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Group Assignment Task 1

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Study & Work Sponsorship in the UK: Overview Dashboard

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1. Introduction

How does each country's social structure, economy, and education system change with migration? How far does Policy maker's change or control those changes? Understanding how and why people move, and the impact of those movements, helps shape and improve social and economic education policy, and migration plays a positive role. This dashboard was made from real world information sourced from https://www.data.gov.au/ and created by the UK Government on Managed Migration and study and work sponsorships It provides insights across different time periods and details factors such as sponsorship applications, approvals, refusals, nationality sponsorship trends, and sponsorship renewals. With the help of UK government data, a Sponsorship Policy Analytics Dashboard has been developed to explore the extent to which sponsorship and policy migration patterns have changed over time.

Mainly, this report describes how to import data from Microsoft SQL Server, how to import data from Microsoft SQL Server to Power BI, and how to develop a creative dashboard using Microsoft Power BI effectively. This involved various stages, including data importation, cleaning, transformation, and the modelling part. Several modelling methods and Advanced DAX (Data Analysis Expression) were used to build the dashboard that is interactive and insightful.

This report outlines the UK Migration Sponsorship Insights Dashboard as a case study that focuses on the data-driven analysis of immigration for study and work. The dashboard project serves as an example of the use of predictive analysis tools to turn complex and historical data sets into valuable visual resources, assisting evidence-based inquiries for researchers and policymakers, as well as institutions that study migration.

2. Methodology

2.1. Importing Data

To create the dashboard, we obtained the required datasets – Study Sponsorship and Work Sponsorship - from the UK Government's Open Data Platform, and the dataset was imported from the official police data website
Dataset: https://www.data.gov.au/.

NOTE: There are two datasets in both Study Sponsorship and Work Sponsorship.

- ➢ Study Sponsorship Datasets:
  - CAS_D01(*studysponsorship*)
  - CAS_D02 (*st_spo*)
- ➢ Work Sponsorship Datasets:
  - CoS_D01*(work_1*)
  - CoS_D02(*work_2)*
  -

2.2. Creating a Database in SQL

Database > New Database > Database Name (Sponsorship) > ok Double click on Sponsorship > Task > Import Flat File > Next > Browse > Datasets (Study Sponsorship and Work Sponsorship)> Next > Then insert allow nulls > next > finish

2.3. Data Cleaning Part

Change the data type using the T-SQL code,
Cleans the Applications field in both datasets (*studysponsorship and work2*) by removing comma separators and then converts the column to an integer data type to ensure the values are stored as numeric data.

```
UPDATE studysponsorship
SET Applications = REPLACE(Applications,',','')

ALTER TABLE studysponsorship
ALTER COLUMN Applications INT;
```

```
UPDATE work2
SET Applications = REPLACE(Applications,',','')

ALTER TABLE work2
ALTER COLUMN Applications INT;
```

2.4 Merge the datasets

After cleaning the part, the two study datasets are merged into one, and the same process is applied to work sponsorship using the T-SQL code.

```sql
SELECT
    Year,
    Quarter,
    Type_of_application,
    Institution_type_group,
    Institution_type,
    NULL AS Geographical_region,
    NULL AS Nationality,
    Applications
FROM studysponsorship

UNION ALL

SELECT
    Year,
    Quarter,
    Type_of_application,
    Institution_type_group,
    NULL AS Institution_type,
    Geographical_region,
    Nationality,
    Applications
FROM st_spo;
```

```sql
SELECT
    Year,
    Quarter,
    Type_of_application,
    Category_of_leave,
    Industry,
    NULL AS Geographical_region,
    NULL AS Nationality,
    Applications
FROM work1

UNION ALL

SELECT
    Year,
    Quarter,
    Type_of_application,
    Category_of_leave,
    NULL AS Industry,
    Geographical_region,
    Nationality,
    Applications
FROM work2;
```

Then, for further analysis transferred the consolidated data into a new table called "*merge_study*" and "*merge_work*" using the T-SQL code.

```sql
SELECT
    Year,
    Quarter,
    Type_of_application,
    Institution_type_group,
    Institution_type,
    Geographical_region,
    Nationality,
    Applications
INTO merged_study_sponsorship
FROM
(
    SELECT
        Year,
        Quarter,
        Type_of_application,
        Institution_type_group,
        Institution_type,
        NULL AS Geographical_region,
        NULL AS Nationality,
        Applications
    FROM studysponsorship

    UNION ALL

    SELECT
        Year,
        Quarter,
        Type_of_application,
        Institution_type_group,
        NULL AS Institution_type,
        Geographical_region,
        Nationality,
```

```sql
SELECT
    Year,
    Quarter,
    Type_of_application,
    Category_of_leave,
    Industry,
    Geographical_region,
    Nationality,
    Applications
INTO merged_work
FROM
(
    SELECT
        Year,
        Quarter,
        Type_of_application,
        Category_of_leave,
        Industry,
        NULL AS Geographical_region,
        NULL AS Nationality,
        Applications
    FROM work1

    UNION ALL

    SELECT
        Year,
        Quarter,
        Type_of_application,
        Category_of_leave,
        NULL AS Industry,
        Geographical_region,
        Nationality,
        Applications
    FROM work2
```

2.5.Imported the Datasets into Power BI

Next, import the datasets into Power BI through the following steps

Get data > SQL server > server name >Database name > ok

Then select the "*Sponsorship" database*, which we imported previously into the SQL, and import only the "*merge_study*" and "*merge_work*" tables into Power BI for the analysis. After importing the datasets, replace the null values with "Not Applicable".

3. Visualization

3.1. Dashboard Review
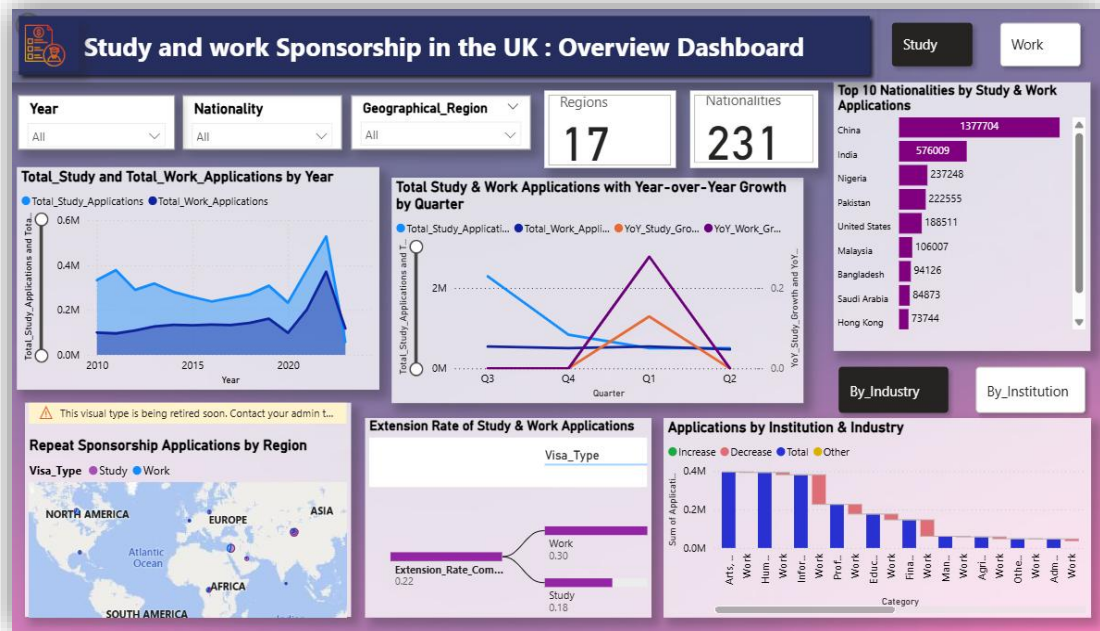
The UK Study and Work Sponsorship: Overview dashboard above used Power BI's advanced visualization functionality to provide insights into data in a more attractive, engaging, and proactive way. As you saw in the UK Study and Work Sponsorship Overview dashboard, the advanced visualization capabilities in Power BI help you view data in a more engaging and actionable way. For this reason, researchers and decision makers can analyse complex data and discover patterns and insights using the dashboard. There are many sections to the dashboard, and we will examine them one by one.

3.2. TOTAL_STUDY AND TOTAL_WORK_APPLICATIONS BY YEAR
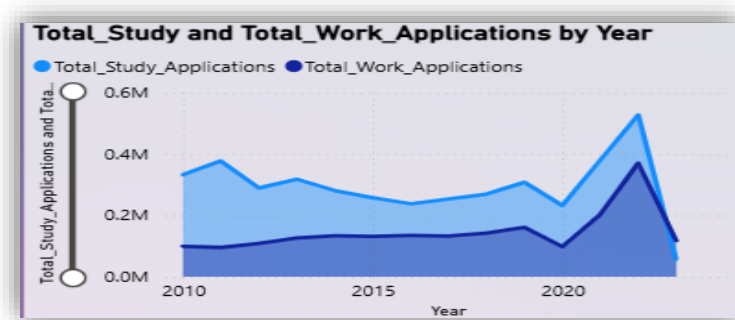
The "TOTAL_STUDY AND TOTAL_WORK_APPLICATIONS BY   YEAR" field uses an area chart to illustrate how study and work visa sponsorship applications changed from 2010 to 2023.This illustrates long-term trends in study and work visa sponsorship applications, provides a clear, understandable view of how visa demand has evolved, and combines both purpose and narrative into a single comprehensive overview. By using a filled area style, the chart shows both the trend direction and the volume of applications. However, this makes it easy to identify periods of growth, decline or seasonal variation, while also showing the visa type with the highest demand during each time period. Furthermore, this chart provides a dynamic and interactive representation that updates by region and nationality by structuring the timeline with a date table and calculating total study and work applications using advanced DAX code.

DAX Used:

This table we created to filter and group data by time periods, which is important for trends. (from 2010 to 2023 with year and quarter)

```
DateTable =
ADDCOLUMNS(
    CALENDAR(DATE(2010,1,1), DATE(2023,12,31)),
    "Year", YEAR([Date]),
    "Quarter", "Q" & FORMAT([Date], "Q"),
    "YearQuarter", YEAR([Date]) & " Q" & FORMAT([Date], "Q"),
    "YearQuarterSort", YEAR([Date])*10 + VALUE(FORMAT([Date],"Q"))
)
```

This measure we created to calculate the total number of study applications based on the selected dates, regions, and nationalities

```
Total_Study_Applications =
CALCULATE(
    SUM(Study_Trend_Table[Application_Count]),
    Study_Trend_Table[Data_View] = "By_Nationality",
    KEEPFILTERS(DateTable[Date]),
    TREATAS(VALUES(Region_Table[Geographical_Region]), Study_Trend_Table[Geographical_Region]),
    TREATAS(VALUES(Nationality_Table[Nationality]), Study_Trend_Table[Nationality])
)
```

This measure we created to calculate work applications based on selected dates, regions, and nationalities.

```
Total_Work_Applications =
CALCULATE(
    SUM(Work_Trend_Table[Application_Count]),
    Work_Trend_Table[Data_View] = "By_Nationality",
    KEEPFILTERS(DateTable[Date]),
    TREATAS(VALUES(Region_Table[Geographical_Region]), Work_Trend_Table[Geographical_Region]),
    TREATAS(VALUES(Nationality_Table[Nationality]), Work_Trend_Table[Nationality])
)
```

This visualization demonstrates the significant fluctuations in study and work visa applications between 2010 and 2023. Study applications show a volatility pattern from 2010–2020, with a large increase around 2021–2022. Work applications gradually increase with minor ups and downs and eventually see a significant decline. Overall, we can determine that study visas are consistently much higher than work visas.

Key Insights:

- Clear seasonal variations appear across quarters.
- Study applications show long-term sustained growth over the decade.
- Work applications show sharper volatility, especially around policy changes and covid 19 pandemic. (e.g., 2020).

3.3. TOTAL_STUDY & WORK APPLICATION WITH YEAR-OVER-YEAR GROWTH BY QUARTER
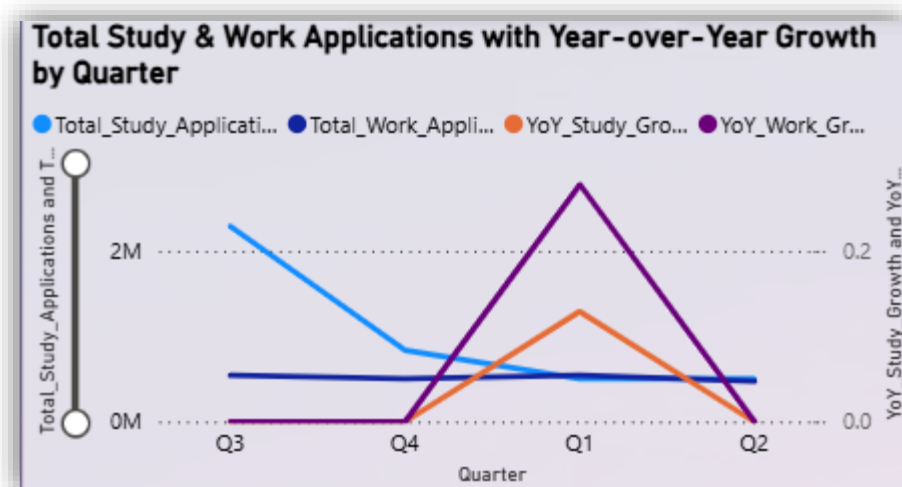
The "TOTAL_STUDY & WORK APPLICATION WITH YEAR-OVER-YEAR GROWTH BY QUARTER" visualization depicts the year-over-year growth rates for both Study and Work sponsorships using a Line Chart. It combines actual quarterly application totals with Year-over-Year growth rates for both Study and work sponsorship, from 2010 to 2023. The line chart includes four-line trends:

- Total Study Applications (Quarterly)
- Total Work Applications (Quarterly)
- Year-over-Year (YoY) Growth – Study
- Year-over-Year (YoY) Growth – Work

The first two lines represent the total number of applications submitted under each category, while the last two lines represent the Year-Over-Year growth rates for each category. Furthermore, all these lines are developed under DAX measures and some of them were created above: *"DateTable"*, *"Total_Study_Applications"* and *"Total_Work_Applications"*

DAX Used:

We created this table to analyze study applications by quarter and calculate trends.

```
Study_Trend_Table =
ADDCOLUMNS(
    merged_study_sponsorship,
    "QuarterStartDate",
        DATE(
            merged_study_sponsorship[Year],
            SWITCH(RIGHT(merged_study_sponsorship[Quarter],1),
                "1",1,
                "2",4,
                "3",7,
                "4",10
            ),
            1
        )
)
```

This measure we created to calculate year-over-year growth for study applications.

```
YoY_Study_Growth =
VAR CurrentValue = [Total_Study_Applications]
VAR PreviousValue =
    CALCULATE(
        [Total_Study_Applications],
        SAMEPERIODLASTYEAR(DateTable[Date])
    )
RETURN
IF(
    NOT ISBLANK(PreviousValue),
    DIVIDE(CurrentValue - PreviousValue, PreviousValue),
    BLANK()
)
```

We created this table to analyze work applications by quarter and calculate trends.

```
Work_Trend_Table =
ADDCOLUMNS(
    merged_work_sponsorship,
    "QuarterStartDate",
        DATE(
            merged_work_sponsorship[Year],
            SWITCH(RIGHT(merged_work_sponsorship[Quarter],1),
                "1",1,
                "2",4,
                "3",7,
                "4",10
            ),
            1
        )
)
```

This measure we created to calculate year-over-year growth for work applications.

```
YoY_Work_Growth =
VAR CurrentValue = [Total_Work_Applications]
VAR PreviousValue =
    CALCULATE(
        [Total_Work_Applications],
        SAMEPERIODLASTYEAR(DateTable[Date])
    )
RETURN
IF(
    NOT ISBLANK(PreviousValue),
    DIVIDE(CurrentValue - PreviousValue, PreviousValue),
    BLANK()
)
```

As the visualization above shows, over the period shown (2010 -2023), both study and employment applications show significant variation between quarters, with study applications starting at a high level and gradually decreasing until the second quarter, while employment applications follow a similar downward trend but remain at a slightly lower volume. The graph shows 501,761 study applications and 472,642 work applications for the second quarter, indicating that study sponsorship remained slightly higher during this quarter. While considering the year-on-year performance over the period 2010-2023, both visa categories record positive growth only in the first quarter, with 0.13 year-on-year academic growth and 0.28 year-on-year work growth, indicating modest annual growth in the first quarter. The remaining quarters, Q2 through Q4, report 0.00% year-on-year growth, which suggests application volumes in these quarters are in line with the volumes experienced in prior years or for which no historical comparisons are available. Overall, this chart demonstrates a strong Q3 peak for study sponsorships, while work visas have seen a gradual decline; there is limited year-on-year movement outside of Q1.

Key Insights:

- Study applications have consistently outperformed employment applications over the period shown, maintaining their position as the most prominent visa category.

- Both categories show a decline in the second quarter, but the decline for study sponsorship is more pronounced, indicating strong seasonal sensitivity or study cycle effects.

- The Year-Over-Year values from the second to fourth quarters are 0.00%, suggesting that there are no comparable values or sufficient historical data for the previous year.

- While study visas show strong seasonal sensitivity due to study recruitment patterns, work visas follow a more consistent, labor-based trend.

- The visual highlights quarter-to-quarter instability, which is crucial for understanding patterns related to policy changes, recruitment cycles, and global events.

- The visual highlights the quarter-to-quarter volatility, which is critical for understanding patterns related to policy changes, recruitment cycles, and global events

3.4. TOP 10 NATIONALITIES BY STUDY & WORK APPLICATION

The "TOP 10 NATIONALITIES BY STUDY & WORK APPLICATION" visualization compares the top 10 nationalities that applied for Study and Work sponsorships. We used the tornado chart for this visualization. The vertical axis shows nationalities, the horizontal axis represents the number of applications, and a separate slice for study and work visas. The purpose of this chart is to provide a clear horizontal comparison of the volume of applications between the two visa types for each nationality and help to identify countries that consistently contribute to immigration flows. Moreover, we created table called "*Top10_Study_Work*" by merging the top nationalities from the study and work datasets using a union and adds a numeric column for sorting by application volume.

DAX Used:

```
Top10_Study_Work =
ADDCOLUMNS(
    UNION(
        SELECTCOLUMNS(
            Top10_Study_Nationalities,
            "Nationality", [Nationality],
            "Applications", [Applications],
            "VisaType", "Study"
        ),
        SELECTCOLUMNS(
            Top10_Work_Nationalities,
            "Nationality", [Nationality],
            "Applications", [Applications],
            "VisaType", "Work"
        )
    ),
    "Applications_Sort", [Applications]    -- numeric column for sorting in visuals
)
```

The "TOP 10 NATIONALITIES BY STUDY & WORK APPLICATION" chart shows that visa applications are largely dominated by a few countries. When comparing the top nations for study and work visa applications, there is a clear difference in how different countries engage with UK migration routes. In the study category, China leads the way with 1.37 million applications, while India, with 576,009, shows a strong education-based connection to the UK. In contrast, in the work visa category, India dominates, recording 658,973 applications , double the number of applications from the US, with 347,976 being the second highest contributor. Although China leads in study visas, work visa applications play a middling role with 77,289, indicating that Chinese applicants are more inclined towards education than employment. Comparing Nigeria and Pakistan, they contribute

significantly to both the study and work categories but contribute less to work category than to the study category. Also, Western countries such as the United States, Canada, and Australia show a stronger representation of work visas than study visas, reflecting established professional migration ties. Overall, the combined trend point out study migration is dominated by Asian educational demand, while employment migration is mainly driven by India and Western professional mobility.

Key Insights:

- China dominates in study visas, while India dominates in work visas, and India is the only nationality with a very high number in both categories.

- Western countries (USA, Australia, Canada) contribute more to work visas than study visas, while African and South Asian countries (Nigeria, Pakistan) contribute more to study visas than work visas.

- While academic migration is mainly based in Asia, employment migration is spread globally. This illustrates the true patterns between education-focused migration and employment-focused migration by nationality

3.5. REPEAT SPONSORSHIP APPLICATIONS BY REGION

In this visualization "REPEAT SPONSORSHIP APPLICATIONS BY REGION" illustrate the geographical distribution of repeat visa sponsorship applications for both Study and Work categories. This map provides a clear, intuitive, and interactive representation of repeat sponsorship applications by region, helping stakeholders understand spatial patterns and target regions with high repeat visa demand. We created a table called "*Combined_Repeat_Sponsorships*" by combining the study and work trends data. It also

consolidates its applications by geographic region, visa type, and application type. The "*Repeat_Sponsorships_Combined*" measure also counts the number of repeat applications (IsRepeat = 1) for each region, allowing us to visually show the intensity of repeat sponsorships across different locations. All these steps are powered under DAX code.

DAX Used:

```
Combined_Repeat_Sponsorships =
UNION(
    SELECTCOLUMNS(
        Study_Trend_Table,
        "Visa_Type", "Study",
        "Geographical_Region", Study_Trend_Table[Geographical_Region],
        "Application_Count", Study_Trend_Table[Application_Count],
        "Application_Type", Study_Trend_Table[Application_Type],
        "Data_View", Study_Trend_Table[Data_View],
        "Category_of_Leave", BLANK()
    ),
    SELECTCOLUMNS(
        Work_Trend_Table,
        "Visa_Type", "Work",
        "Geographical_Region", Work_Trend_Table[Geographical_Region],
        "Application_Count", Work_Trend_Table[Application_Count],
        "Application_Type", Work_Trend_Table[Application_Type],
        "Data_View", Work_Trend_Table[Data_View],
        "Category_of_Leave", Work_Trend_Table[Category_of_Leave]
    )
)
```

```
Repeat_Sponsorships_Combined =
CALCULATE(
    SUM(Combined_Repeat_Sponsorships[Application_Count]),
    Combined_Repeat_Sponsorships[IsRepeat] = 1
)
```

Europe and Asia appear to have the highest number of repeat sponsorships, reflecting ongoing work commitments, study extensions, and steady migration routes. The data shows that the Asian region has a strong positive relationship with the UK's study and work visa system, reflected in its high number of repeat sponsorship applications, with 315,811 applications and 120,270 applications respectively. This suggests that the region's main engagement with the UK is through education rather than employment. Moreover, North America shows a higher number of repeat sponsorship applications in the

employment category than in the study category, possibly due to the availability of highly skilled professionals or long-term employment terms. However, recurring sponsorship terms are often much lower in regions such as Africa, South America, and Oceania. Overall, these trends indicate that academic and work-related repeat sponsorship activities are significantly impacted by geographic, economic, and historical factors.

Key Insights:

- Europe and Asia show the highest repeat sponsorship activity, which demonstrates strong ongoing mobility and a continued connection with the UK.

- Regions with a strong economy and skilled workforce, along with the UK, tend to generate more repeat sponsorship, meaning people from these regions are more likely to extend or return for additional opportunities.

- This visualization shows that repeated migration is closely linked to international patterns, economic strength, and mobility networks.

3.6. EXTENSION RATE OF STUDY & WORK APPLICATION
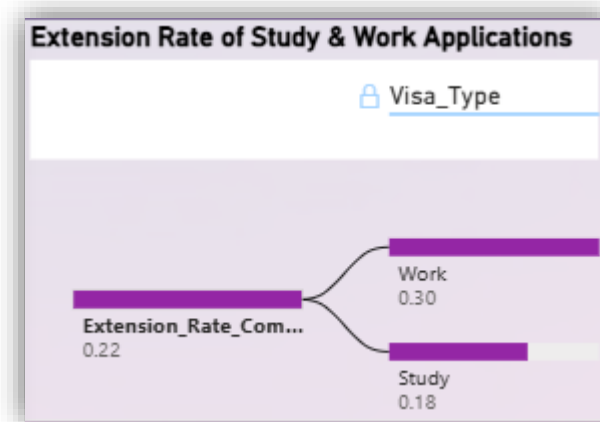
We used decomposition tree for this visualization to depict an interactive breakdown of visa applications and extension rates across multiple dimensions, such as visa type, nationality, institution/industry, year, and quarter. It allows users to explore the relative contribution of each category to overall application trends and extension patterns, as well as uncover deeper, multi-dimensional patterns in the data set. The "EXTENSION RATE OF STUDY & WORK APPLICATION" visualization created using Advanced DAX code.

DAX Used:

This table was created to combine study and work extension data into one table by capturing *"Nationality", "Visa_ type", "Application_ TYPE"* ,*"Applications_counts"*, *"Data_View", "Year"* and *"Quarter"*.

```
Combined_Extensions =
UNION(
    SELECTCOLUMNS(
        Study_Trend_Table,
        "Visa_Type", "Study",
        "Nationality", Study_Trend_Table[Nationality],
        "Application_Count", Study_Trend_Table[Application_Count],
        "Application_Type", Study_Trend_Table[Application_Type],
        "Data_View", Study_Trend_Table[Data_View],
        "Year", Study_Trend_Table[Year],
        "Quarter", Study_Trend_Table[Quarter]
    ),
    SELECTCOLUMNS(
        Work_Trend_Table,
        "Visa_Type", "Work",
        "Nationality", Work_Trend_Table[Nationality],
        "Application_Count", Work_Trend_Table[Application_Count],
        "Application_Type", Work_Trend_Table[Application_Type],
        "Data_View", Work_Trend_Table[Data_View],
        "Year", Work_Trend_Table[Year],
        "Quarter", Work_Trend_Table[Quarter]
    )
)
```

We created this measure to calculate the ratio of applications that are extensions of stay relative to total applications. It allows the decomposition tree to show where extensions are most prevalent by visa type, nationality, or duration.

```
Extension_Rate_Combined =
VAR Total_Extensions =
    CALCULATE(
        SUM(Combined_Extensions[Application_Count]),
        FILTER(
            Combined_Extensions,
            Combined_Extensions[Application_Type] = "Extensions of Stay"
        )
    )
VAR Total_Applications =
    CALCULATE(
        SUM(Combined_Extensions[Application_Count])
    )
RETURN
DIVIDE(Total_Extensions, Total_Applications, 0)
```

We created this table to combine institution types from study category and industries from work data category into one unified table for comparison and visualization.

```
Combined_Institution_Industry =
UNION(
    // Study Table
    SELECTCOLUMNS(
        Study_Trend_Table,
        "Visa_Type", "Study",
        "Category", Study_Trend_Table[Institution_Type],
        "Application_Count", Study_Trend_Table[Application_Count],
        "Year", Study_Trend_Table[Year],
        "Quarter", Study_Trend_Table[Quarter],
        "Data_View", Study_Trend_Table[Data_View]
    ),
    // Work Table
    SELECTCOLUMNS(
        Work_Trend_Table,
        "Visa_Type", "Work",
        "Category", Work_Trend_Table[Industry],
        "Application_Count", Work_Trend_Table[Application_Count],
        "Year", Work_Trend_Table[Year],
        "Quarter", Work_Trend_Table[Quarter],
        "Data_View", Work_Trend_Table[Data_View]
    )
)
```

This creates a clean label that only shows the category when the data view *is "By Institution"* or "*By Industry*"; otherwise, it shows *"Not Applicable"*.
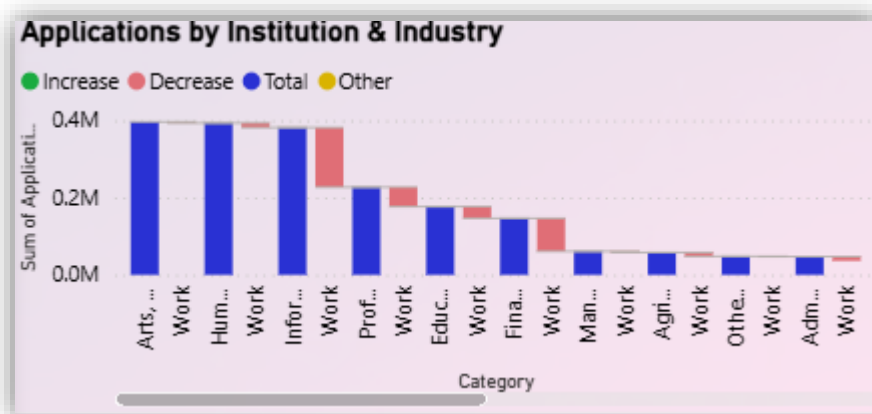
```
Category_Display =
IF(
    Combined_Institution_Industry[Data_View] = "By Institution"
    || Combined_Institution_Industry[Data_View] = "By Industry",
    Combined_Institution_Industry[Category],
    "Not Applicable"
)
```

This chart shows the different extension rates between study and work visa categories to continue or extend your stay in the UK. When considering visa type, work visa holders have the highest extension rate than study visa holders, with rates of 0.30 and 0.18 respectively. This shows that around a third of work visa holders return to extend their sponsorship, while study visa holders are less likely to stay longer for further studies or additional study pathways. When considered at the nationality level across 200+ countries, some nations, such as Greenland, show extremely high prevalence rates of 1.00. In contrast, other nations, such as Pitcairn Islands, with 0.64, and New Caledonia, with 0.50, also show higher-than-average prevalence rates.

Key Insights:

- Overall extension rate is 0.22, which means that 22% of the applicants extend their stay.

- Work visa holders are the most likely to extend, with an extension rate of 0.30, while the study visa holders extend less frequently, at 0.18, which means a great proportion of students do not continue beyond their initial study period

- There are over 200 nationalities in this dataset, and only a few have very high extension rates.

- High extension rates suggest long-term migration intentions, perhaps for work, residence or family reasons.

3.7. APPLICATIONS BY INSTITUTION & INDUSTRY

The "APPLICATIONS BY INSTITUTION & INDUSTRY" visualization shows the distribution of both study and work visa applications across institutions and industries, highlighting the contribution of each category to the overall total. Its purpose is to help analyse visa sponsorship by category and understand which sectors drive the overall number of applications. Furthermore, for this visualization we used the previously introduced table *"Combined_Institution_Industry"* to uncover a hidden and complex trend using advanced DAX. Also, the *"Application_Count"* for each category is represented as a separate column in the waterfall chart, showing the incremental impact on the total apps in that category. Positive contributions (high app count) appear as ascending columns, while smaller contributions or reductions appear as descending columns, depending on how the waterfall is configured.

On the Study side, the largest contribution comes from major higher-education categories such as Non-Russell Group universities, Russell Group universities, and Further Education institutions. Each of them is at the core of student migration to the UK, thus adding to a significant volume of applications. This key category is indicative of strong international demand for all levels of educational institutions, especially universities that conduct research and for other groups of universities, as well as providers of vocational and college education. There is some demand from Independent Schools, English Language Schools and Other Institutions, albeit small, that is indicative of uneven but still significant international student recruitment. On the other hand, the chart highlights various industries. Some of them are, *"Arts, Entertainment and Recreation"*, *"Information and Communication"*, *"Professional, Scientific and Technical Activities"*, *"Education"*, *"Manufacturing"* and other service activities. Each of these industries contributes to a meaningful increase in the number of applications in the work category.

Key Insights:

- There is a high concentration of study sponsorship in only a few educational categories.

- Work sponsorship is broader as it has a number of sectors that contribute in lower amounts.

- The waterfall structure clearly indicates how each category contributes to the total, allowing for easy identification of key drivers for both visa types.

3.8. Card Visualizations

Within this dashboard, we created two card visualizations using advanced Dax code that allow users to quickly identify essential information without complex visualizations or too much hassle. They are called Region, Nationality.

We created a table called "*Region_Table*" to combine all unique regions in both study and work data into one list and created a measure called "*Regions*" to count how many unique regions there are in "*Region_Table*".

```
Region_Table =
DISTINCT(
    UNION(
        SELECTCOLUMNS(Study_Trend_Table, "Geographical_Region", Study_Trend_Table[Geographical_Region]),
        SELECTCOLUMNS(Work_Trend_Table, "Geographical_Region", Work_Trend_Table[Geographical_Region])
    )
)
```

```
Regions =
COUNTROWS(Region_Table)
```

Moreover, we created a table called "*Nationality_Table*" to combine all unique nationalities in both study and work data into one list and created a measure called "*Nationalities*" to count how many unique nationalities there are in "*Nationality_Table*".

```
Nationality_Table =
DISTINCT(
    UNION(
        SELECTCOLUMNS(Study_Trend_Table, "Nationality", Study_Trend_Table[Nationality]),
        SELECTCOLUMNS(Work_Trend_Table, "Nationality", Work_Trend_Table[Nationality])
    )
)
```

```
Nationalities =
COUNTROWS(Nationality_Table)
```

3.9 . Slicer

- Year:
  Filters data to specific years(2010-2023)

- Geographical_Region:
  Filters data by geographic areas,

- Nationalities:
  Filters data by different nationalities

4. Conclusion

The Power BI dashboard provides analysis on historical trends and sector performances related to the UK study and work sponsorships. The report meets its objectives and answers the relevant questions through the amalgamation of datasets and the application of DAX formulas and the creation of advanced visualizations. The report presents six trends, foremost is study sponsorship which is heavily driven by semester academic calendars and has fluctuations on a seasonal basis. The institutions which provide sponsorship and study pathways are Non-Russell Group, Russell Group and some further education. Conversely, work sponsorship has consistent trends sponsorship on a quarterly basis and is sponsored by the arts, healthcare, IT and professional services industries.

The dashboard also highlights the importance of geographic, sector-based, and temporal dimensions in shaping application behaviour. Year-over-year analysis shows meaningful growth concentrated primarily in the first quarter, while repeat application behaviour reveals regional clusters with higher retention or extension rates. Collectively, these insights underscore the diverse and dynamic nature of the UK's migration system, where student mobility is driven by educational structures and work mobility reflects labour market demands across a wide range of industries.

To conclude, the report illustrates and demonstrates the role of data in the understanding of migration trends and the implications of such understanding for informing policies, planning and organizational decisions. The Power BI dashboard is an analytical tool that provides a visual overview of sponsor activity and can be expanded for forecasting, scenario planning, or further demographic analysis.