| **Title of your Project** |  |
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| **Digital Nomad’s Paradise Found? - Cracking the Code of Lisbon, Riga & Barcelona** | |

| **Short Summary** |  |
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| With the digital nomad lifestyle on the rise, the possibilities of living and moving around the world seem endless. With so many options, we wanted to provide guidance on choosing a suitable destination to live for digital nomads. To begin with, we focused our analysis on three European cities: Lisbon, Riga and Barcelona.  Not only are these three cities immensely popular among digital nomads, but they also have current datasets available in open-source format on Inside Airbnb, which we could use for our analysis. By combining data from Airbnb and coworking spaces, we developed a score to determine the attractiveness of the cities for digital nomads in terms of pricing, accommodation reviews, amenities, host qualities and coworking opportunities. | |

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| Source: [Pexels.com](https://www.pexels.com/de-de/foto/frau-die-auf-stuhl-sitzt-wahrend-laptop-verwendet-735855/) | |

| **Main section** |  |  |
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| *Introduction*  In the age of digital nomads, choosing the next ideal city to work and play in isn't always easy. Everyone in the digital nomad community has different preferences, whether it be climate, culture or leisure activities. Amidst a myriad of options, our group zeroed in on three cities we found particularly appealing: Riga, Lisbon and Barcelona. The cities appear in various statistics as popular locations for nomads and also have open-source datasets available on Inside Airbnb, which we were able to work with.[[1]](#footnote-0)  But first things first.  *Who are digital nomads?*  Digital nomads are people who use technology to work remotely, untethered from traditional office spaces, giving them the freedom to live and work anywhere with a good internet connection. Being a digital nomad goes beyond just remote working[[2]](#footnote-1). It's about balancing work with exploration, immersing yourself in different cultures, having a reliable internet connection and, most importantly, finding affordable yet comfortable places to live. To better understand our target group, we have created a digital nomad persona.    Image Source: pexels.com  With this persona in mind, we took a deep dive into Airbnb listings in Riga, Barcelona and Lisbon. If you're interested, you can access data for different cities on the [Inside AirBnb website](http://insideairbnb.com/). We acquired the datasets from the Inside Airbnb website in August 2023. Specifically, the Lisbon dataset dates back to June 12, 2023, the Barcelona dataset to June 10, 2023, and the Riga dataset to June 29, 2023.  Our primary goal was to gain insights from Airbnb listings regarding the price of the offers, reviews and hosting quality, which would allow us to compare cities regarding their suitability for digital nomads based on these criteria.  In addition to the data and insights we could get from Inside Airbnb, we included information on the availability of coworking spaces in the three cities, because those can be a crucial part to the digital nomad’s lifestyle.  To list the coworking spaces of each city, the data was researched via Google search query. The name, address and geo-data were recorded. For each city, we also compared the results with a Google query on the most popular coworking spaces.  ***Our data set and data preprocessing***  After downloading the datasets, we conducted a thorough review and cleaning process to ensure the data would be valuable for our subsequent analyses. The following modifications were made to refine the datasets:   1. **Removal of Rows Lacking Reviews**: Reviews are integral to our objective of calculating an "attractiveness score" for each listing. Therefore, any rows lacking review information were removed from the datasets. 2. **Filtering by Accommodation Size**: Given that our focus is on single travelers, we limited our analysis to listings with accommodation sizes that are suitable for one or two people. Specifically, we eliminated all rows where the "accommodates" column had a value greater than 2. This not only makes the data more relevant to our target demographic (single traveler) but also allows us to consider more budget-friendly options, aligning with the lifestyle of digital nomads. 3. **Elimination of Erroneous Listings**: We conducted an outlier analysis, particularly focusing on pricing. For example, within the Lisbon dataset, we identified a listing priced at 65,000 euros per night, which seemed highly implausible. We manually verified this by clicking the link to the corresponding listing and confirmed that this was an error. As a result, such extreme outliers were removed. In Lisbon, we filtered out all listings priced over 2,000 euros per night for further manual review. Interestingly, we found that such high price points were more plausible in the context of Barcelona, but we still reviewed them individually to ascertain their validity.   By making these refinements, we aimed to create a more accurate and relevant dataset that better serves the goals of our analysis.    Source: Here is an excerpt from the Inside Airbnb page.  **Dataset Description**  Our analysis draws upon two primary datasets, each serving distinct yet complementary purposes:  **1. Airbnb Dataset:**  This segment provides comprehensive data about hosts, Airbnb properties, and pricing. Attributes used in our analysis include,   * Listings Details: Listing ID, URL, and name * Price: Price per listing per night * Reviews: Overall rating for each listing * Host Experience: Number of years that host is active on Airbnb, Superhost status * Location: This segment details the geographical coordinates and neighborhoods of the listings in each City.   **2. Coworking Space Dataset:**  This dataset provides specifics about coworking spaces, and includes the following attributes for each location:   * City: Whether the coworking space is located in Riga, Barcelona or Lisbon * Latitude and Longitude   ***Scoring Criteria Development***  Based on Airbnb data available for three cities, we earmarked four factors we deemed crucial when deciding for the most attractive city as a digital nomad.   1. **Average Listing Price**: Targeted specifically at individual digital nomads, we analyzed the average price of listings to ensure affordability and value. 2. **Average Review Score**: We examined the average scores of reviews to gauge the overall satisfaction of guests based on inaccuracy, response, cleanliness, check-in, communication, location, and value, thereby providing insights into the quality of the listing. 3. **Host Experience**:    1. Evaluated based on factors such as the years of host experience in Airbnb    2. Acquisition of "Superhost" status, to ensure guests will have a reliable and quality experience. 4. **Proximity to Coworking Spaces**: Utilizing location data, specifically longitude and latitude coordinates, we assessed    1. The average distance from each Airbnb listing to the nearest coworking space.    2. Total number of coworking spaces within the city.   During our data-cleaning process, we realized that eliminating listings lacking Wi-Fi would result in a significant reduction of our dataset. Given this finding, we opted not to exclude such listings. As digital nomads, we recognize that the availability of Wi-Fi in the accommodation is not the sole factor for consideration. Often, we may prefer working from coworking spaces or even cafés, rather than exclusively from our temporary residence. Instead, we chose to place greater emphasis on the cost of the flat, as budget considerations are often more pertinent for digital nomads.  After completing the data-cleaning phase, we shifted our focus to broader analytical inquiries. These encompassed metrics like the average pricing for flats, the typical review scores, the prevalence of dedicated workspaces within listings, and the average proximity to nearby coworking spaces. The overall results can be seen in the following table.  After these overarching analyses, we embarked on the computation of an "Attractiveness Score," devised according to the following criteria.  *Key insights from data exploration*  ***Scoring Methodology***  First, we established a function that categorizes the data based on five quantiles for the selected factors. Then we assigned scores for each factor from 1 to 5 based on the quantile thresholds. In addition, we also did a reverse quantile function for ‘price’ and ‘distance’ since the lower quantile should get a high score.  Finally, we assigned the highest weight for price assuming it's the most important factor for digital nomads in choosing an Airbnb, followed by reviews, proximity to coworking space, and host experience. The final attractive scores for each city can be adjusted by assigning different weights to the factors.    Sample code snippet for calculating an attractive score for quantile thresholds  For visualization, we used a ‘hexbin mapbox’ from the ‘plotly’ library to display the density or distribution of data points on a geographical map. It takes latitude and longitude data points and aggregates them into hexagonal bins, where the color represents the density or score associated with those points.  ***Results of our Analysis***  Based on our analysis, we observed that the three cities are almost indifferent in terms of attractive score, making them the best cities for digital nomads. However, there are minor differences among the cities and the attractiveness of each city depends on the individual needs of digital nomads, as can be seen in the following image.  *Scoring criteria and attractive score for each city*  In addition, we uncovered the following key insights   1. **Airbnb Market**: Barcelona boasts a more concentrated market with a balanced distribution of listings across the entire city. In contrast, Riga and Lisbon exhibit a dispersed pattern, with listings scattered throughout their respective urban landscapes. 2. **Pricing:** While all three cities fall within a similar price range, Riga emerges as the most budget-friendly destination for digital nomads. 3. **Availability of Coworking spaces**: Barcelona excels as the top choice for digital nomads, offering an ideal 'work-from-anywhere' environment. This distinction is attributed not only to its abundance of coworking spaces but also its unparalleled proximity to the nearest coworking hubs. 4. **Connectivity**: In the realm of digital connectivity, Lisbon emerges as a frontrunner with nearly 100% Wi-Fi coverage, closely trailed by Barcelona. However, Riga must enhance its amenities to meet the requirements of digital nomads effectively. 5. **Host experience**: It is also evident that hosts in all three cities possess an average of 6 years of experience, which implies that these cities have adeptly embraced the Airbnb phenomenon, swiftly adapting to its growth and demands.   *Attractive Airbnb listings in each city based on attractive score*  ***Limited Scope: A Starter Guide for Nomadic Cities***  There are a lot of other factors to consider, when deciding on the next city to travel to as part of your digital nomad lifestyle. Healthcare infrastructure and political stability being only two of many. Due to time and data constraints, we decided to focus on the described data sets. We believe that our analysis provides a good first overview of the attractiveness of the respective cities as a part of the digital nomad lifestyle.  ***Final Reflections: Overcoming Data and Team Challenges***  Just like any other group project in the history of group projects, it wasn’t always a walk in the park. We had to overcome differences in data quality and structure, as well as general limitations in data quality. Having solved this, we needed to determine cities to start the analysis with, of which we had valuable data and that made sense to analyze in terms of digital nomad attractiveness. Due to summer, we had to manage everyone’s summer holiday schedules and also faced quite some cases of illness. In the end, we steered through these shallow waters by making the most of the data we had, communicating and giving our tasks a clear structure.  In spite of the numerous challenges and constraints we encountered, our team remained committed to the project, utilizing effective communication and structured task management to navigate these obstacles. The end result is an analysis that, while limited in scope, provides valuable initial insights into the suitability of various cities for digital nomads.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ***Group Members - Group 13***  **Mentor: Ken Knütel**  Femke Feuker Carsten Hennig  Laura Rosenberg Christine Westermann-Lammers Christina Heidrich Swetha Aratipamula | |  |

1. One example for statistics: <https://nomadlist.com/europe>, <http://insideairbnb.com/get-the-data> [↑](#footnote-ref-0)
2. https://nomadlist.com/digital-nomad-statistics [↑](#footnote-ref-1)