Where are good hitchhiking points? - Data analysis and visualization of Hitchwiki
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Abstract: This study examined how we could employ SNS (Social Network Service) geospatial data in order to further understand human’s social and cultural activities. We specifically examined how hitchhikers travel in Europe using open-data from Hitchwiki. We extracted longitude, latitude, rating scores and comments by hitchhikers, and visualized the data. The results revealed that hitchhiking is particularly popular in France, Germany, and the Netherlands. The results also revealed that density of hitchhiking points is generally high and widely spread in the Netherlands, whereas such points are centralized in big cities in France and Germany.

Keywords: Hitchwiki, Data Visualization, R

1. Introduction
The Internet has become one of the common ways to obtain information. Researchers and analysts can now collect text information (e.g., tweets, and comments) from anywhere in the world using Twitter and Facebook API (Application Programming Interface) and see how people react to social and cultural issues (e.g., international political news, world sports events, and popular music scenes). When people travel, they can collect information on good local hotels, restaurants, and bars. They can see how previous visitors commented and rated the places. Researchers and analysts can find hot spots among visitors examining such information stored online and come up with business strategies. Furthermore, they can collect geographical information of people and see how they are moving in their daily lives. For instance, researchers and analysts can examine traffic flows in big cities and come up with plans to reduce traffic congestion. They can also examine information flow among SNS users and see how information spreads among the users all over the world.

Despite the fact that such big data have revealed some hidden patterns and structures of human’s social and cultural activities, we still have concealed ones. For example, hitchhiking has been one of the popular ways for traveling. It has been less popular, compared to the 1970s. Yet, many travelers are still exploring the world by hitchhiking. What if we collect information of the hitchhikers, what kind of hidden patterns and structures of human’s social and cultural activities can we find? The present study, therefore, examined where hitchhiking is popular and how travelers attempt to get rides in Europe.

2. Hitchwiki and data
2.1 Hitchwiki
We employed publically available data from Hitchwiki (http://hitchwiki.org). This website was organized and launched in November, 2006. They have general tips on hitchhiking, social event announcements and news in
hitchhiking communities in the world. They have growing database of hitchhiking points. As of the 14th of August, 2015, you can see an interactive online map with 21,589 points in the world. These points were written by hitchhikers, and they contain information including longitude, latitude, date, city name, rating score (i.e., how good/poor a hitchhiking point was), comment, and destination. One can download the data as a kml file.

2.2 Data
We selected the data in Europe for the current study because the data size was largest among all continents. There are 17,622 hitchhiking points. Of those, we removed 5,045 data points because 1) some of the points existed in the ocean, and 2) the other points did not have rating scores, leaving 12,577 data points for analysis. We used R for data cleaning. We wrote a custom script to manipulate strings, and extracted geospatial data (i.e., longitude and latitude), rating score (i.e., hitchability), and hitchhikers’ comments.

3. Analysis
3.1 Global assessment in Europe
Figure 1 displays an European map with rating scores (i.e., hitchability). Hitchhikers evaluated how good or poor their hitchhiking spots were using a five-step
Likert scale (i.e., senseless, bad, average, good and very good). The higher hitchability is, the greener the data point is. There were 2,805 hitchhiking points rated as very good, 5,362 points as good, 2,915 points as average, 1,153 points as bad, and 342 points as senseless. In general, these data points spread all over the area. But, France (1,789 points), Germany (1746 points), the Netherlands (852 points), and Poland (827 points) particularly had the largest proportion of the data; hitchhiking seems popular in these countries (see Figure 2).

3.2 Hitchhiking density by European countries

In order to further analyze the data, we focused on data with France, Germany, and the Netherlands in the rest of this study. We examined which countries have high hitchhiking density by dividing the number of hitchhiking points by the size of each country’s area (square km). Figure 3 displays hitchhiking density and suggests that the Netherlands has higher hitchhiking density than France and Germany do.

3.3 Grid analysis

Hitchhiking seems popular in different ways in these countries. It is popular in France and Germany in terms of quantity, whereas it is popular in the Netherlands in terms of density. Despite such a difference, hitchhikers’ Figure 2. The total number of hitchhiking points by European countries. Hitchhiking is particularly popular in France, Germany, The Netherlands, and Poland.

Figure 3. Hitchhiking density in Europe. The countries with browner colors have higher hitchhiking density. The Netherlands, Belgium, Switzerland, and Slovenia have high density.
behavioral patterns would be similar. For example, they may attempt to get rides in big cities. Alternatively, they would behave in different ways. They may find their rides nationwide in small countries like the Netherlands whereas they may find rides in big cities in big countries like France and Germany.

We used grid analyses in order to examine which parts of the countries have larger number of hitchhiking points. Specifically, we created 20-km grids and counted how many data points exist in each of them. Figure 4 displays which parts of the three countries have higher hitchhiking density. Red grids indicate popular hitchhiking areas whereas blue grids indicate less popular areas. In case of France and Germany, the figure suggests that popular hitchhiking spots are centralized in big cities including Paris, Lyon, Bordeaux, Berlin, Hamburg, and Kassel. In case of the Netherlands, the figure suggests that hitchhiking spots are more spread in the nation.

4. Discussion and conclusion
The present study examined where hitchhiking is popular and how hitchhikers travel in Europe. We see that France, Germany, and the Netherlands are the top three popular countries. Why is hitchhiking popular in these countries? One possibility is that France and Germany naturally attract more travelers including hitchhikers. According to the United Nations World Tourism Organization (UNWTO), these countries are in top ten popular destinations in Europe. Why is hitchhiking popular in the Netherlands? One possibility comes from the status of hitchhiking. Hitchhiking is legalized and there are spots on the roads called liftplaats. Such a welcoming attitude of the Netherlands possibly attracts more tourists who are up for exploring the country by hitchhiking. We also found that the patterns of hitchhiking in the Netherlands differ from those in France and Germany; hitchhikers attempt to get rides nationwide. They seem to try hitchhiking on hard shoulder as well as typical hitchhiking points like petrol station, bus stop, and ramps (see Figure 5).

References URL
Hitchwiki: http://hitchwiki.org/maps/
Sited on the 14th of August, 2015