Exploring Digital Nomad Destinations Based on the Short-Term Living Conditions

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Applied Session: 13
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Aim

To help early-stage digital nomads explore and compare countries based on **internet speed, cost of living, accommodation quality, and climate conditions**.
This visualisation is designed to support **user-driven decision-making** by offering clear comparisons across clusters and countries.

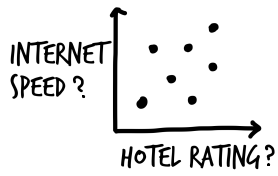
Motivation

Having lived in multiple countries, I realised that minor **lifestyle factors** such as humidity, internet latency, or hotel quality can greatly affect comfort and productivity. This inspired me to develop a tool to help others like me, **early-stage digital nomads** make informed choices.

Ideas

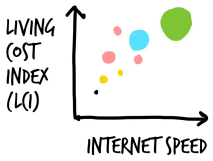
Sheet 1 Name GAYOUNG DAN Date

① SCATTER PLOT

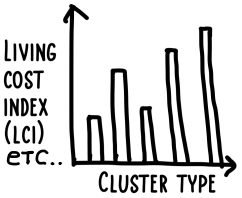


② BUBBLE PLOT

BUBBLE SIZE = NUMBER OF AVAILABLE HOTELS
BUBBLE COLOUR = CLUSTER TYPE



③ BAR CHART



TOPIC STORY

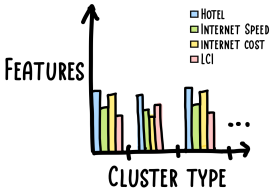
WHAT KINDS OF DIGITAL NOMAD DESTINATIONS EXIST BASED ON SHORT-TERM LIVING CONDITIONS?

AUDIENCE

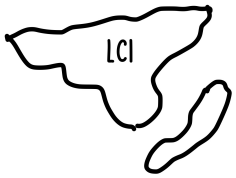
DIGITAL NOMAD

- FIRST -TIME/EARLY STAGE
- WANT TO EXPLORE WHAT TYPE OF COUNTRIES AVAILABLE

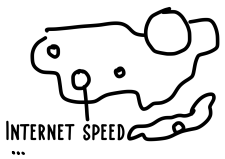
④ GROUPED BAR CHART



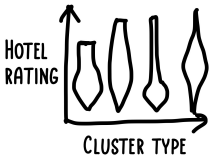
⑤ CHOROPLETH MAP



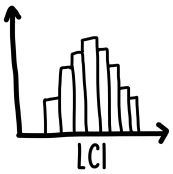
⑥ BUBBLE MAP



⑦ VIOLIN PLOT



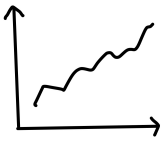
⑧ HISTOGRAM



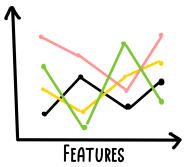
⑨ HEATMAP

⑩ TREEMAP

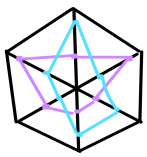
⑪ LINE GRAPH



⑫ PARALLEL PLOT



⑬ RADAR CHART



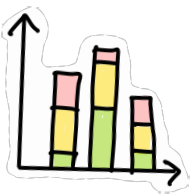
⑭ TABLE

⑮ LOLLIPOP PLOT

⑯ MULTIPLE MAPS PER REGION

⑰ COLOUR PER FEATURE /CLUSTER/ LOCATION

⑱ STACKED BAR CHART



Filter

DUPLICATED IDEAS

- SCATTER PLOT → IS INCLUDED / POSSIBLE TO BE COVERED BY BUBBLE PLOT
- BAR CHART → GROUPED BAR CAN COVER MORE INFO
- BUBBLE MAP → SIMILAR TO CHOROPLETH MAP AND LIMITATION FOR VISUALIZING MANY COUNTRIES (CAN BE TOO DISTRACTIVE)
- LINE GRAPH → WEAKLY RELATED TO THE TOPIC (DOESN'T TARGET TO SHOW TIME TREND)
- MULTIPLE MAPS → DUPLICATED TO MAPS & LOW EFFECTIVE IN VISUALIZING THE TOPIC

FILTERED IDEAS: 2,4,5,7,8,9,10,12,13,14,15,17,18

Categorise

COMMON APPLICABLE IDEA

17 COLOUR PER FEATURE CLUSTER LOCATION

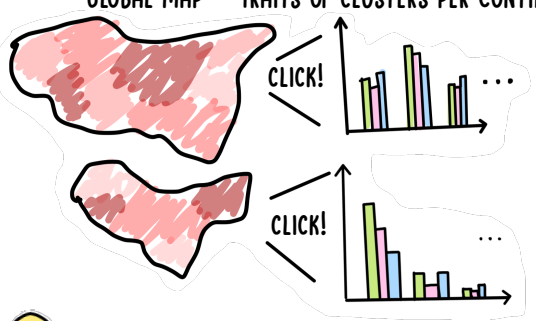
OVERVIEW / SUMMARY OF TOTAL COUNTRIES
5 CHOROPLETH MAP, 8 HISTOGRAM, 10 TREEMAP

GROUPED-LEVEL (CLUSTERS) COMPARISON
4 GROUPED BAR, 7 VIOLIN PLOT, 9 HEATMAP, 17 LOLLIPOP PLOT, 18 STACKED BAR

INDIVIDUAL COUNTRY EXPLORATION (DETAILS)
2 BUBBLE PLOT, 12 PARALLEL PLOT, 13 RADAR CHART, 14 TABLE

Combine & Refine

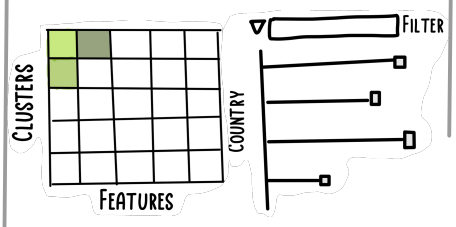
GLOBAL MAP TRAITS OF CLUSTERS PER CONTINENT



GLOBAL DESTINATIONS WITH LIVING CONDITION DETAILS IN CONTINENT-LEVEL WITH CLUSTERS INFO.

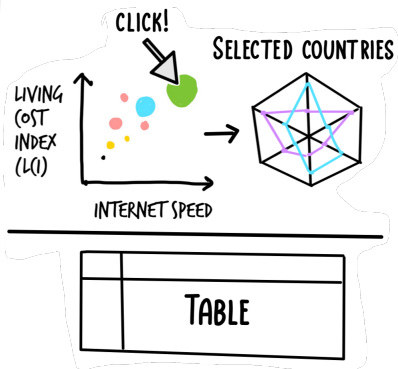
1

CLUSTER PROFILER: EXPLORE CLUSTER & COUNTRIES PER CLUSTER



2

COUNTRY COMPARATOR



3

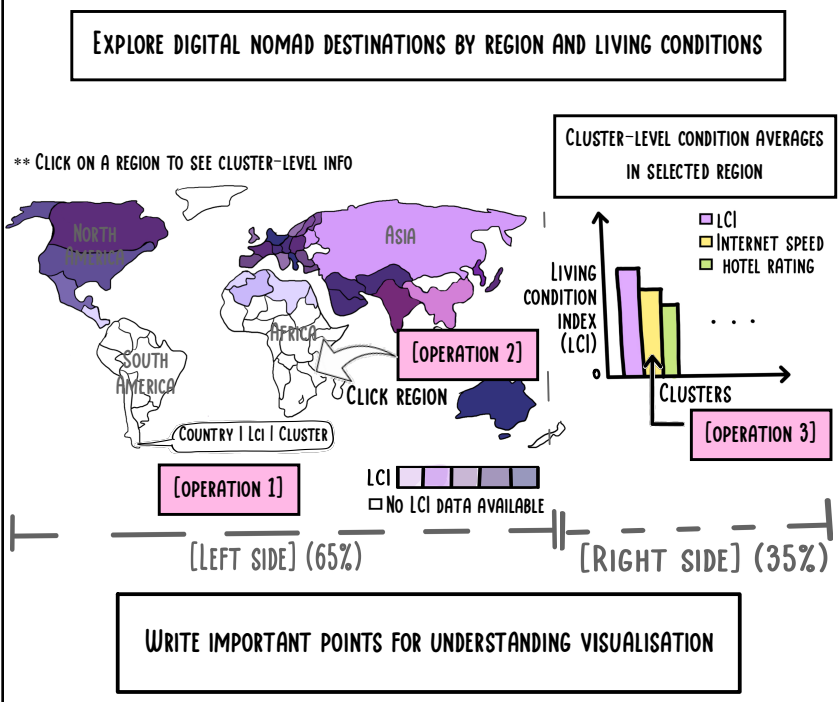
Summarise and question

HOW CAN MY VISUALISATION HELP USERS COMPARE MULTIPLE FEATURES ACROSS COUNTRIES?

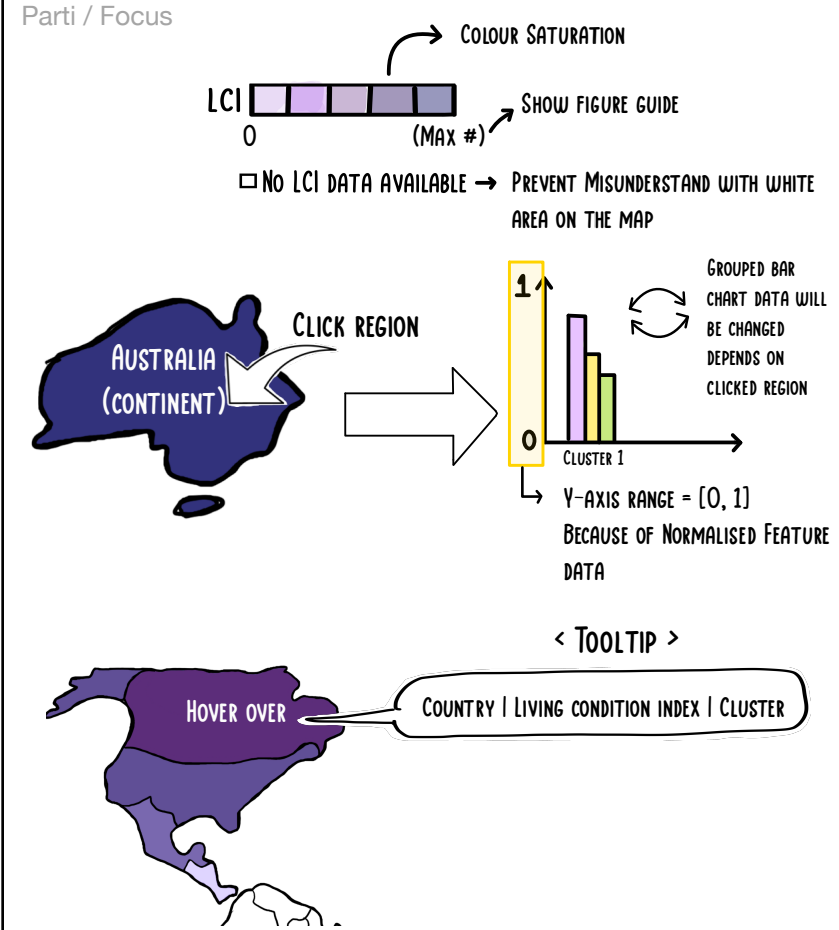
WHAT TYPE OF USER INTERACTIONS COULD MAKE MY VISUALISATION MORE USEFUL OR ENGAGING?

WHAT KINDS OF INFORMATION ARE ESSENTIAL TO HIGHLIGHT IN MY NARRATIVE VISUALISATION, AND HOW MIGHT DIFFERENT VISUAL STYLES SUPPORT THAT?

Big Picture / Layout



Parti / Focus



Sheet 2,3,4

Name Gayoung Dan

Date

Title Exploring Digital Nomad Destinations Based on Short-Term Living Conditions

Description

The overall task is to design an interactive narrative visualisation that helps first-time or early-stage digital nomads explore and compare short-term living conditions across different countries.

Components / Operations

< Operation 1 > : Hover function on map

Hover function allows to view:

- Country name
- Living Cost Index (lci)
- cluster type

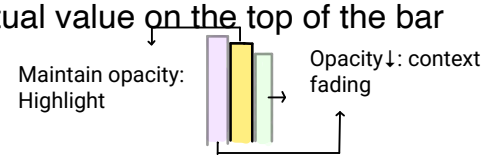
It gives info of each country

< Operation 2 > : Region Selection

When user clicks a region on the map, grouped bar chart Data will be changed based on the selected region

< Operation 3 > : Feature Selection on bar chart

When user clicks a bar, each bar shows actual value on the top of the bar



Pro & Cons

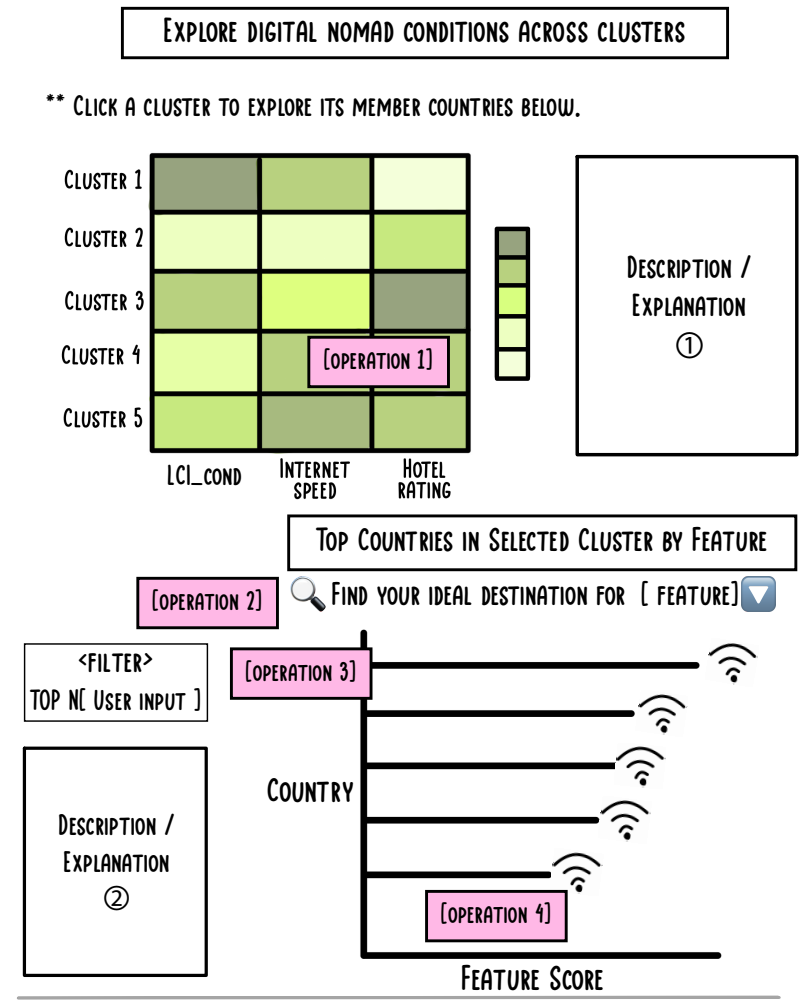
Pros

- The map (exploration) & the bar chart (comparison) are divided horizontally, clearly separating their functional role
- visual clarity: The normalised y- axis, consistent color legend, reveal value labels with clicking
- user focus: The click-based opacity emphasis helps direct user interaction to get the Information

Cons

- Potential confusion to users: The map shows country-level values as well / while chart aggregates region-level cluster averages
- bar space constraint: if there are many clusters or attributes, The grouped bar chart may face Spaces issue.
- interpretation burden: differences in value scale between the map and chart may confuse users without dear annotations
- user must click the bar or hover function to view the Country information in map and actual features value in bar chart

Big Picture / Layout



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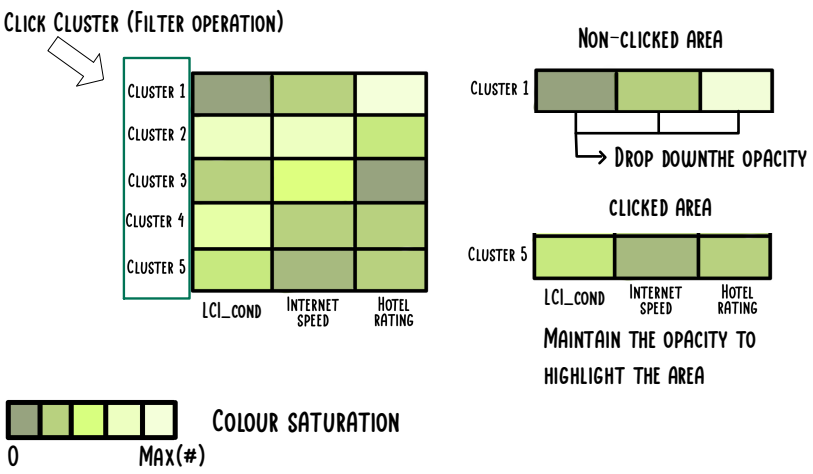

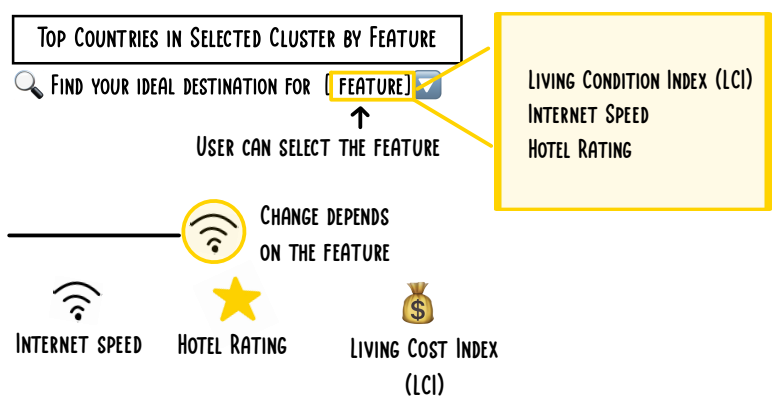

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Description

The overall task is to design an interactive narrative visualisation that helps first-time or early-stage digital nomads explore and compare short-term living conditions across different countries.

Components / Operations

< Operation 1 > : Cluster Selection

When user click the cluster (on y axis of heatmap), the lollipop chart below will show the counties within selected cluster

- The heatmap also will be changed, except the row of the selected cluster, other rows will be fade out, decreasing the opacity.

< Operation 2 > : Feature Selection on Bar Chart

User can select the feature they want to explore by using the filter. When user click the button, user can see the option of features: LCI, Internet Speed, Hotel Rating.

< Operation 3 > : Filter out Top N countries

When user input the number on this Top N filter, User can see the top N countries in selected countries by feature on the right chart.

< Operation 4 > : Country Selection on Bar Chart

When user click the bar of countries in the chart, description ② will show the following information:

HI, I'm [Country Name]!
- I belong to Cluster #.
- My [feature] is [data + units].

Pro & Cons

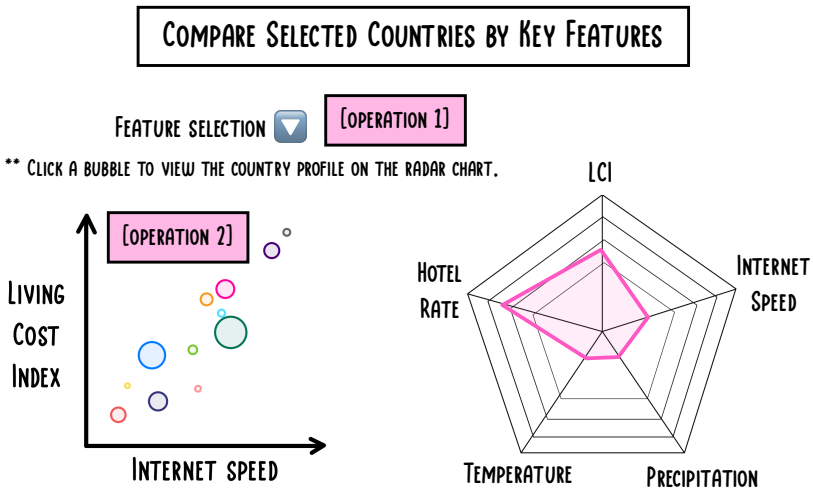
Pros

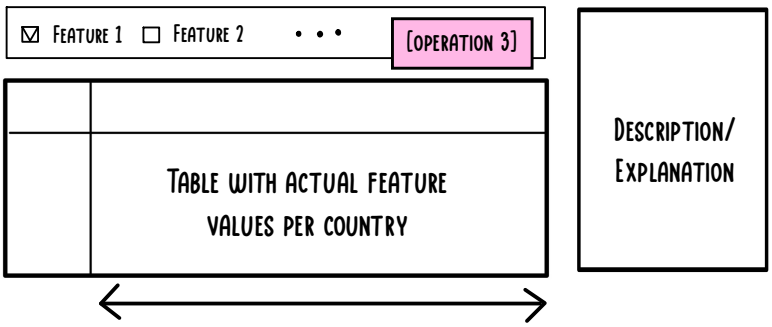
- Strong feature-cluster-country linking using interaction operations.
- Colour consistency between heatmap & bar chart

Cons

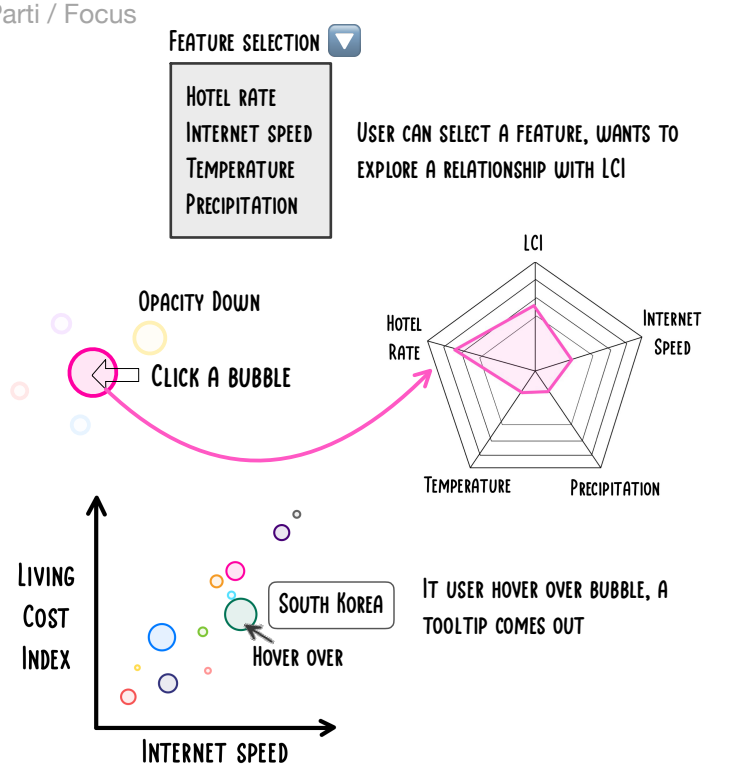
- Pictograms in bar chart may not be clearly interpreted by all users
- Potential usability issue on the chart description(right -> left)

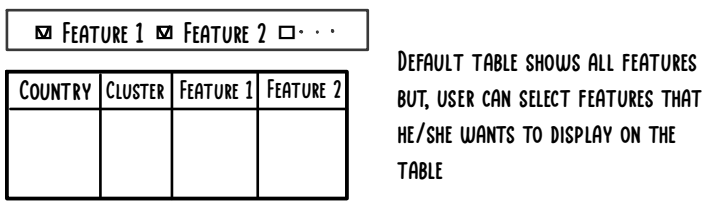
Big Picture / Layout





Parti / Focus





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Name Gayoung Dan

Date

Title Exploring Digital Nomad Destinations Based on Short-Term Living Conditions

Description

The overall task is to desig n an interactive narrative visualisation that helps first-time or early-stage digital nomads explore and compare short-term living conditions across different countries.

Components / Operations

< Operation 1 > : Feature Selection

The user can select a feature to be plotted on the X-axis of the bubble plot (e.g., Internet speed, Hotel Rating, etc).
This dynamically updates the chart to show the relationship between living cost index (LCI) and the selected feature across all countries.

< Operation 2 > : Country selection via bubble click

When the user clicks on a country in the bubble plot, its individual profile is displayed on the radar chart.
The radar chart visualizes the country's performance across multiple features, including LCI, internet speed, hotel rate, temperature, and precipitation.

< Operation 3 > : Feature Selection via Checkboxes

Users can select which features to display in the table using checkboxes positioned above it.

- **Default**: All Five features are selected
- Unchecking a box -> Hide the corresponding column from the table

Pro & Cons

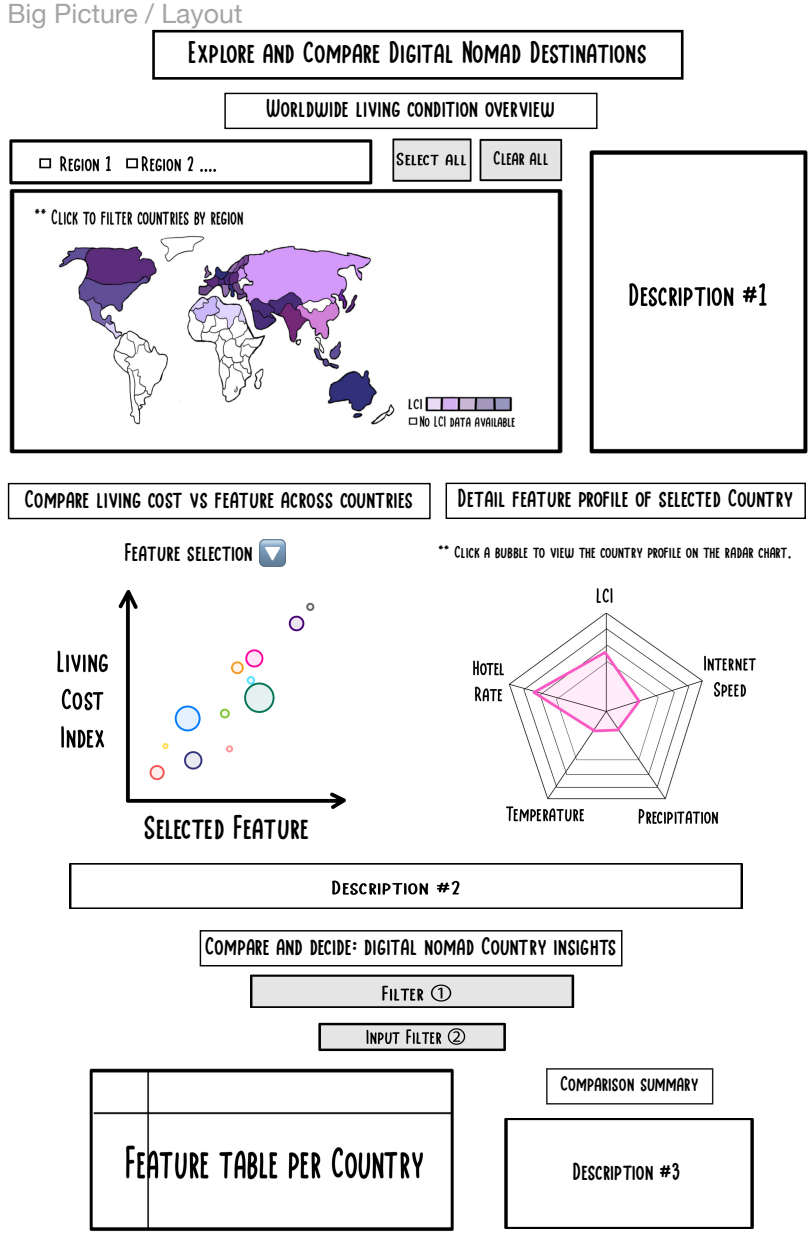
Pros

- Supports multi-step exploration from overview to detail: Bubble -> Radar -> Table
- Combines visual patterns with exact numeric comparison: Radar (Overall picture) -> Table (Actual Detail)
- Offers user-driven interaction and flexibility

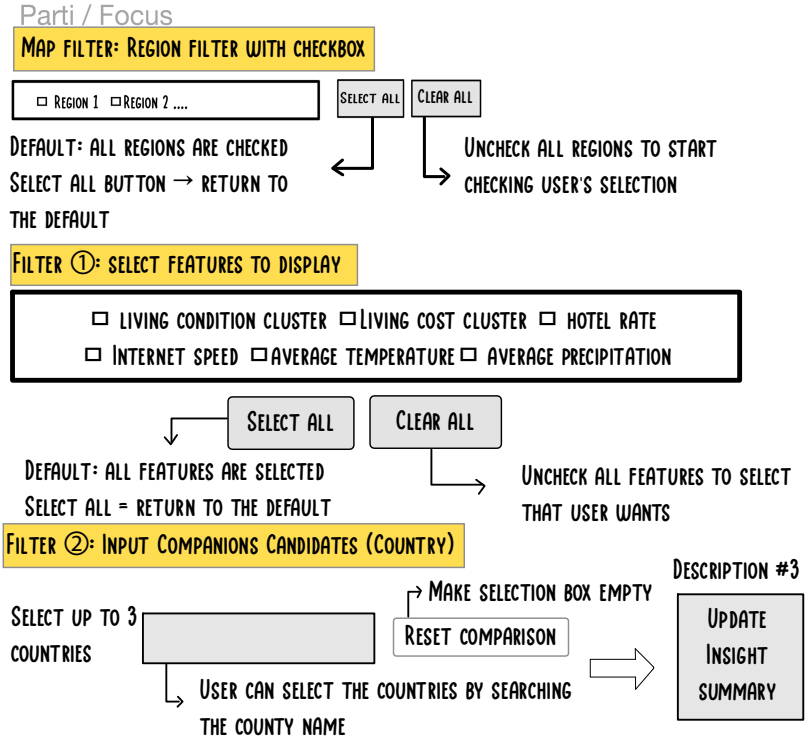
Cons

- Visual load may increase with multiple components
- Feature inconsistency between radar and table (if user unselect feature) may confuse users
- Table layout may shift based on checkbox filters

Big Picture / Layout



Parti / Focus



Sheet 5

Name Gayoung Dan

Date Exploring Digital Nomad Destinations Based

Title on Short-Term Living Conditions

Description

The overall task is to design an interactive narrative visualisation that helps first-time or early-stage digital nomads explore and compare short-term living conditions across different countries.

Components / Operations

< Operation 1 > : Region Selection & Tooltip on Map

- User can click on a region in the checkbox to filter the countries displayed in the map and the bubble plot.
- Hovering over a country shows its name and LCI_Cond
- Depends on the selection, it updates description 1
- **Default**: When no region is selected, all countries are displayed in both the map and bubble plot.

< Operation 2 > : Feature Selection for X-axis (Bubble Plot)

- A dropdown above the bubble plot allows user to select the X-axis feature (e.g., internet speed, hotel rating etc.)
- The chart dynamically updates to show the relationship between LCI and the selected feature.
- **Default**: Internet Speed is selected as the initial feature

< Operation 3 > : Country Selection via Bubble Click

- Clicking a bubble (country) highlights it and updates the radar chart with that country's information.
- The radar chart visualises normalised scores across five key features.
- **Default**: The radar chart remains empty until a country is selected.

< Operation 4 > : Feature Column Selection for Table

- Users can show or hide table columns by checking/ unchecking feature options displayed above the table.
- The Input filter allows users input up to 3 countries that they want to compare as a final comparison.
- **Default**: All six features (LCI_Cond Cluster, LCI_Cost Cluster, Internet Speed, Hotel Rating, Temperature, Precipitation) are selected.

< Operation 5 > : Input Filter + Interactive Summary

- User can input countries (up to 3) for final comparison.
- Description #3 shows insight summary between selected countries and features.

Details

- **Framework**: R Shiny
- Key Packages: ggplot2, plotly, leaflet, fmsb, DT, dplyr
- **Methods**:
  - region click -> country filter (map -> bubble/table)
  - bubble click -> radar update
  - checkbox filter for table column filter
- **Data**: Metadata of each features and normalised data
- **Time Estimate**: ~7 days incl. linking + testing (working hour 8h per day)