Social Contract Indicators Dashboard User Manual

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1. Introduction

The **Social Contract Indicators Dashboard** is an interactive web application developed by the Istanbul Bilgi University Team in 2025 as part of the CO3 – Resilient Social Contracts for Democratic Societies project. It enables users to explore composite indices, domains, subdomains, and individual indicators related to social contracts across various countries, focusing on democratic resilience.

The dashboard offers:

- Flexible filters for domains, subdomains, indicators, and countries.
- Multiple visualization options, including tables, bar charts, maps, scatter plots, radar charts, and indicator-specific charts.
- Metadata to provide context for indicators.
- Normalized indices to ensure comparability across metrics.

This manual guides users through the dashboard's features, including how indicators and indices are calculated, to facilitate effective data exploration and interpretation.

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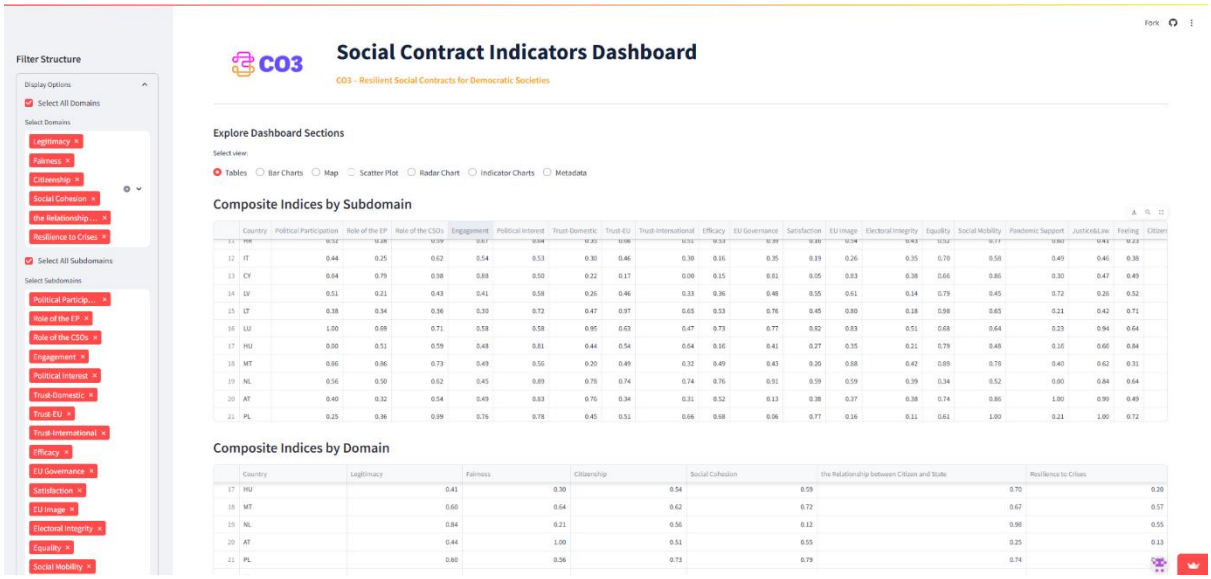
2. Getting Started

To access the dashboard:

1. **Open the Application**: Visit the https://sc-indicators-dashboard-v00.streamlit.app/ where the dashboard is hosted . **Browser Compatibility**: Use a modern web browser (e.g., Chrome, Firefox, Edge) for optimal performance.
2. **Prerequisites**: Ensure an internet connection to load the dashboard and its visualizations.

The dashboard loads with a header displaying the CO3 logo, title, and a sidebar for filtering options.

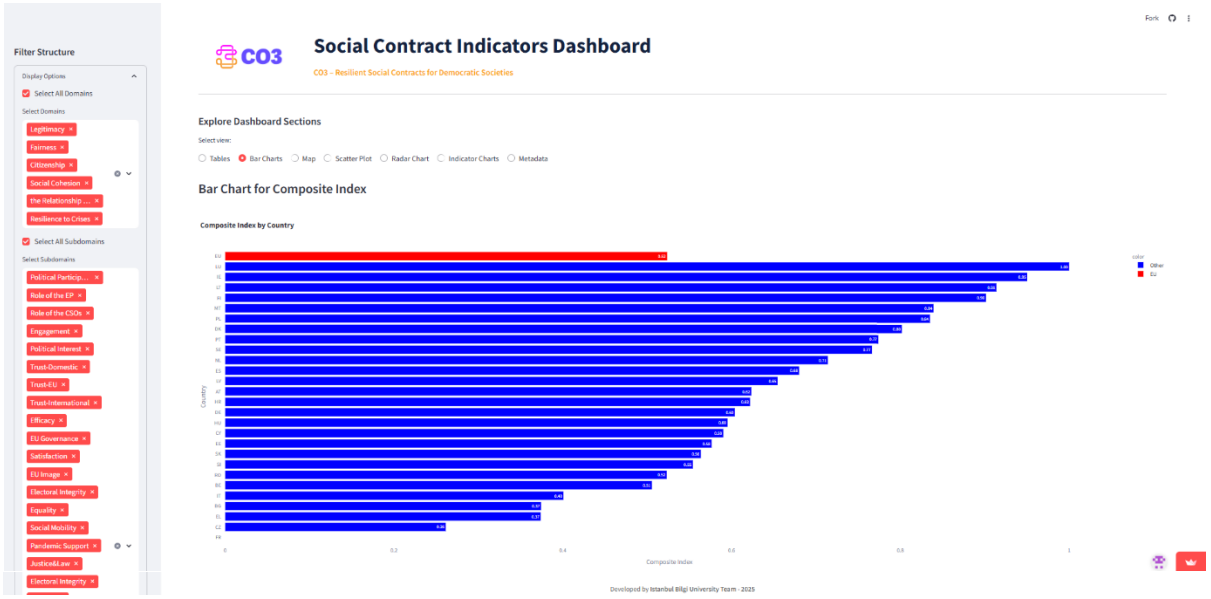


3. Dashboard Layout

The dashboard is divided into three main areas:

- **Header**: Features the CO3 logo, the title "Social Contract Indicators Dashboard," and the project tagline.
- **Sidebar**: Contains filters to customize data by domains, subdomains, indicators, and countries.
- **Main Content Area**: Displays the selected visualization or data view (e.g., tables, charts, maps).

A footer at the bottom credits the Istanbul Bilgi University Team (2025).

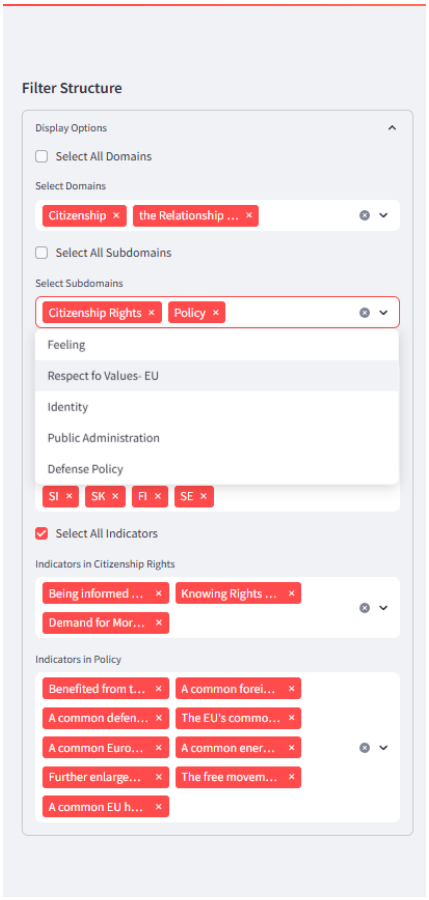


4. Filtering Data

The sidebar allows users to filter the dataset to focus on specific data aspects.

Steps to Apply Filters

1. **Expand the Filter Structure**:
   - Open the "Display Options" expander in the sidebar (default: expanded).
2. **Select Domains**:
   - Check "Select All Domains" to include all domains or uncheck to choose specific ones via the multiselect dropdown.
3. **Select Subdomains**:
   - After selecting domains, choose subdomains. Check "Select All Subdomains" or pick specific ones from the multiselect dropdown.
4. **Select Countries**:
   - Choose one or more countries from the multiselect dropdown (default: all countries).
5. **Select Indicators**:
   - Indicators are grouped by subdomain. Check "Select All Indicators" or select specific indicators for each subdomain.
   - Available indicators update based on selected subdomains.



Notes

- Filters are interconnected: domain selection limits available subdomains and indicators.
- The dashboard recalculates indices (composite, domain, subdomain) based on selections.
- Warnings may appear if no data is available after filtering (e.g., "No domain data available after filtering").

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5. Exploring Dashboard Sections

The main content area offers seven views, selectable via a horizontal radio button menu labeled "Explore Dashboard Sections." A new section below explains how indicators and indices are calculated, followed by descriptions of each visualization type.

5.1 Calculation of Indicators and Indices

Purpose: Understand how the dashboard processes raw data to produce indicators, subdomain indices, domain indices, and the composite index, ensuring comparability across countries.

Overview: The dashboard uses a hierarchical structure where raw indicators are aggregated into subdomains, domains, and a composite index. All indices are normalized to a 0–1 scale for consistency. The calculations exclude the EU27 aggregate from min/max normalization ranges to reflect individual country variations, while keeping EU27 in the dataset for comparison.

Step-by-Step Calculation Process:

1. **Raw Indicators**:
    - **Source**: Raw data is loaded from the "SC Indicators Data Prep.xlsx" file, with indicators organized by country.
    - **Processing**: Indicators are converted to numeric values, with non-numeric entries treated as missing (NaN). Users can view raw or normalized indicator values in the "Indicator Charts" section.
    - **Normalization**: Each indicator is normalized to a 0–1 scale using the formula: Normalized Value=Value−MinMax−Min\text{Normalized Value} = \frac{\text{Value} - \text{Min}}{\text{Max} - \text{Min}}Normalized Value=Max−MinValue−Min where Min and Max are the minimum and maximum values for the indicator across all selected countries (excluding EU27).
2. **Subdomain Indices**:
    - **Aggregation**: For each subdomain, the dashboard calculates the average of its normalized indicators (skipping missing values).
    - **Normalization**: The subdomain average is normalized again to 0–1 using the same formula, with Min and Max based on individual countries (excluding EU27).

    - **Example**: If a subdomain has three indicators, their normalized values are averaged per country, and the result is normalized to ensure the subdomain index is between 0 and 1.
3. **Domain Indices**:
    - **Aggregation**: For each domain, the dashboard averages the normalized subdomain indices within that domain (skipping missing values).
    - **Normalization**: The domain average is normalized to 0–1, with Min and Max excluding EU27.
    - **Example**: A domain with two subdomains takes the average of their normalized indices, then normalizes the result.
4. **Composite Index**:
    - **Aggregation**: The composite index is the average of all normalized domain indices for each country (skipping missing values).
    - **Normalization**: The composite index is normalized to 0–1, with Min and Max excluding EU27.
    - **Purpose**: Provides a single metric summarizing a country's social contract performance.

Key Notes:

- **Double Normalization**: Indicators, subdomains, and domains are normalized twice (after initial scaling and after aggregation) to ensure all indices are on a 0–1 scale, facilitating comparison.
- **EU27 Exclusion**: The EU27 aggregate is included in visualizations but excluded from min/max calculations to avoid skewing the normalization range.
- **Missing Data**: The dashboard handles missing data by skipping NaN values during averaging, ensuring robust calculations.
- **Data Source**: The structure of domains, subdomains, and indicators is defined in the dataset's header rows, with metadata in "Metadata.xlsx."

Use Case: Understanding these calculations helps users interpret the indices accurately, especially when comparing countries or analyzing trends.

5.2 Tables

Purpose: Display numerical data in tabular format for composite indices, domain indices, and subdomain indices.

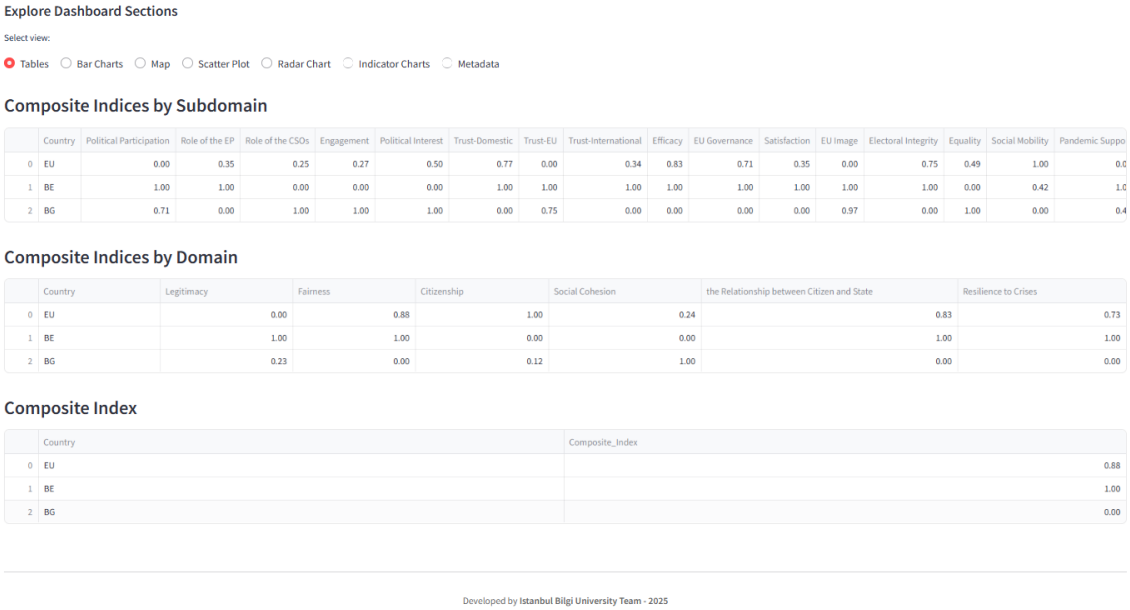
Features:

- **Composite Indices by Subdomain**: Shows normalized subdomain indices.
- **Composite Indices by Domain**: Displays normalized domain indices.
- **Composite Index**: Lists the overall composite index per country.
- Values are formatted to two decimal places.

How to Use:

1. Select "Tables" from the view menu.

2. Scroll through tables to review data.
3. Adjust sidebar filters to customize the view.



Use Case: Ideal for precise numerical values for reporting or analysis.

5.3 Bar Charts

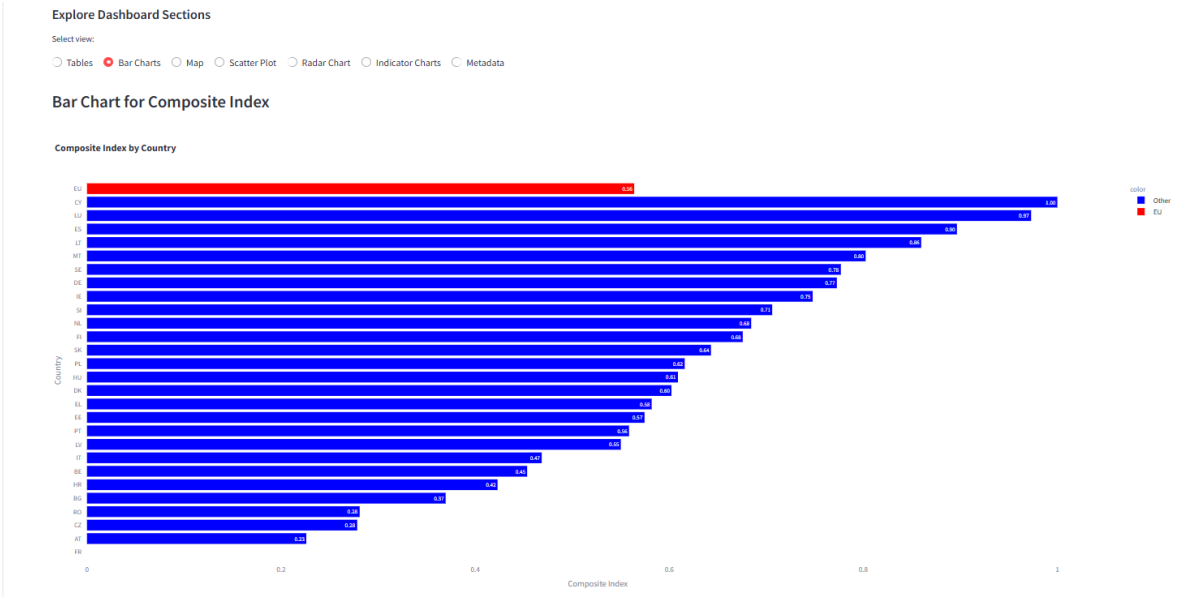
Purpose: Visualize indices as horizontal bar charts for country comparisons.

Features:

- **Composite Index Bar Chart**: Shows the composite index, with EU highlighted in red.
- **Domain Index Bar Chart**: Displays a selected domain's index.
- **Subdomain Index Bar Chart**: Shows a selected subdomain's index.
- Bars include value labels (two decimal places).
- EU countries are red; others are blue.

How to Use:

1. Select "Bar Charts" from the view menu.
2. Choose a domain or subdomain from dropdowns.
3. Hover over bars for exact values.
4. Adjust sidebar filters to update data.



Use Case: Useful for comparing countries or identifying top/bottom performers.

5.4 Map

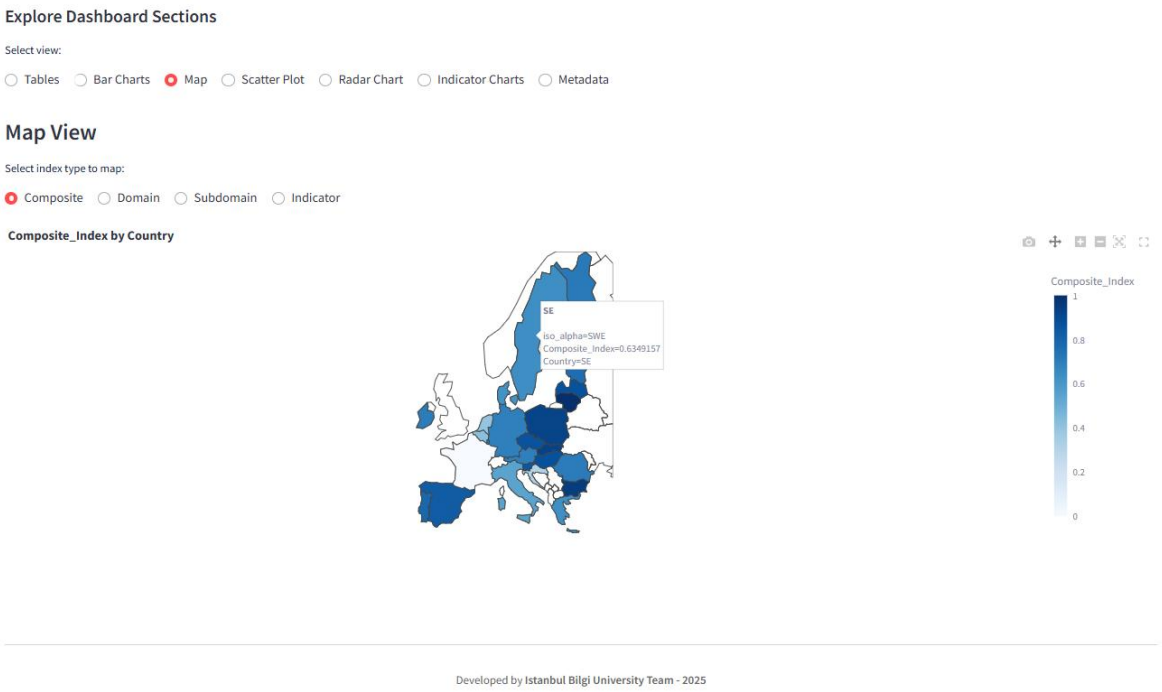
Purpose: Display indices on a choropleth map of Europe.

Features:

- Supports Composite, Domain, Subdomain, or Indicator indices.
- Indicators can be normalized or raw.
- Color intensity (Blues scale) reflects values.
- Hover for country details.
- Focused on Europe (Mercator projection).

How to Use:

1. Select "Map" from the view menu.
2. Choose an index type and specific item (if applicable).
3. Select "Normalized" or "Raw" for indicators.
4. Hover over the map for details.
5. Adjust sidebar filters.



Notes:

- Custom codes (e.g., "EU") may not map correctly.
- Ensure mappable countries are selected.

Use Case: Best for spatial analysis or regional patterns.

5.5 Scatter Plot

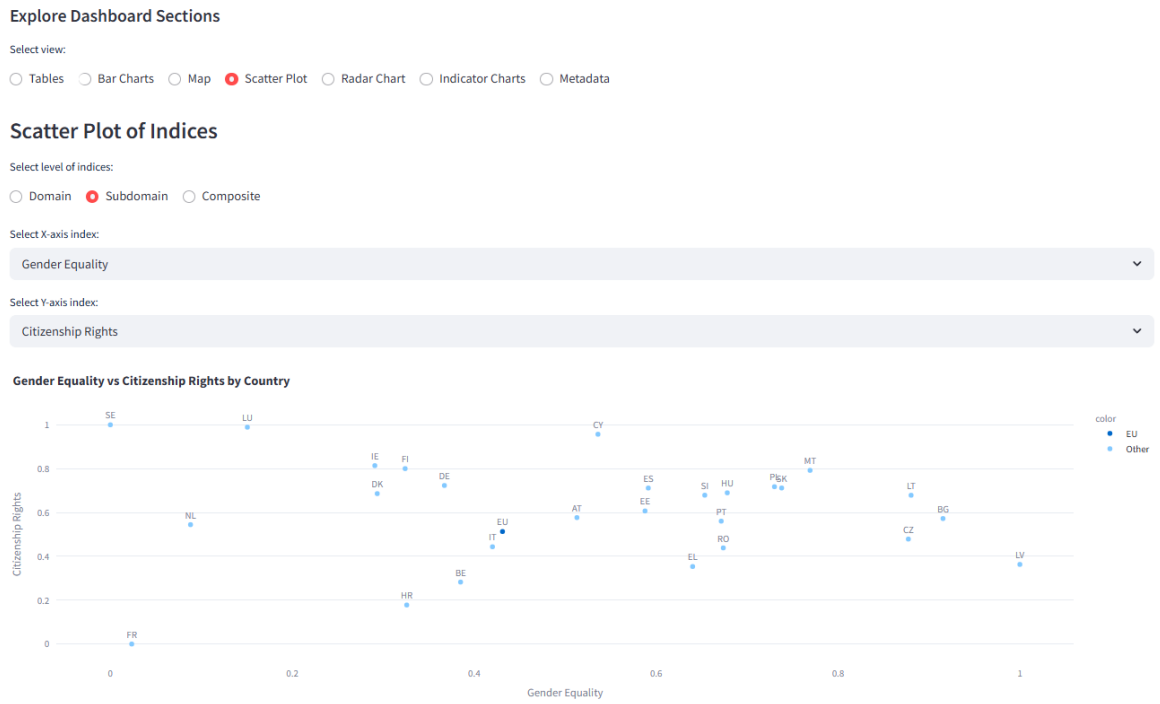
Purpose: Compare two indices in a scatter plot.

Features:

- Select Domain, Subdomain, or Composite level and X/Y axes.
- Points are labeled with country names; EU is red.
- Hover for details.

How to Use:

1. Select "Scatter Plot" from the view menu.
2. Choose index level and axes.
3. Adjust sidebar filters.
4. Hover over points for details.



Use Case: Ideal for analyzing index relationships.

5.6 Radar Chart

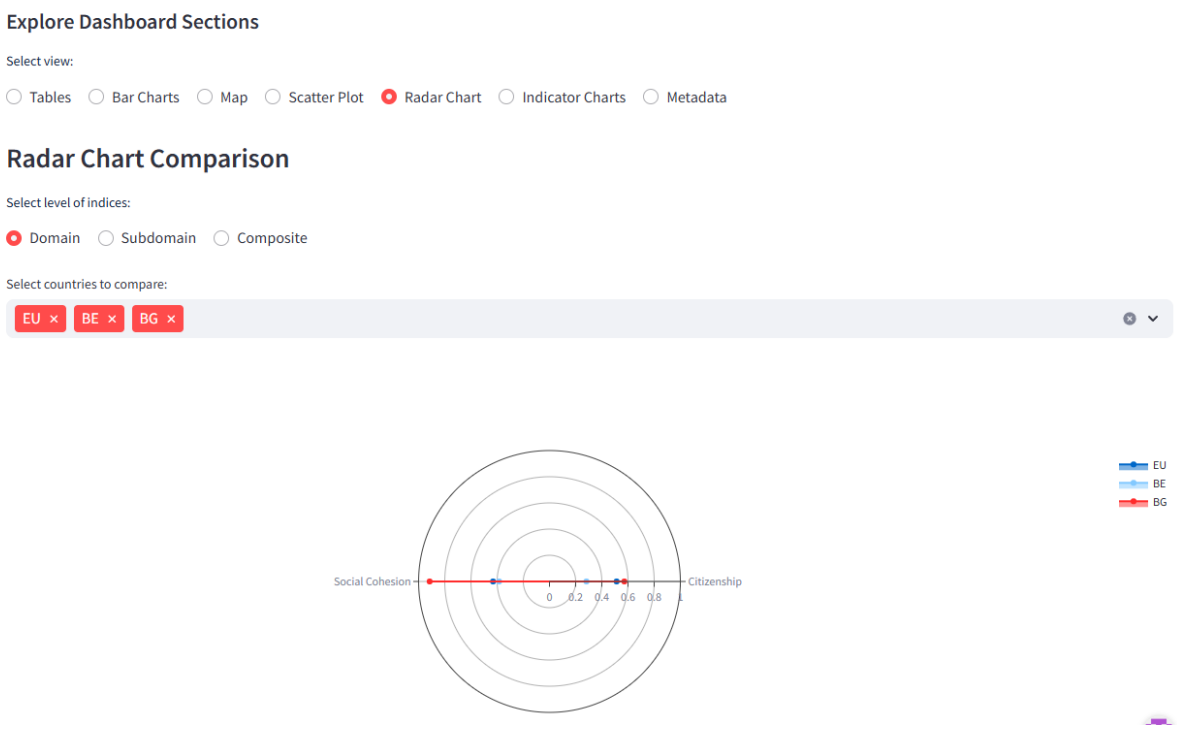
Purpose: Compare countries across indices in a radar chart.

Features:

- Supports Domain, Subdomain, or Composite indices.
- Select multiple countries.
- Axes represent indices (0–1 scale).
- Hover for values.

How to Use:

1. Select "Radar Chart" from the view menu.
2. Choose index level and countries (defaults to EU).
3. Adjust sidebar filters.
4. Review the chart for comparisons.



Use Case: Useful for multi-dimensional country comparisons.

5.7 Indicator Charts

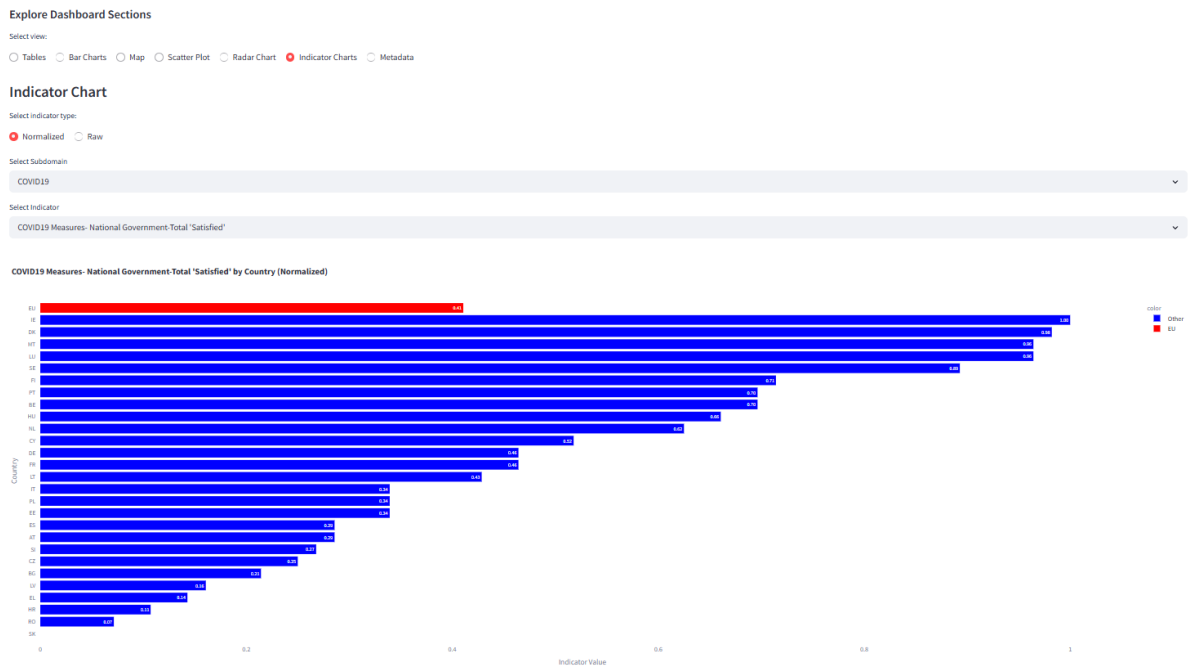
Purpose: Visualize individual indicators as bar charts.

Features:

- Choose normalized or raw values.
- Select subdomain and indicator.
- EU is red; bars include value labels.

How to Use:

1. Select "Indicator Charts" from the view menu.
2. Choose "Normalized" or "Raw."
3. Select subdomain and indicator.
4. Adjust sidebar filters.
5. Hover for details.



Use Case: Best for focusing on specific indicators.

5.8 Metadata

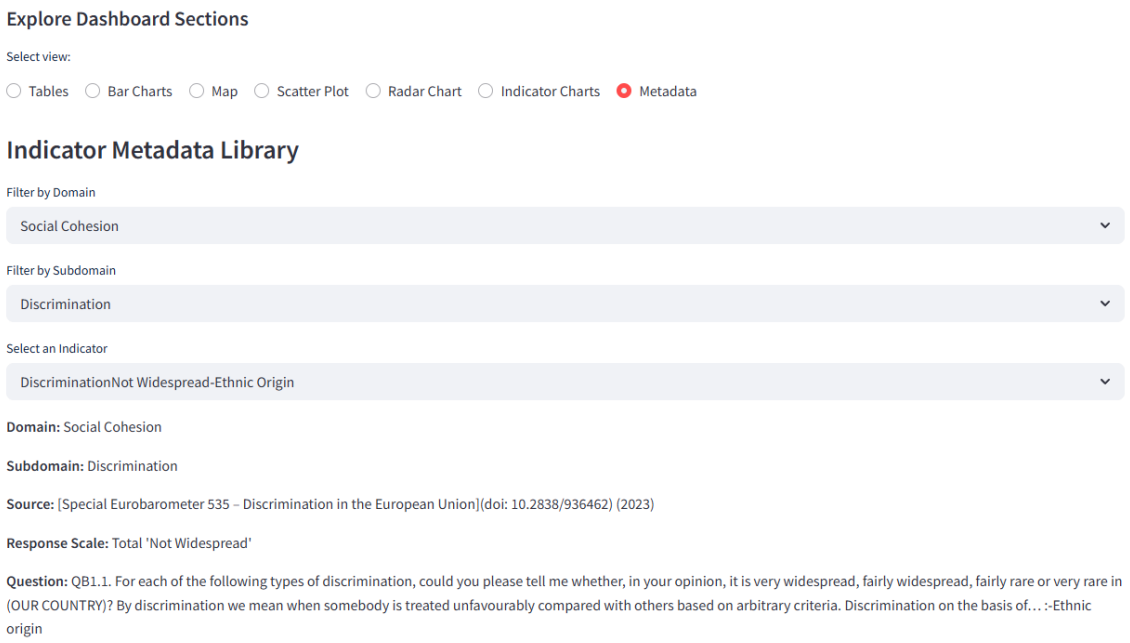
Purpose: View indicator details, including source and context.

Features:

- Filter by domain, subdomain, and indicator.
- Displays domain, subdomain, source (with link), date, response scale, and question.

How to Use:

1. Select "Metadata" from the view menu.
2. Choose domain, subdomain, and indicator.
3. Review metadata.
4. Click source link for original data.



Use Case: Essential for understanding indicator context.

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6. Tips for Effective Use

- **Start Broad**: Use "Select All" to explore, then refine filters.
- **Check EU Highlighting**: EU is highlighted (red) for comparison.
- **Combine Views**: Use tables for numbers, charts for trends, maps for geography.
- **Verify Filters**: Empty visualizations may indicate restrictive filters.
- **Review Metadata**: Check indicator details for context.
- **Understand Normalization**: Indices are normalized to 0–1; raw indicators may vary in scale.
- **Hover for Details**: Charts support hover interactions for values.

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7. Troubleshooting

- **No Data Displayed**:
  - Ensure countries, domains, subdomains, and indicators are selected.
  - Check indicator availability.
- **Map Issues**:
  - Verify country selections for mappable codes.
- **Slow Performance**:
  - Reduce countries or indicators.
  - Use a modern browser.
- **Unexpected Values**:
  - Confirm normalized vs. raw data.
  - Review metadata for scales.

- **Visualization Errors**:
  - Refresh the page or clear cache.
  - Ensure dataset files are accessible (if local).

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8. Contact and Support

For questions or issues:

- **Contact**: Istanbul Bilgi University Team
- **Email**: emre.erdogan@bilgi.edu.tr
- **Note**: Check CO3 project page for updated contact details.