LOGO

Death in images: a study about how data visualizations foster death awareness during the COVID-19 pandemic

Morte em imagens: um estudo sobre como as visualizações de dados promovem a consciência da morte durante a pandemia COVID-19

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ABSTRACT

Data visualizations are being used to represent death for the COVID-19 pandemic. Despite facilitating understanding, they also foster death awareness through visual language. Considering the delicate content of these data visualizations, it is vital to understand how different design choices might promote death awareness to modulate reader response. This paper aims to analyze a popular data visualization depicting contagion to map how visual language impacts the reader's mortality awareness. The method was guided by Close Reading, and the results showed that the use of size, shape, spatial positioning, and color fosters fear. At the same time, the schematic way of representation incites reflection.

KEYWORDS

Design; Data visualization; Death awareness.

RESUMO

As visualizações de dados estão sendo usadas para representar a morte pela pandemia COVID-19. Apesar de facilitar a compreensão, elas também promovem a consciência da morte por meio da linguagem visual. Considerando o conteúdo delicado dessas visualizações de dados, é vital entender como diferentes escolhas de design podem promover a consciência da morte para modular a resposta do leitor. Este artigo tem como objetivo analisar uma visualização de dados popular que descreve o contágio para mapear como a linguagem visual afeta a consciência da mortalidade do leitor. O método foi guiado por Close Reading, e os resultados mostraram que o uso de tamanho, forma, posicionamento espacial e cor fomentam o medo. Ao mesmo tempo, a forma esquemática de representação incita à reflexão.

PALAVRAS-CHAVE

Design; Visualização de dados; Consciência da morte

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INTRODUCTION

Data visualization (DV) has been used since the beginning of the COVID-19 pandemic to communicate information to the general public. John Hopkins University was the first to create a platform to monitor such data and display it to the user (COMBA, 2020). Soon, numerous other organizations began mobilizing to develop what Cooley (2020) calls a tracking dashboard.

Data visualizations are defined as "the reduction and spatial representation of datasets in such a way as to make them more intelligible than their pre-visualization, tabular format" (Hepworth, 2016, p.8). They assist users in understanding information, act as cognitive assistance, and foster an account that raw data cannot, as well as aid in objectivity, data management, and much more (BRAGA; PONTES E SILVA, SOUTO, 2020; GOMES; PIMENTA; SCHNEIDER, 2019; GRAY, 2020).

However, DV also has the power to persuade, mislead and change user perspectives (PANDEY et al., 2015). Institutions that collect, store, and distribute data have control over those that have their data collected (PINNEY, 2020). During the pandemic, DV can promote positive user behavior by assisting users in making informed decisions and inspiring them to become more engaged in politics (NÆRLAND, 2020).

Not all visual representations are suitable for all cases, and it is the designer's responsibility to manipulate the visual language of a DV to adequately represent its intended purpose (TVERSKY; MORRISON; BETRANCOURT, 2002). Data visualizations design is not incidental, nor are the conclusions users draw from it (EISNER, 1997). The designer's role is to manage the visual elements to create visualizations that send a clear message to the readers (VIÉGAS, WATTENBERG, 2007).

Data visualizations are a section of graphic representation, which are representations made to express information, amusing, delighting, persuading, invigorating, provoking, or stimulating the reader (VON ENGELHARDT, 2002). Different types of graphic representation have a distinct visual language. Therefore for a DV to be successful for communication, it needs to translate information and, sometimes, create a particular visual language for its specific purpose (VON ENGELHARDT, 2002).

Data visualizations excel in presenting data with emotional distance, promoting impartiality (GRAY, 2020). However, when neutrality is applied to sensitive data, such as data about death, there is a risk that human life

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will be turned into mere management numbers (HEPWORTH, 2016). When people are presented with large sets of data, they lose the individual meaning of each data point and become less engaged and less empathetic (COOLEY, 2020).

Additionally, for COVID-19 data visualizations, visual language does more than facilitate understanding. It also acts as a mortality reminder, causing the user to grapple with the inevitability of one's death (ROSENBLATT et al., 1989). Greenber and Arndt (2012) argue that such mortality reminders can cause the users to experience existential distress because of the Terror Management Theory (TMT).

Terror Management Theory states that humans have developed enough cognitive abilities to recognize that life is fleeting, conflicting with self-preservation instincts. When these two systems clash, a feeling of existential terror arises, also known as death anxiety (GRANT; WADE-BENZONI, 2009).

People depend on a self-made system of self-esteem, worldview, and close relationships to manage this terror (GREENBERG; ARNDT, 2012; PYSZCZYNSKI et al., 2020). This system provides people with the assurance that they live a meaningful life. However, when this anxiety buffering is put under attack, for example, when different worldviews appear, people can become sensitive and violent towards those posing a risk to their beliefs (GREENBERG; ARNDT, 2012; ROSENBLATT et al., 1989).

Therefore, visualizations that seek to be neutral and impersonal might cause apathy and lack of motivation (COOLEY, 2020; HEPWORTH, 2016), while visualizations that lean too emotional might promote fear and incite users to become violently protective (GRANT; WADE-BENZONI, 2009; ROSENBLATT et al., 1989; STEIN; CROPANZANO, 2011). Furthermore, how the visual language presents mortality reminders can interfere with user behavior. It is a successful form of persuasion (PANDEY et al., 2015), meaning that the way visual language is employed directly affects user behavior.

Therefore, it becomes imperative to understand how data visualization can foster death awareness through the visual medium. Hence, this paper aims to map out the connections between the visual languages used in a DV and the possible ways it can foster death awareness.

To accomplish this goal, the method of Close Reading was employed. Close Reading is a qualitative methodology that allows the researcher to analyze a piece of media and understand how design choices can evoke different user interactions (BIZZOCCHI, 2005; BIZZOCCHI; BEN LIN;

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TANENBAUM, 2011). Similar qualitative and subjective methodologies were used to analyze data visualizations, which provided insights into the thought processes that design can foster (SIMPSON, 2020).

2 LITERATURE REVIEW

To build the connections between visual language and death awareness, three areas were revised: (1) Terror Management Theory alongside Terror Management Health Model, (2) death anxiety versus death reflection, and (3) visual language.

2.1 Terror management theory

Terror Management Theory poses that humans have biologically evolved to be self-preserving while also developing an awareness of the inevitability of death, a dissonance that causes existential terror (GOLDENBERG; ARNDT, 2008; GREENBERG; ARNDT, 2012). Humans use a self-made system of self-esteem, worldviews, and close relationships to manage this terror. However, when a person comes in contact with mortality reminders, this system is broken, and the person experiences death anxiety (GOLDENBERG; ARNDT, 2008; GREENBERG; ARNDT, 2012).

Mortality reminders can trigger two responses: proximal or distal. When distal defenses are activated, the person experiences fear and anxiety, which leads them to bolster their worldviews to compensate. Alternatively, distal defenses cause repression and either encourages healthier behavior or denial and apathy (GREENBERG; ARNDT, 2012).

For any of those two systems to function, one must believe that the worldview they uphold is correct and that they are exceeding its expectations (ROSENBLATT et al., 1989). Worldviews assure literal or symbolic immortality and deny the precarious nature of human life, proving the security of living a meaningful life (GREENBERG; ARNDT, 2012; PYSZCZYNSKI et al., 2020).

However, worldviews are societal constructs that are threatened whenever someone who does not uphold the same worldview exists (ROSENBLATT et al., 1989). When confronted with worldviews differences, a person suffering from death anxiety can either accept that their beliefs are not universal or regard the transgressor as evil and seek to eliminate them and their values (GRANT; WADE-BENZONI, 2009; ROSENBLATT et al.,

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1989; STEIN; CROPANZANO, 2011).

Humans tend towards the former. When reminded of their mortality, people were more lenient towards those who upheld the same values and less kind to those viewed as different (STEIN; CROPANZANO, 2011).

For the pandemic, this situation can aggravate further, as some coping mechanisms that keep death anxiety at bay are threatened by healthcare guidelines (PYSZCZYNSKI et al., 2020). Letting existential terror go unmanaged can have detrimental consequences for the human psyche, as explicit thoughts of death may cause threat avoidance (GOLDENBERG; ARNDT, 2008). On the other hand, unconscious thoughts of death can be even more dangerous as they lead people to favor self-soothing actions instead of healthy ones (GREENBERG; ARNDT, 2012).

2.2 Death anxiety and death reflection

The way a mortality reminder is presented to the user can affect whether they engage in death reflection or death anxiety (LYKINS et al. 2007). Those two types of anxiety differ in the cognitive process, death anxiety being processed in the “hot” system and death reflection in the “cold” system (GRANT; WADE-BENZONI, 2009).

The “hot” system fosters intense, guttural, and impulsive reactions, while the “cold” system is responsible for deliberation, analysis, and rationality (METCALFE; MISCHEL, 1999). While death anxiety incites feelings of fear, panic, and dread, death reflection fosters contemplation of meaning, purpose, and focus on positive legacy (GOLDENBERG; ARNDT, 2008; GRANT; WADE-BENZONI, 2009).

Death anxiety and death reflection differ in three key aspects: emotionality, duration, and focus of attention (GRANT; WADE-BENZONI, 2009). Death anxiety garners strong visceral emotions, focuses on specific events, has a short duration, and emphasizes self-protective tendencies. On the other hand, death reflection causes measured responses and controlled thoughts, has an extended period and promotes positive changes for communities (GRANT; WADE-BENZONI, 2009).

How the mortality reminder is presented affects whether the reader engages in death reflection of death anxiety. Mortality reminders that trigger anxiety are usually causal, short-term, and processed quickly and instinctively. On the other hand, mortality reminders that incite reflection are long-term, reflective, and coexist with other changes in someone's life (GRANT; WADE-BENZONI, 2009; LYKINS et al., 2007).

2.3 Visual language

Visual language is the "integration of words, images, and shapes" (Horn, 1998, p.11). Understanding visual language becomes essential to literacy in a world essentially visual (BÖRNER; BUECKLE; GINDA, 2019; HORN, 1998). Data visualization uses visual language to create meaning, signs, claims about the future, and even shape it (NÆRLAND, 2020; RETTBERG, 2020), which makes understanding visual language imperative to analyzing DV.

Horn (1998) divides visual language into four units: icons, concept diagram, info-graphic, and information mural. For this paper, the unit focused on is concept diagram, which is described as "diagrams that express a single concept. Usually, simple to moderately complicated graphic accompanied by one or a few sentences" (Horn, 1998, p. 59). These visualization types are often used to organize information into digestible pieces, provide generalization, disambiguate, and present time passage through multiple points of view – i.e., tables, diagrams, quantitative charts, and graphs (HORN, 1998). Data visualizations are included in this category as they provide abstractions and summaries of the world and are meant to facilitate understanding and persuasion (KENNEDY; ENGEBRETSEN, 2020).

Von Engelhardt (2002) discusses visual language as applied to graphic representations, which he defines as representations made to express information, amuse, delight, persuade, invigorate, provoke or stimulate the reader, such as data visualizations (VON ENGELHARDT, 2002).

According to him, different graphic representations use different types of visual language. Graphical representations are deeply influenced by social trends and constantly shifting. Therefore, for data visualizations to be successful for communication, they need to translate information and, sometimes, create visual elements for a specific purpose (VON ENGELHARDT, 2002). However, this does not mean that there are no underlying systematic principles essential to consider when making and analyzing DV (VON ENGELHARDT, 2002)

Von Engelhardt (2002) provides a framework for analyzing graphic representations divided into syntactic, semantic, and classification of graphical expression. Syntactic as visual language combines verbal, pictorial, and schematic elements (GOMES, 2020), which can happen in many ways, such as color, texture, orientation, size, etc. (BERTIN, 1999; GOMES, 2020). Horn (1998) divides it into ten properties: point, line, abstract shape, space between shapes, words, phrases, sentences, and

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text blocks. For DV, for example, a line can function as a connection, narrative structure, patterns, or position of the reader about the visualization (LECHNER, 2020).

Using the explanation of syntactic provided by both Horn and Bertin, Von Engelhardt (2002) proposes a framework. It divides syntactic into visual attributes (i.e., shape, color, size), syntactic structures (i.e., lineup, superimposition, clustering), syntactic roles of graphic objects (i.e., label, connector, grid lines), and simultaneous combination (i.e., multi-panel display and background inset). Similarly, Börner et al. (2019) talk about the same elements, separating them into graphic symbols (i.e., point, line, volume, icons, text) and graphic variables (i.e., position, form, color, motion).

Visual language semantics is about the meaning of words and sentences and their relationships. In the case of visual language, it is at the semantic level that legibility and readability are incorporated (GOMES, 2020). Image and text combine to create meaning (GOMES, 2020; HORN, 1998).

Von Engelhardt (2002) classifies semantics into types of correspondence (i.e., literal, metaphoric, etc.), mode of expression (pictorial or non-pictorial), and informational roles (information, reference, or decoration). Börner et al. (2019) add to this and map out the types of interactions DV can garner for users (i.e., zoom, search, filter, etc.).

Lastly, the classification of graphic representation pertains to the type of information being shown (i.e., map, picture, time chart, etc.). Modes of classification change from author to author, and for this paper, Von Engelhardt (2002) and Börner et al. (2019) will be used, as they both provide similarly detailed classifications. Von Engelhardt (2002) talks about how graphic representations can be divided into a map, picture, statistical chart, time chart, link diagram, grouping diagram, table, symbol, written text, and combinations of two or more. In addition to those, Börner et al. (2019) also add the classification of: graph, tree and network (BÖRNER; BUECKLE; GINDA, 2019; VON ENGELHARDT, 2002).

Additionally, Börner et al. (2019) classify graphic representations by the insight needs of the users (i.e., comparison, geospatial, order, etc.), the data scale (i.e., nominal, ordinal, interval or ratio), and the type of analysis done to the data (i.e., statistical, temporal, geospatial, etc.) These new elements were incorporated into Von Engelhard's framework. The complete framework used for the analysis can be found in chart 1.

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3 METHOD

The method used in this paper was Close Reading, a qualitative and subjective methodology described as the process of meticulously dismantling a piece of media until all its flaws and meanings can be defined (BIZZOCCHI; BEN LIN; TANENBAUM, 2011). Close Reading can garner valuable insights if performed systematically through specific lenses to deconstruct how the design principles evoke different user interactions (BIZZOCCHI, 2005; BIZZOCCHI; BEN LIN; TANENBAUM, 2011). For this paper, visual language and its interaction with TMT and TMHM theories were the analytical lenses to analyze data visualization.

Fadel (2020) divides this method into 5 phases: (1) Object when the researcher experiences the object for the first time and describes it, (2) First reading, when the researcher makes a note of the most striking design elements, (3) Theories when relevant theories for the analysis of the object are compiled into an annotation table, (4) Other readings, the analysis of the object and iterative editing of the annotation table, and finally (5) Conclusion.

A framework was developed for phase (4) by combining the frameworks by Von Engelhardt (2002) and Börner et al. (2019). The analysis method was derived from Von Engelhardt (2002), where the author recommends that the analysis graphic representations be segmented into progressively smaller clusters until the elementary graphic object is reached.

The method of analysis proposed by von Engelhardt (2002) is divided into 4 phases:

1. Brief description of the graphic representation;
2. Source of the graphic representation;
3. Comment to highlight some specific characteristic;
4. Analysis:
    - **a.** Syntax of spatial structure (analysis of syntactic structure);
    - **b.** Type of correspondence (analyses of the figure, split into the spatial arrangement and visual attributes);
    - **c.** Type of graphic representation (what is the classification of the graphical representation).

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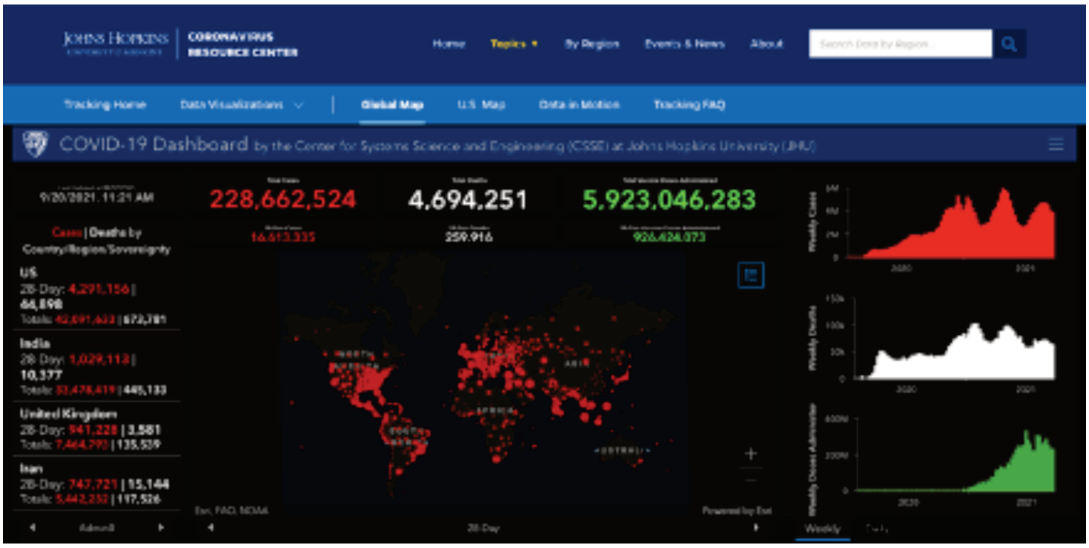
4 THE OBJECT

John Hopkins University of Medicine's COVID-19 dashboard (Figure 1) is the data visualization chosen for the analyses. The website is organized as a multi-panel display with four large clusters: the mapped cluster, the table cluster, the time chart cluster, and the number cluster.

Figure 1 – John Hopkins University COVID-19 dashboard main screen



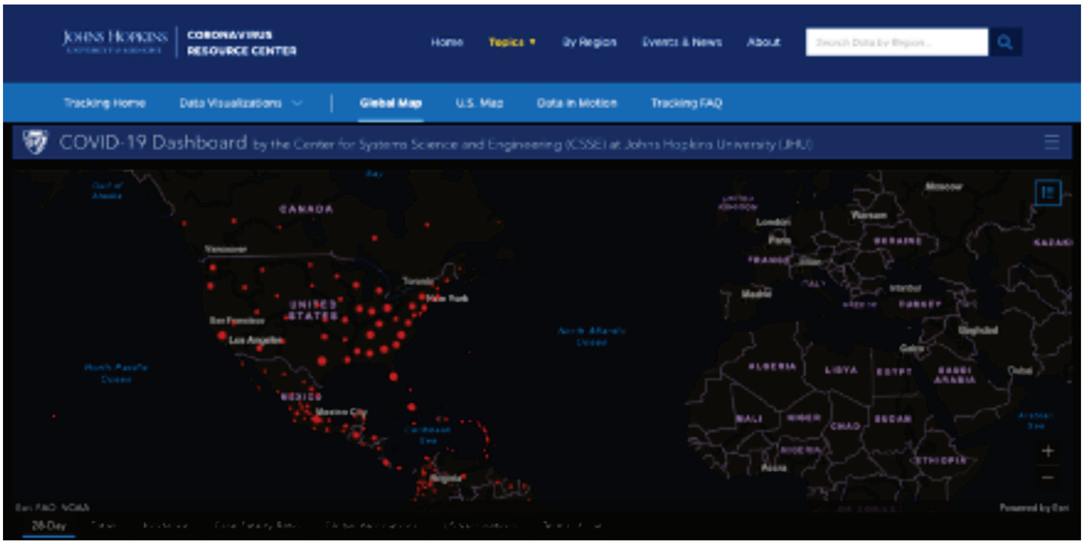
Source: (original from the website: < https://coronavirus.jhu.edu/map.html> last accessed: 20/09/2021).

The map cluster focuses at the center of the webpage (Figures 2-3). It uses dark colors and progressively bigger red circles to indicate contagion numbers. The map uses the same modes of interaction as Google maps and allows users to zoom in/out and move the map by click-and-drag. It is a hybrid graphic representation, a statistical map, and a composite syntactic structure called a background inset (VON ENGELHARDT, 2002). This map is the cluster this analysis will primarily focus on (figure 2-4).

The time chart cluster on the right side of the representation shows daily cases/death/vaccines across a period. A table comparing the number of deaths versus the number of cases for different countries is to the left. Finally, the number cluster with large colored numbers indicates the overall number of cases/death/vaccines at the top.

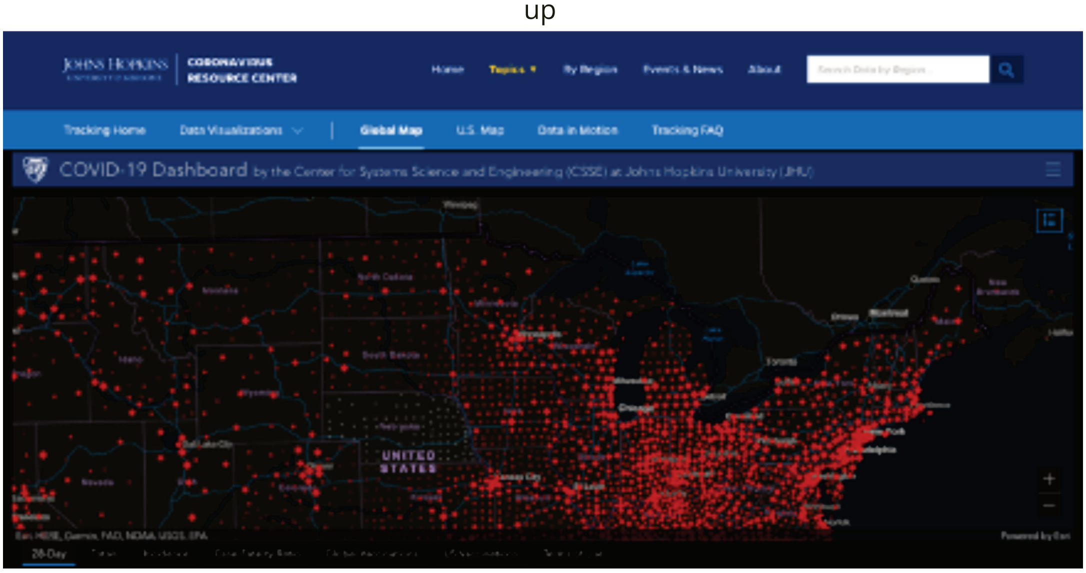
A fifth cluster appears on the DV through reader interaction, the legend. This cluster can be seen in figure 4, and it is comprised of a large dark gray box with an attached light gray box. The title 'legend' is at the top, followed by an explanation of the red circles' size in terms of contagion. I.e., the bigger the circle, the more people are contaminated.

Figure 2 – John Hopkins University COVID-19 dashboard, statistical map cluster



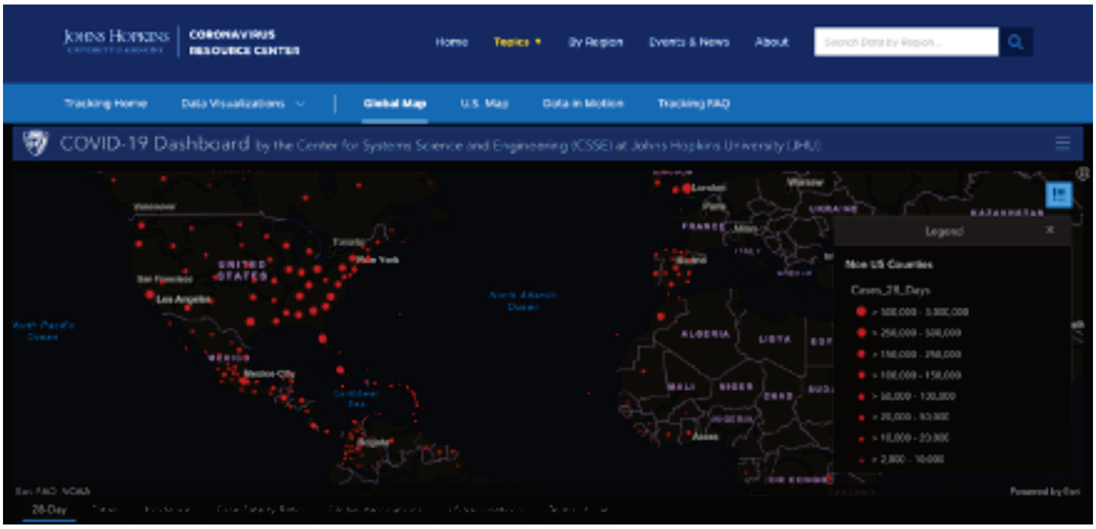
Source: (original from the website: < https://coronavirus.jhu.edu/map.html> last accessed: 20/09/2021).

Figure 3 – John Hopkins University COVID-19 dashboard, statistical map cluster – close up



Source: (original from the website: < https://coronavirus.jhu.edu/map.html> last accessed: 20/09/2021h).

Figure 4 – John Hopkins University COVID-19 dashboard, legend



Source: (original from the website: < https://coronavirus.jhu.edu/map.html> last accessed: 20/09/2021).

5 RESULTS

Chart 1 shows the results from the analysis of the data visualization. The table summarizes the results of applying Close Reading to the object. It is divided into four parts corresponding to von Engelhardt's method: description, syntactic, semantic, and classification, with some elements from Börner et al. (2019) to the semantic and type sections.

Chart 1: analysis of the JHU data visualization

DESCRIPTION	
Description of the data visualization	The visualization is a statistical map with three separate clusters. The map acts as a background inset, on which two interfaces are superimposed (figure 2). The first interface is a dark gray square with a blue outline. It opens another window where a legend appears (figure 4). The second one is at the bottom right and consists of two dark gray boxes with light gray outlines, which can zoom in/out of the map. The map itself is a dark gray, with light gray lines acting as border dividers. The ocean is colored a dark blue and labeled in light blue text. Each continent is marked in the light gray all-caps text, and as the zoom-in increases, the label changes to a light purple, and the names and borders of the countries and states appear. The lines that mark borders are light gray, the lines that represent roads are light blue, and the lines that represent the rivers are dark blue, the same color as the oceans and lakes. Each location of the map is marked with a different-sized bright red dot. The dots are smaller in places with fewer reported cases of

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	COVID-19 and larger in areas with more reported cases.		
Source	John Hopkins University, <https://coronavirus.jhu.edu/map.html> last accessed: 20/09/2021		
Characteristic that the researcher chooses to highlight	The color red The dark background The focus on the negative The mode of representation of a map with the red circles indicating contagion		
SYNTACTIC			
Composite syntactic structures			
Simultaneous combination Nesting	Background inset		This data visualization is a background inset, with a statistical map as the background. There are two clusters superimposed on the chart, one for the legend and another for zoom in/out.
	Multi-panel display	Graphic multiple Shared-axis multi-panel	
Visual attributes (given to graphic objects)	Spatial attributes	Shape Size Spatial position Orientation	The red dots use size and spatial position to identify the degree of infection anchored to a specific geographical location. Circles are used as a shape, which is used to identify the number of cases.
	Area-fill attributes	Value Grain Color	The red color acts as an area fill attribute, using correspondence metaphor, metonym, and arbitrary-conventional to represent danger.
Syntactic structures (relationships between graphic objects)	Object-to-object	Spatial clustering Separation by separators Lineup Linking Containment Superimposition	Spatial clustering happens when the red dots grow too large and merge with those around, creating a single visual element. Separation by separators happens with the space between the clusters of red dots or the red dots themselves. There are two instances of superimposition, and the first happens with the two clusters of information on the bottom and upper right corner. The second is the red dots that are superimposed on top of the map.
	Object-to-space	Metric space Distorted metric space	The DV makes use of distorted metric space, as all maps do It also uses metric space because all the elements inside of the

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			graphic space of the map have meaning depending on their geographical location
Syntactic roles of graphic objects	Object-to-object anchoring	Node Label Separator Connector Container Modifier	Labels are used to identify continents, countries, cities, oceans, lakes, and rivers.
	Object-to-space anchoring	Point locator Line locator Surface locator Volume locator Metric bars Gridlines	The lines that divide the countries and states act as line locators. The red circles act as point locators, anchoring the number of infections to a specific geographical space. Surface locators are also used in the form of lake positions or country delimitations
	No anchoring		n/a
SEMANTIC			
Type of correspondence	Literal Metaphoric Metonym Rebus-based Arbitrary-conventional		There is literal correspondence between the map and the real world. Each country and continent directly represents its real-world counterpart. The red color acts as a metaphor, metonym, and arbitrary-conventional correspondence. The metaphor comes from the relationship between red to fire or blood, which signifies danger. Metonym is because red is a visual element of, for example, blood. Arbitrary-conventional correspondence can also be applied because it is common to use red to warn people of danger (i.e., warning signs, stop signs, traffic lights, etc.)
Mode of expression	Pictorial Non-pictorial		The map is the pictorial element, directly connecting the real world and the representation. The red dots are non-pictorial and use arbitrary conventional correspondences to infer the concept of danger and infection.

Informational roles	Information objects		The red dots count the number of infections per day. Every time the data changes, the dots are altered.
	Reference objects	Spatial objects	The lines that establish borders. The lines that identify bodies of water The surface of the map as a whole.
		Legend objects	The texts identify geographical locations and bodies of water. The icon on the upper right corner is clickable and displays a legend for the red dots when opened (figure 4).
	Decoration objects		n/a
Interactions	Zoom Search and locate Filter Details on demand History Extract Link and brush Projection Distortion		The DV allows the user to zoom in and out and locate the map. It also has search and location functions that can be used to search for a specific geographical location. The filter can select only the countries of the type of information that the user wants to see, for example, choosing not to see information about vaccines and focusing on the number of cases.
CLASSIFICATION OF GRAPHIC REPRESENTATIONS			
Primaries	Map Picture Statistical chart Time chart Link diagram Grouping diagram Table Symbol Written text Graph Tree Network		
Hybrids	Statistical map Path map Statistical path map Statistical time chart Statistical link diagram Chronological link diagram		The representation is a statistical map as it combines the data from a statistical chart with geographical locations.

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Insight needs	Categorize/cluster Order, rank, sort Distribution (also outliers) Comparisons Trends (process and time) Geospatial Compositions (also of text) Correlations/relationships	The DV's insight onto the user is the geospatial comparison between different geographical locations and their COVID-19 data.
Data scales	Nominal Ordinal Interval Ratio	The data presented in the DV is a ratio, as the distance between one data point and another is clear (i.e., one death, one contamination, one vaccine), and the zero point is not arbitrary (in this case, the zero point is no vaccines administered, or no deaths/contaminations)
Analysis	Statistical Temporal Geospatial Topical Relational	The analysis for the DV is focused on geospatial, as it seeks to show the differences in data across different geographical locations.

6 FINAL CONSIDERATIONS

The data visualization uses color and size as a metaphor for contamination. The red represents the number of infected, and the more this color fills a country, the worse the situation. Size, in this case, means the growth of the pandemic, and the larger the size, the bigger the danger. The red color acts as both a metonym and metaphor, invoking for the reader the idea of contagion, fire, blood, which all signify danger (VON ENGELHARDT, 2002).

Additionally, spatial position plays a significant role in how people perceive danger. Because the data visualization is a map, there is meaning to positioning the red dots in space. They are anchoring the concept of a plague to a specific location. The visual clustering of red dots highlights dangerous areas, and the empty spaces between red regions act as a foreboding element, inciting fear for rapidly approaching danger. The way the DV shifts in perspective through zoom serves to locate a reader in a point in space and makes them aware of the situation around them.

Many of those choices might evoke death's anxiety. The red color, the shape of the circles, and how they seem to grow and spread like infected

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tissue all seek to incite fear and emotional responses from the reader. The red dots are the graphic objects that carry information and thus the most critical part of the visualization and the ones that will be at the focus of attention. Despite this, their design incites fear and collaborates with death anxiety.

The magnitude of the representation can also distract the reader from the importance of individual action and make them overwhelmed with the state of the world, lessening empathic responses and engagement (COOLEY, 2020).

Locating the reader in a space can serve death anxiety and death reflection. Because there is a possibility to zoom in and gain perspective on the individual situation versus the world, it can incite a feeling of fear of an enemy approaching, which aligns with the self-protective nature of TMT and TMHM. However, it can also provide a different perspective to the narrative and make readers empathize with those around them and, through this empathy, shift to prosocial behavior, which is in line with death reflection.

The mode of representation is pictorial, leaning heavily schematic, reducing the scale of human life loss to mere administrative numbers (HEPWORTH, 2016). On the one hand, the less personal nature of data might garner fewer emotional responses and lean towards rational behavior, promoting death reflection. On the other hand, when DV focuses on narratives and individual stories over the whole picture, the responses from the readers skew more empathetic and engaged (COOLEY, 2020).

It is essential to acknowledge that the way designers present information shapes the world and influences how people respond in the face of a pandemic (COOLEY, 2020; EISNER, 1997; HEPWORTH, 2016; KENNEDY; ENGEBRETSEN, 2020). This paper sought to understand how the design elements acted as mortality reminders and how they might foster death awareness.

Future studies should test whether these results hold up when confronting readers.

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