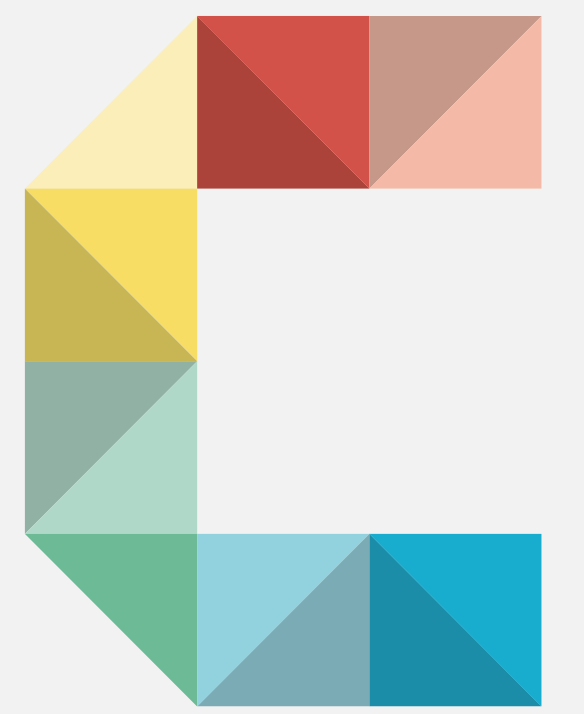# Searching for the Essentials
Impacts of COVID-19 on Web Searches for Food & Other Necessities

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When the COVID-19 pandemic hit the world, nearly every aspect of daily life was affected. The food industry, normally functioning unobtrusively, was shaken as people began hoarding products like pasta or toilet paper. Our interactive web map application aims to visualize the impact of COVID-19 on interests in food and other essential items in three European countries – Germany, the Netherlands, and the United Kingdom - based on *Google Trends* data of specific products [1] .

FOCUS

Our web application is divided into two sections: the FOOD and the COUNTRY section. The former shows a divergent proportional symbol map comparing the evolution of one search term among the three countries. The latter contains a radar chart allowing the visitor to discover differences between all fifteen search terms across the countries. In addition, both sections show the evolution of the COVID-19 infection rate with a line chart.

SYMBOL MAP

When opening the web application homepage (or by clicking on the navigation button FOOD), the user selects a search term by clicking on the respective icon (Fig. 1). The map visualizes the Search Trend Popularity for the selected term during 2020 compared to the previous year without COVID-19 impact (Fig. 2). Blue circles indicate a higher search frequency during the pandemic while red circles show a lower relative search query. We chose a conic conformal map projection as it is suitable for our area of interest extending from east to west.
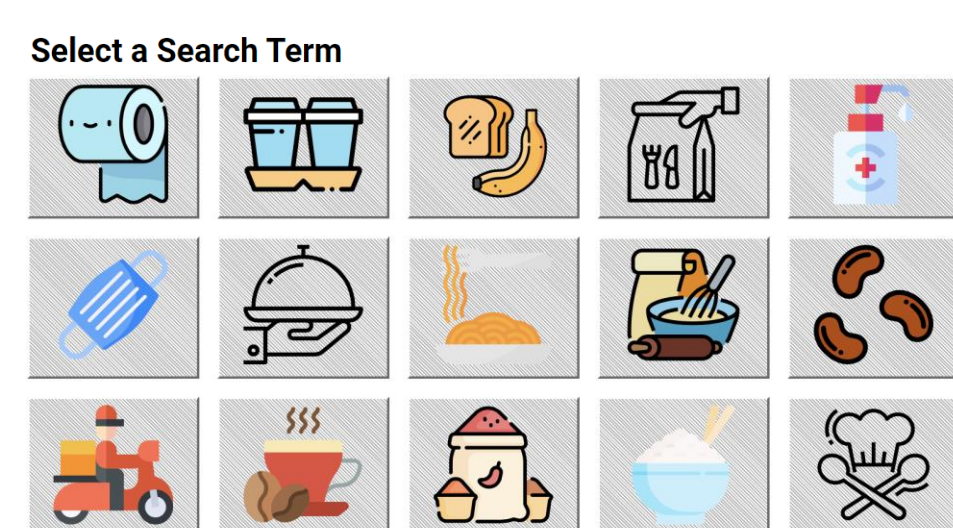
Select a Search Term

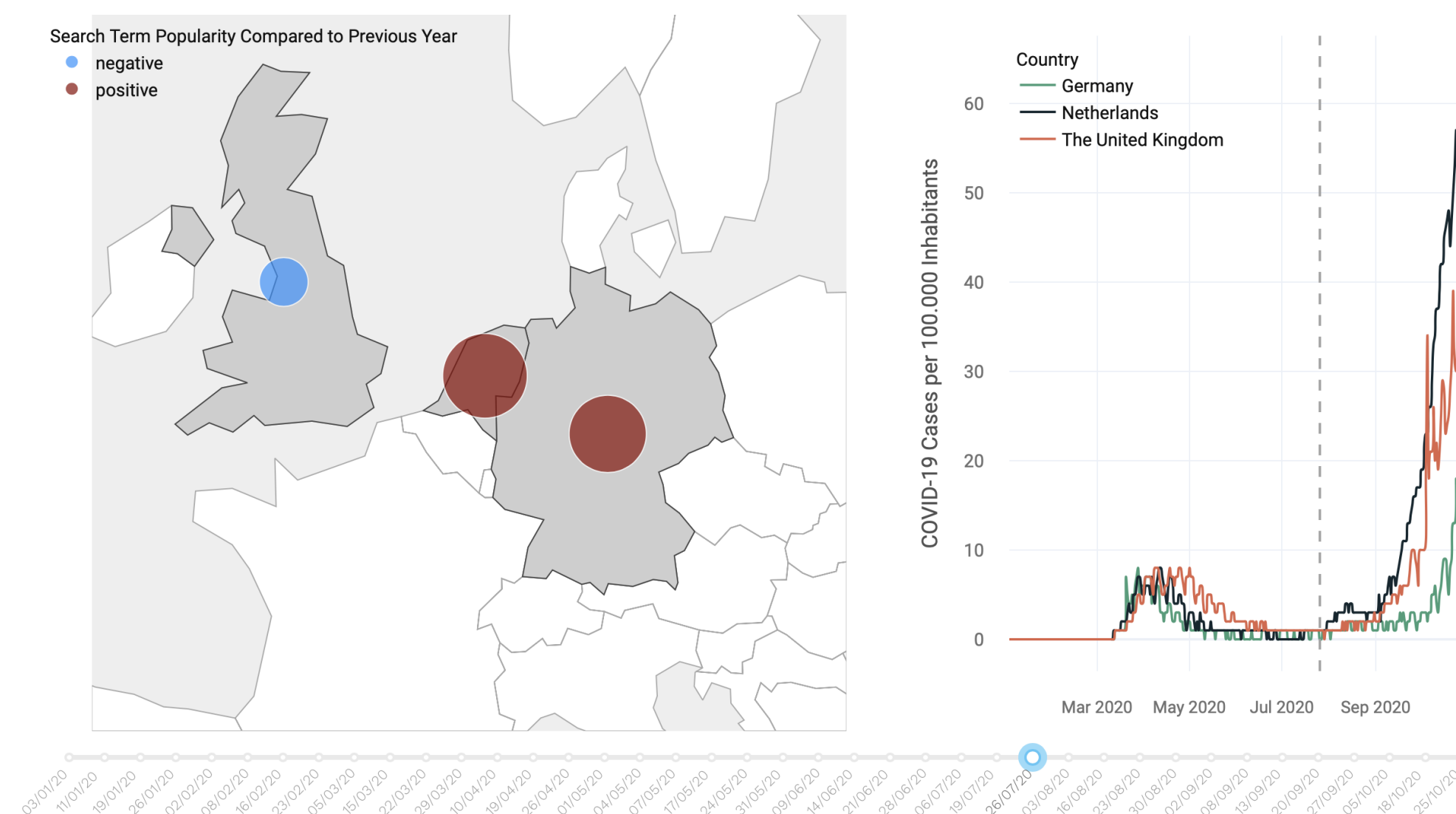*Fig. 1 Search terms visualized by icons.*

Fig. 2 Close-up of the FOOD section showing the daily COVID-19 cases on the right and the symbol map displaying the search trend popularity for "restaurant" in the week of July 26.
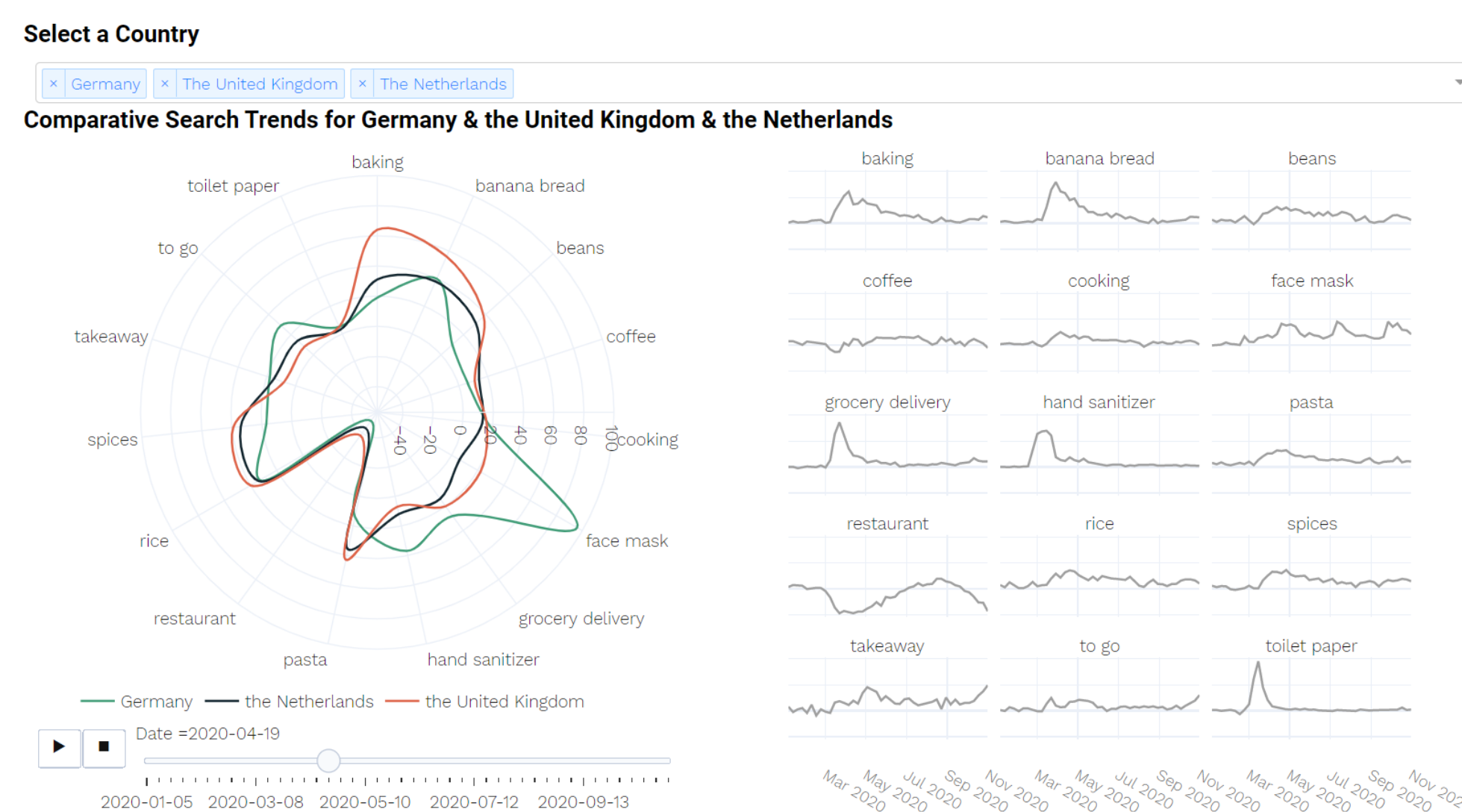

Fig. 3 Close-up of the COUNTRY section displaying the radar chart and the line plots.

RADAR CHART

Clicking on the navigation button COUNTRY a radar chart pops up comparing the 15 search terms across the countries selected in the dropdown menu (Fig. 3). A timeline animation can be started, or the date can be selected individually. Negative and positive values indicate lower or higher searches compared to the year before. Additional context is given by a multiple time series plot displaying the evolution of each search term.

DATA COLLECTION

We used the *Google Trends* data from January 2019 to November 2020 and calculated the differences between the two years [1]. For the daily COVID-19 cases we collected the data from the *World Health Organization (WHO)* starting on January 2020 [2].

TOOLS

The app was built with Dash, an open-source Python library. Plotly, a scientific graphing Python library, was used to create the map and graphs. The project is hosted on Heroku, a cloud platform allowing for deployment of flask applications.

CONCLUSION

The search term popularities changed during the COVID-19 break-out in 2020. Web searches for banana bread and toilet paper increased, while restaurants were searched less often. During the first wave people especially started looking for hand sanitizer and toilet paper, while the search for face masks was staggered for the countries due to regulations starting to apply at different times. All these trends can be further explored with our interactive web map application.

REFERENCES

[1] Google Trends (2020). Google Trends. Retrieved Nov 11, 2020 from https://trends.google.com

[2] World Health Organization (2020). WHO Coronavirus Disease (COVID-19) Dashboard. Retrieved Nov 11, 2020 from https://covid19.who.int

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