Diploma Thesis

USER EVALUATION OF INTERACTIVE COVID-19 DASHBOARDS

The objective is to conduct user evaluation of COVID-19 dashboards containing geospatial information. It consists of a formative study to **identify problematic user interaction aspects** in existing dashboards and it is enhanced by comparing two self-developed ones. The nature of this study requires the usage of **mixed research methods**, combining **eye-tracking technologies** and Q+I. The results help reveal how the users interact with the dashboards and their functionalities and if the displayed information is correctly transferred.

1 Objective

EXPERIMENT I

User testing on **existing dashboards** to obtain insights on user-friendly functionalities and make **recommendations** for design improvement
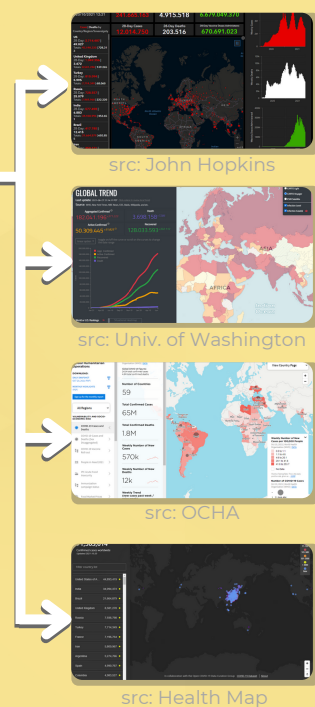
Methods

Experiment
○ **Procedure:** solve 12 tasks
○ **Stimuli:** 4 existing dashboards
○ **Number of participants:** 19
○ **Apparatus&Software:** SMI RED 250&SMI BeGaze

Analysis
○ **Qualitative:** questionnaire and interview
○ **Quantitative:** correctness, trial duration and AOIs

src: John Hopkins
src: Univ. of Washington
src: OCHA
src: Health Map

Results

○ Choropleth map
○ Interactive elements
○ Search option
○ Big title
○ List of regions
○ Select a date option
○ Light aesthetics
○ Small credits

○ Dot/grad. symbols
○ Static elements
○ Non-visible tabs
○ Small title
○ Click and pop-ups
○ Time-slider/graph hover
○ Dark aesthetics
○ Block of text

2 Objective

DASHBOARDS

Create stimuli according to Experiment I, by developing two dashboard interfaces within an SDI

Methods

Data Sources
dades obertes catalunya
idescat

○ COVID-19 daily cases
○ Population to calculate the incidence rate
○ Geometries of adm. levels

Implementation

Server
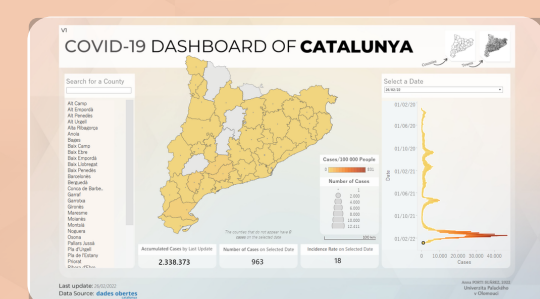Data retrieving, cleaning and manipulation
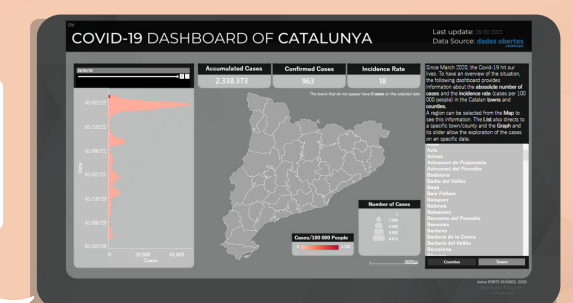
Database
Storage in 4 tables
PostGIS

Interface
Join data, design of functionalities and publication
tableau

Results

COVID-19 DASHBOARD OF CATALUNYA
Find it here
Light Version

COVID-19 DASHBOARD OF CATALUNYA
Find it here
Dark Version

3 Objective

EXPERIMENT II

User testing on **self-developed dashboards**, comparing their functionalities, to elaborate final **recommendations**, considering Experiment I
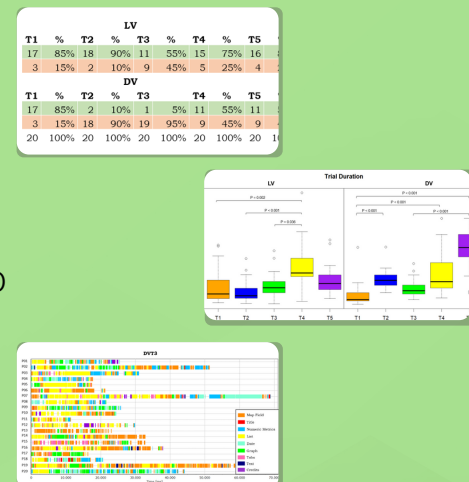
Methods

Experiment
○ **Procedure:** solve 10 tasks + 1 minute free viewing
○ **Stimuli:** 2 self-developed dashboards
○ **Number of participants:** 20
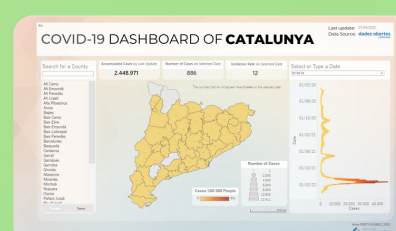○ **Apparatus&Software:** SMI RED 250&SMI BeGaze

Analysis
○ **Qualitative:** questionnaire and interview
○ **Quantitative:** correctness, trial duration and AOIs + entry time to first fixation to the AOIs

Results

Insights
○ Numeric metrics placed on the top
○ Drop-down/typing date selector
○ Tabs near to the element they refer to
○ Follow cartographic rules

COVID-19 DASHBOARD OF CATALUNYA
Find it here
Final Version

Conclusions

Together with dashboard development tools, this work involves the familiarisation with analysis methods in **cognitive cartography**, both quantitative and qualitative, focusing on eye-tracking and all the technologies related. Besides this, the main aim is achieved by obtaining insights on dashboard user interaction and recommendations are elaborated considering which functionalities they should contain, their appearancce and placement in the layout, and their role in communicating and transferring the information properly, in order to **improve dashboard interface design.**

Attachment 2 · Olomouc, 2022

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