# Supplementary Materials for "Voyage Viewer: Empowering human mobility at a global scale"

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## 1 Design Implementation

### 1.1 Main form

To access the results page with the visualizations, users fill out a standard form to determine similarity to others in Voyage Viewer's data.The form has the following fields: Country of origin, State / Region of Birth, Age range, Gender, Education background, and Employment status. All fields have dropdown menus with possible choices for each field. The form pictured in Figure 3.



Figure 1: The form for taking in user input for six variables to find location matches based on these attributes. All the fields have dropdown menus that display the possible categories for each field.

# 2 Supplementary write-up of user study

An informal user study was conducted with 10 individuals following a dashboard evaluation outlined in [Tec18]. This user study focused on assessing how a group of Colombian individuals (with varying levels of familiarity with migration policy and statistics) were able to use the tool to asked three key questions: 1) what are the main national and international destinations for people similar to them 2) What are the job prospects for people like them who have migrated to the most frequent destinations and their levels of income 3) Based on the information presented describe if they would make a migration decision and where it would be.

This group was also stratified into two different prompts. The first group were simply introduced to the application without any instruction, while the second group were asked to use the tool to facilitate a hypothetical migration decision. Background information on users was collected, who were all young, Colombian born and with tertiary education qualifications. The users answered and discussed the thought processes following the three open-ended questions above and were asked to rate the application from a scale of one to ten on a rubric of Interactivity, data freshness, data quality, clarity/aesthetics, usability, and performance. The open-ended questions included an attention check to identify the largest flow out of Colombia between 2015 and 2020.

## 2.1 User Study Procedure

1. Background Assessment

2. Study Introduction

3. Prototype Familiarization

4. Task Solving

5. Prototype Evaluation via Survey

6. Unstructured verbal feedback

### 2.1.1 Background Assessment

Get anonymized information about users before starting tasks. This information is just general demographics: Type of User, Age range, gender, Educational background, Highest Degree of Education attained

### 2.1.2 Study Introduction

You will be participating in a feedback session for Voyage Viewer. We would like to get your opinion to evaluate and make our prototype more useful.

### 2.1.3  Prototype Familiarization

To familiarize our users with the Voyage Viewer, we will show one short video describing Voyage Viewer's goals and it's different parts in a very general way. We use the videos to make sure that all the users get exposed to the same information, reducing possible variability from a human guided demo, and making this feedback procedure more scalable for future use.

The videos used is available upon request.

### 2.1.4  Task Solving: Citizen Users

Instructions:
Go to http://voyageviewer.mit.edu/
Go to the 'People like me' tab.
Using the information provided by Voyage Viewer:

Identify the main national and international destinations for people similar to you.
Assess the job prospects for people like you in the most frequent destinations where people like you migrate to.
Assess prospective income across the different destinations.
Look at the different ways people like you have used to look for jobs in their destinations. Is there a difference between how people like you find jobs and how locals find jobs? Did this plot show you a new alternative to look for jobs? Has the information presented informed you about possible migration opportunities for you? If so, what was the most relevant information provided by Voyage Viewer? If you were to pursue this migration opportunity would the information provided by Voyage Viewer would suffice to make a decision? If not, what other information would you like to see on Voyage Viewer to allow you to make a migration decision?
Describe their thought process.
Assuming you have migration intentions (nationally or internationally), do you find the data presented in VV useful for making your hypothetical decision?
Attention Check (e.g. what is the largest flow out of Colombia between 2015 and 2020)?
After users finish their tasks, they are asked to fill out the following rubric about Voyage Viewer.

### 2.1.5  Rubric:

Please rate the Voyage Viewer application based on the following qualities using values from 1 to 10, where 10 is outstanding and 1 is very poor.

- Interactivity: Is the data contained in Voyage Viewer static or explorable? Could you easily interact with VV?

- Data Freshness: Is the data contained in Voyage Viewer relevant to today? Is the data contained in Voyage Viewer stale or updated?

- Data Quality: Does the data contained in Voyage Viewer appear correct and complete?

- Clarity/Aesthetics: Did the visualizations present the data in a clear way? Were the visualizations interpretable? Did the visualizations help or hamper the comprehension of the data?

- Usability: Was the design and layout of Voyage Viewer intuitive or counterintuitive? Was the application flow easy to follow?

- Performance: Was the time that the app took to load your responses adequate?
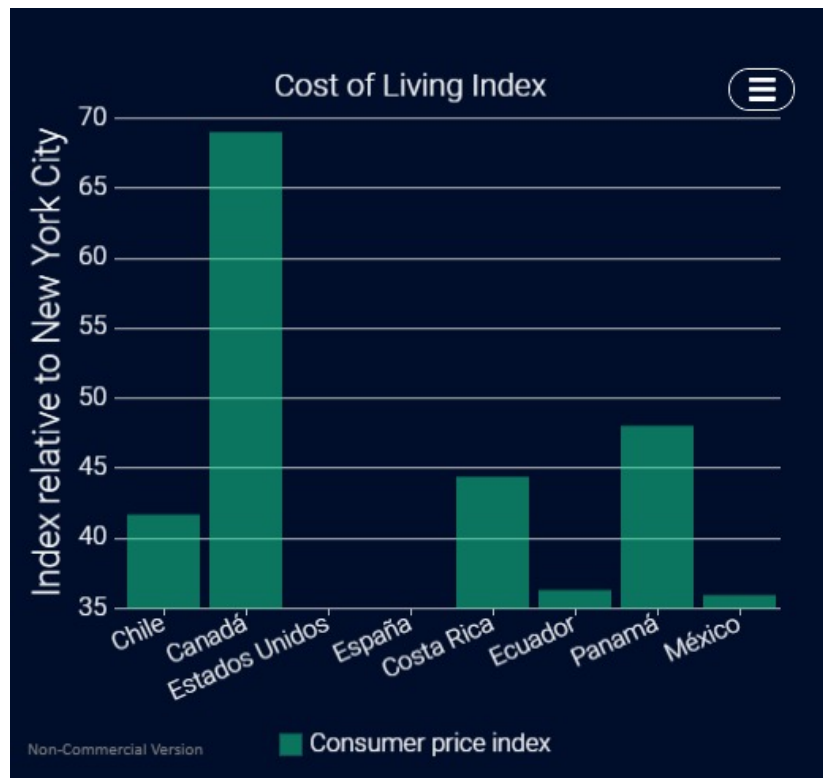
# 3 Additional screenshots



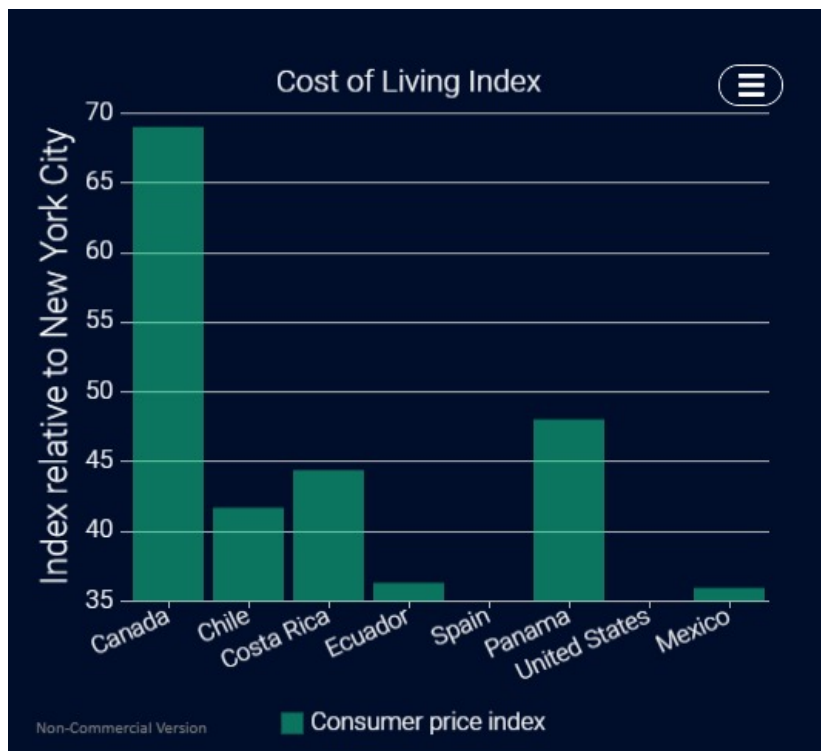Figure 2: Bar chart showing cost of living index for international destinations

Figure 3: Bar chart showing cost of living index for national destinations

# References

[Tec18]   Techboom:  A rubric for data visualization. `https://medium.com/`
          `@techboomph/a-rubric-for-data-visualization-a053b545be32`,
          2018.