

Task 1 – Child Well-Being Monitor

I. INTRODUCTION

‘LEAVE NO ONE BEHIND’ is the call expressed in Sustainable Development Goals (SDGs) to eradicate poverty and improve human development by 2030. Poverty affects children severely more than any other age group. Therefore, it is essential to improve children's lives to make this vision a reality.



is a unique study that examines the lives of children throughout the first two decades of the 21st century. The UK government's Department for International Development initiated the study to improve the prospects of children. This study collects detailed data on various aspects such as health, nutrition, education, time use, and psychosocial well-being from 12,000 boys and girls across four countries. It was conducted in Ethiopia, India, Peru, and Vietnam. These countries were selected because they reflect a range of issues facing the developing world. The sample is so large and diverse, it is very likely to apply the findings to other countries as well.

In **India**, Young Lives was originally established in what was then the state of Andhra Pradesh. Now divided into two states, Andhra Pradesh and Telangana. Many households and children remain excluded from basic services and quality of service remains a concern. For education, there has also been a rapid increase in parents and children opting to use private over government schools. Of the Young Lives countries, India is where discrimination against girls and women is the most prominent and most entrenched. Scheduled Tribes and Scheduled Castes also face consistent discrimination and children from these groups are very disadvantaged and have less access to services than other children.

Ethiopia is highly vulnerable to drought and is one of the poorest countries. Nevertheless, in recent decades the country has had one of the fastest-growing economies in Africa. However, like most other countries in this period, income inequality has increased, and basic health problems persist, including high rates of child stunting. The government is faced with considerable challenges of resourcing as Ethiopia has a high fertility rate and half its population is aged less than 18 years (UNICEF, 2017) resulting with continued growth in the size of the youth population.

After more than 15 years of research, the evidence now spans the first two decades of life, from ages 1 to 22 years. Our goal is to bring these data into actionable insights by developing a reporting tool called **Child Well-Being Monitor** to analyze child poverty in India and Ethiopia using Power BI Report Builder and Power BI. Therefore, the project aims to improve understanding of the causes and consequences of childhood poverty and to inform people about the development of future policies and to target child welfare interventions more effectively. It is our hope that these insights can support efforts by countries to meet the challenges set out in the Sustainable Development Goals (SDGs; UNGA, 2015).



CHILD WELL-BEING MONITOR

Country

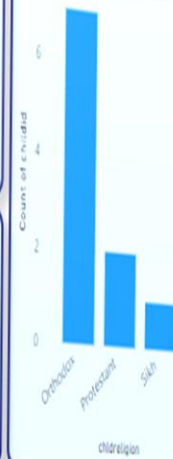
Ethiopia

India

Top Three Languages Spoken by the Young Lives Children



Major Religions



Total Children Participated

6018

Count of child

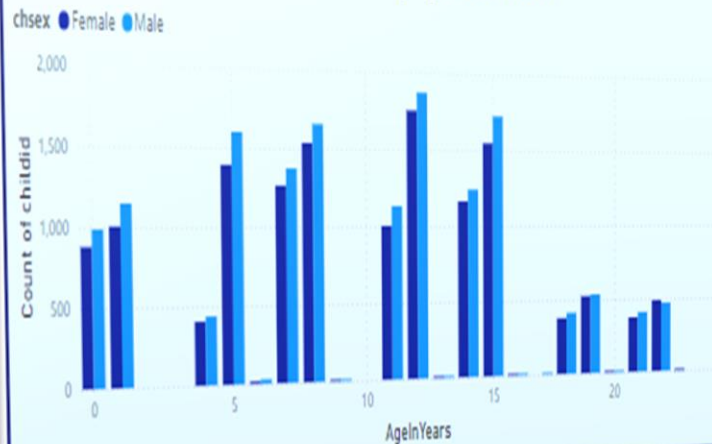
Gender Distribution of Children



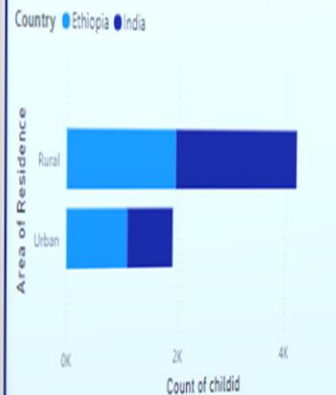
Child Participation Across All Survey Rounds



Count of children by Age and Gender



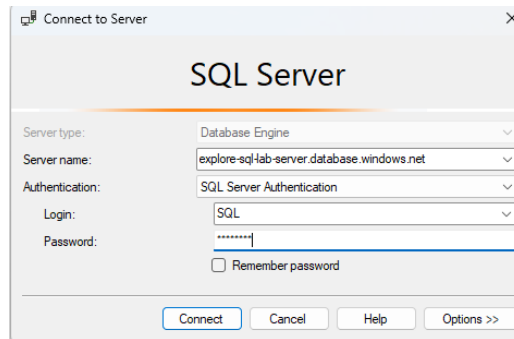
Children's Area of Residence by Country



II. DATA PREPARATION

The steps are given below:

1. Connected Microsoft Azure to SQL Server.



2. After downloading the dataset, it was uploaded into Young Lives database.
3. Several tables and views were created to establish relationships and facilitate easy data access, following the guidelines in Briones (2018).

SQL Code snippets are as follows:

- Labelled the ClusterIDs of Ethiopia by referencing 'ETH-SurveyDesign-Factsheet'. And the ClusterIDs of India by referencing 'INDIA-UAP-SurveyDesign-Factsheet'.

```
-- EthiopianClusters table (ClusterID to District mapping)
CREATE TABLE EthiopianClusters (
    ClusterID INT,
    District VARCHAR(100)
);

-- Insert data into EthiopianClusters
INSERT INTO EthiopianClusters (ClusterID, District) VALUES
(1, 'Addis Ababa, Ethiopia'),
(2, 'Addis Ababa, Ethiopia'),
(3, 'Addis Ababa, Ethiopia'),
(4, 'Amhara, Ethiopia'),
(5, 'Amhara, Ethiopia'),
(6, 'Amhara, Ethiopia'),
(7, 'Amhara, Ethiopia'),
(8, 'Oromia, Ethiopia'),
(9, 'Oromia, Ethiopia'),
(10, 'Oromia, Ethiopia'),
(11, 'Oromia, Ethiopia'),
(12, 'Southern Nations Nationalities and Peoples, Ethiopia'),
(13, 'Southern Nations Nationalities and Peoples, Ethiopia'),
(14, 'Southern Nations Nationalities and Peoples, Ethiopia'),
(15, 'Southern Nations Nationalities and Peoples, Ethiopia'),
(16, 'Southern Nations Nationalities and Peoples, Ethiopia'),
(17, 'Tigray, Ethiopia'),
(18, 'Tigray, Ethiopia'),
(19, 'Tigray, Ethiopia'),
(20, 'Tigray, Ethiopia');

-- Indian Clusters table (ClusterID to District mapping)
CREATE TABLE IndianClusters (
    ClusterID INT,
    District VARCHAR(100)
);

-- Insert the data for each cluster
INSERT INTO IndianClusters (ClusterID, District) VALUES
(1, 'West Godavari, India'),
(2, 'West Godavari, India'),
(3, 'Srikakulam, India'),
(4, 'Srikakulam, India'),
(5, 'Srikakulam, India'),
(6, 'Srikakulam, India'),
(7, 'Srikakulam, India'),
(8, 'Kadapa, India'),
(9, 'Kadapa, India'),
(10, 'Anantapur, India'),
(11, 'Anantapur, India'),
(12, 'Anantapur, India'),
(13, 'Anantapur, India'),
(14, 'Karimnagar, India'),
(15, 'Karimnagar, India'),
(16, 'Mababubnagar, India'),
(17, 'Mababubnagar, India'),
(18, 'Mababubnagar, India'),
(19, 'Mababubnagar, India'),
(20, 'Hyderabad, India');
```

- The clusters were joined with the respective tables and child identification table was made.

```

-- Joining your existing table with EthiopianClusters and IndianClusters to get place names
CREATE VIEW ChildIdentification AS
SELECT childid
      ,clustid
      ,District
      ,typesite
      ,region
      ,dint
      ,round
      ,yc
      ,panel
      ,deceased
FROM [dbo].[ethiopia_constructed] AS E
JOIN EthiopianClusters AS C
ON E.clustid = C.ClusterID
UNION ALL
SELECT childid
      ,clustid
      ,District
      ,typesite
      ,region
      ,dint
      ,round
      ,yc
      ,panel12345 AS panel
      ,deceased
FROM [dbo].[india_constructed] AS I
JOIN IndianClusters AS IC
ON I.clustid = IC.ClusterID

```

Table 1. Identification Table

- The rest of the tables created, included all columns by joined data from both the countries.

```

-----2.ChildGeneralCharacteristics Table
CREATE VIEW ChildGeneralCharacteristics AS
SELECT childid
      ,chsex
      ,chlang
      ,chethnic
      ,chldrel
      ,agemon
      ,marrcohab
      ,marrcohab_age
      ,birth
      ,birth_age
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,chsex
      ,chlang
      ,chethnic
      ,chldrel
      ,agemon
      ,marrcohab
      ,marrcohab_age
      ,birth
      ,birth_age
FROM [dbo].[india_constructed]

```

Table 2. Child General Characteristics Table

```

-----3.ChildAnthropometricMeasures
CREATE VIEW ChildAnthropometricMeasures AS
SELECT childid
      ,chweight
      ,chhealth
      ,bmi
      ,zwfa
      ,zhfa
      ,zbfa
      ,zwfl
      ,fwfa
      ,fhfa
      ,fbfa
      ,fwfl
      ,underweight
      ,stunting
      ,thinness
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,chweight
      ,chhealth
      ,bmi
      ,zwfa
      ,zhfa
      ,zbfa
      ,zwfl
      ,fwfa
      ,fhfa
      ,fbfa
      ,fwfl
      ,underweight
      ,stunting
      ,thinness
FROM [dbo].[india_constructed]

```

Table 3. Child Anthropometric Measures Table

```

-----4.ChildBirthandImmunisations
CREATE VIEW ChildBirthandImmunisations AS
SELECT childid
      ,bwght
      ,bwdoc
      ,numante
      ,tetanus
      ,delivery
      ,bcg
      ,measles
      ,polio
      ,dpt
      ,hib
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,bwght
      ,bwdoc
      ,numante
      ,tetanus
      ,delivery
      ,bcg
      ,measles
      ,polio
      ,dpt
      ,hib
FROM [dbo].[india_constructed];

```

Table 4. Childbirth and Immunizations Table

```

-----5.ChildIllness,Injury,Disability
CREATE VIEW ChildIllnessInjuryDisability AS
SELECT childid
      ,chmightdie
      ,chillness
      ,chinjury
      ,chhprob
      ,chdisability
      ,chdiscale
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,chmightdie
      ,chillness
      ,chinjury
      ,chhprob
      ,chdisability
      ,chdiscale
FROM [dbo].[india_constructed];

```

Table 5. Child Illness, Injury and disability Table

```

-----6.ChildSmokingDrinkingHabits
CREATE VIEW ChildSmokingDrinkingHabits AS
SELECT childid
      ,chsmoke
      ,chalcohol
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,chsmoke
      ,chalcohol
FROM [dbo].[india_constructed];

```

Table 6. Child Smoking and Drinking Habits

```

-----7.ChildSubjectiveHealthandWellbeing
CREATE VIEW ChildSubjectiveHealthandWellbeing AS
SELECT childid
      ,chhrel
      ,chhealth
      ,cladder
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,chhrel
      ,chhealth
      ,cladder
FROM [dbo].[india_constructed];

```

Table 7. Child Subjective Health and Well-being Table

```

-----8.ChildTimeUse
CREATE VIEW ChildTimeUse AS
SELECT childid
      ,hsleep
      ,hcare
      ,hchore
      ,htask
      ,hwork
      ,hschool
      ,hstudy
      ,hplay
      ,commwork
      ,commsch
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,hsleep
      ,hcare
      ,hchore
      ,htask
      ,hwork
      ,hschool
      ,hstudy
      ,hplay
      ,commwork
      ,commsch
FROM [dbo].[india_constructed];

```

Table 8. Child Time Use Table

```

-----9.ChildEducation
CREATE VIEW ChildEducation AS
SELECT childid
      ,agegr1
      ,enrol
      ,engrade
      ,entype
      ,hghgrade
      ,timesch
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,agegr1
      ,enrol
      ,engrade
      ,entype
      ,hghgrade
      ,timesch
FROM [dbo].[india_constructed];

```

Table 9. Child Education Table

```

-----10.ChildReadingandWriting
CREATE VIEW ChildReadingandWriting AS
SELECT childid
      ,levlread
      ,levlwrit
      ,literate
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,levlread
      ,levlwrit
      ,literate
FROM [dbo].[india_constructed];

```

Table 10. Child Reading and Writing Table


```

-----11.ChildCaregiverCharacteristics
CREATE VIEW ChildCaregiverCharacteristics AS
SELECT childid
      ,careid
      ,careage
      ,caresex
      ,carehead
      ,carerel
      ,carecantread
      ,caredu
      ,careladder
      ,careldr4yrs
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,careid
      ,careage
      ,caresex
      ,carehead
      ,carerel
      ,carecantread
      ,caredu
      ,careladder
      ,careldr4yrs
FROM [dbo].[india_constructed];

```

Table 11. Child Caregiver's Characteristics Table

```

-----12.ChildBiologicalParentCharacteristics
CREATE VIEW ChildBiologicalParentCharacteristics AS
SELECT childid
      ,dadid
      ,dadage
      ,dadlive
      ,dadyrdied
      ,dadcantread
      ,dadedu
      ,momid
      ,momage
      ,momlive
      ,momyrdied
      ,momcantread
      ,momedu
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
      ,dadid
      ,dadage
      ,dadlive
      ,dadyrdied
      ,dadcantread
      ,dadedu
      ,momid
      ,momage
      ,momlive
      ,momyrdied
      ,momcantread
      ,momedu
FROM [dbo].[india_constructed];

```

Table 12. Child Biological Parent Characteristics Table

```

-----13.HouseholdHeadCharacteristics
CREATE VIEW HouseholdHeadCharacteristics AS
SELECT childid
       ,headid
       ,headage
       ,headsex
       ,headedu
       ,headrel
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT childid
       ,headid
       ,headage
       ,headsex
       ,headedu
       ,headrel
FROM [dbo].[india_constructed];

```

Table 13. Household Head Characteristics Table

```

-----14.HouseholdSizeandComposition
CREATE VIEW HouseholdSizeandComposition AS
SELECT headid
       ,male05
       ,male612
       ,male1317
       ,male1860
       ,male61
       ,female05
       ,female612
       ,female1317
       ,female1860
       ,female61
       ,hhsize
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT headid
       ,male05
       ,male612
       ,male1317
       ,male1860
       ,male61
       ,female05
       ,female612
       ,female1317
       ,female1860
       ,female61
       ,hhsize
FROM [dbo].[india_constructed];

```

Table 14. Household Size and Composition Table

```

-----15.LivestockOwnership
CREATE VIEW LivestockOwnership AS
SELECT headid
      ,[aniany]
      ,[animilk]
      ,[anidrau]
      ,[anirumi]
      ,[anispec]
      ,[anicowm]
      ,[anicowt]
      ,[anicalv]
      ,[anibuft]
      ,[anibuft]
      ,[aniheif]
      ,[anibull]
      ,[anihebu]
      ,[anidonk]
      ,[aniybul]
      ,[anishee]
      ,[anigoat]
      ,[anipigs]
      ,[anipoul]
      ,[anirabb]
      ,[anibeeh]
      ,[aniothr]
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT headid
      ,[aniany]
      ,[animilk]
      ,[anidrau]
      ,[anirumi]
      ,[anispec]
      ,[anicowm]
      ,[anicowt]
      ,[anicalv]
      ,[anibuft]
      ,[anibuft]
      ,[aniheif]
      ,[anibull]
      ,[anihebu]
      ,[anidonk]
      ,[aniybul]
      ,[anishee]
      ,[anigoat]
      ,[anipigs]
      ,[anipoul]
      ,[anirabb]
      ,[anibeeh]
      ,[aniothr]
FROM [dbo].[india_constructed];

```

Table 15. Livestock Ownership Table

```

-----16.HouseholdLandandHouseOwnership
CREATE VIEW HouseholdLandandHouseOwnership AS
SELECT headid
      ,ownlandhse
      ,ownhouse
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT headid
      ,ownlandhse
      ,ownhouse
FROM [dbo].[india_constructed]

```

Table 16. Household Land and House Ownership Table

```

-----17.HouseholdCreditandFoodSecurity
CREATE VIEW HouseholdCreditandFoodSecurity AS
SELECT headid
      ,credit
      ,foodsec
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT headid
      , credit
      ,foodsec
FROM [dbo].[india_constructed];

```

Table 17. Household Credit and Food Security Table

```

-----18.HouseholdWealthIndexandSubIndices
CREATE VIEW HouseholdWealthIndexandSubIndices AS
SELECT headid
      ,wi_new wi
      ,hq_new hq
      ,sv_new sv
      ,cd_new cd
      ,elecq_new elecq
      ,toiletq_new toiletq
      ,drwaterq_new drwaterq
      ,cookingq_new cookingq
FROM [dbo].[ethiopia_constructed]
UNION ALL
SELECT headid
      ,wi
      ,hq
      ,sv
      ,cd
      ,elecq
      ,toiletq
      ,drwaterq
      ,cookingq
FROM [dbo].[india_constructed];

```

Table 18. Household Wealth Index and Sub indexes

4. Connected Azure SQL database to Power BI and imported the dataset, where it underwent cleaning and preprocessing. The process involved removing unwanted columns, removing NULLs and replacing values. For example, Food situation variable was labelled as,

Value = 1.0

Label: *Well-fed and satisfied*

(We always eat enough of what we want)

Value = 2.0

Label: *Well-fed, but limited variety*

(We eat enough but not always what we would like)

Value = 3.0

Label: *Occasionally underfed*

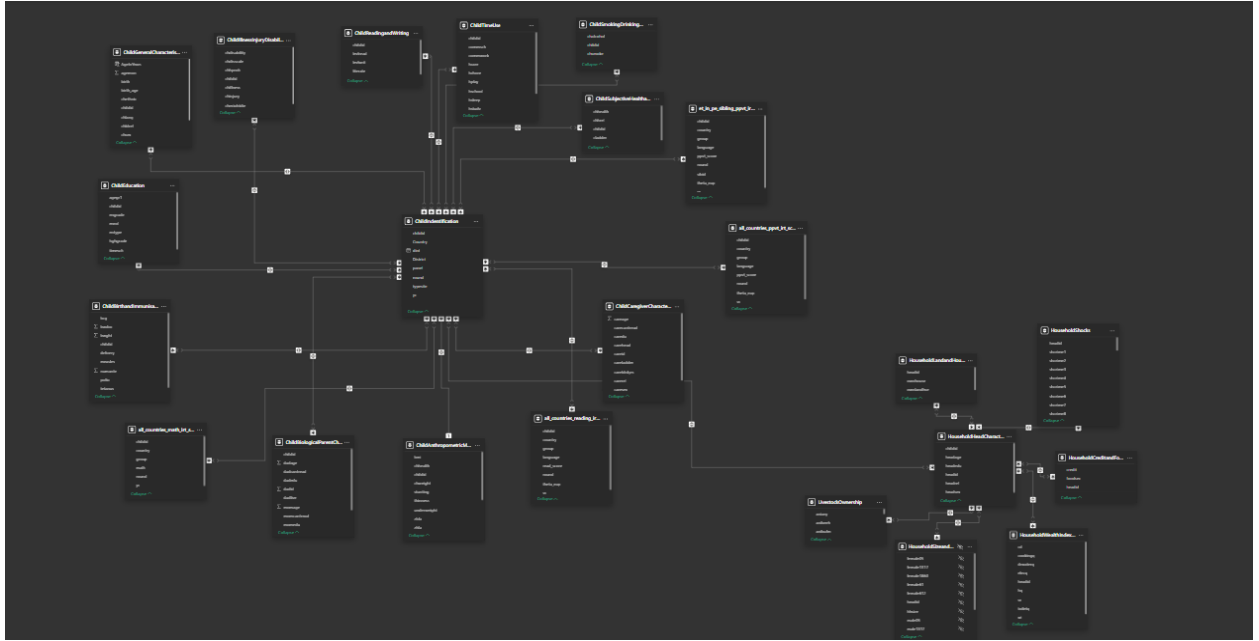
(We sometimes do not eat enough)

Value = 4.0

Label: *Frequently underfed*
(We frequently do not eat enough)

The variable labels were taken from data dictionaries document present in the dataset.

5. The next step involved creating relationships between tables:



6. Created calculated Tables to convert age in months to age in years.

```
1 AgeInYears = INT('ChildGeneralCharacteristics'[agemon] / 12)
```

Created calculated measures for visualization such as:

```
1 Average_BMI = AVERAGE(ChildAnthropometricMeasures[bmi])
```

```
1 Percentage_stunted =
2 DIVIDE(
3     COUNTROWS(FILTER(ChildAnthropometricMeasures, ChildAnthropometricMeasures[stunting] = 1)),
4     COUNTROWS(ChildAnthropometricMeasures),
5     0
6 ) * 100
7
```

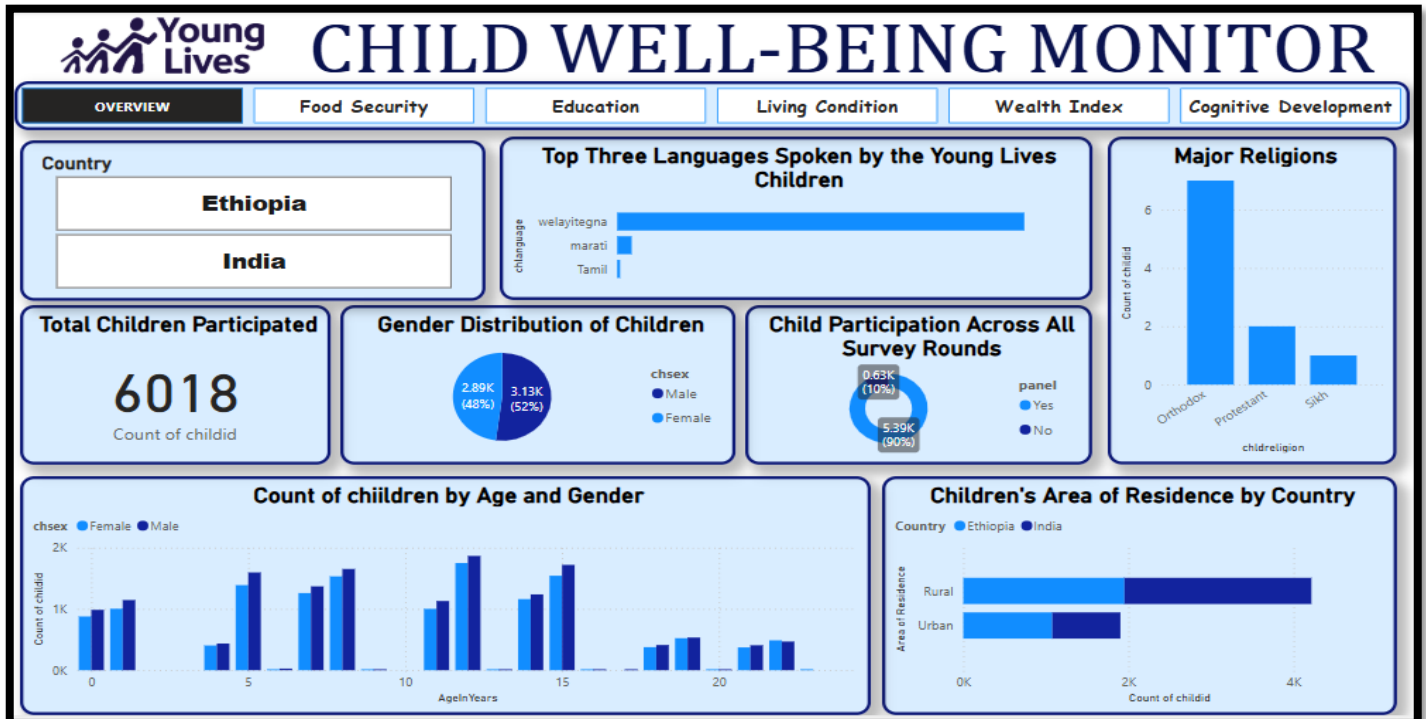
```
1 Percentage_thin =
2 DIVIDE(
3     COUNTROWS(FILTER(ChildAnthropometricMeasures, ChildAnthropometricMeasures[thinness] = 1)),
4     COUNTROWS(ChildAnthropometricMeasures),
5     0
6 ) * 100
```

```
1 Percentage_Underweight =  
2 DIVIDE(  
3     COUNTROWS(FILTER(ChildAnthropometricMeasures, ChildAnthropometricMeasures[underweight] = 1)),  
4     COUNTROWS(ChildAnthropometricMeasures),  
5     0  
6 ) * 100  
7
```

7. The Child well-being monitor dashboard was created in Power BI.
8. This was then exported to Microsoft Fabric to create paginated reports.

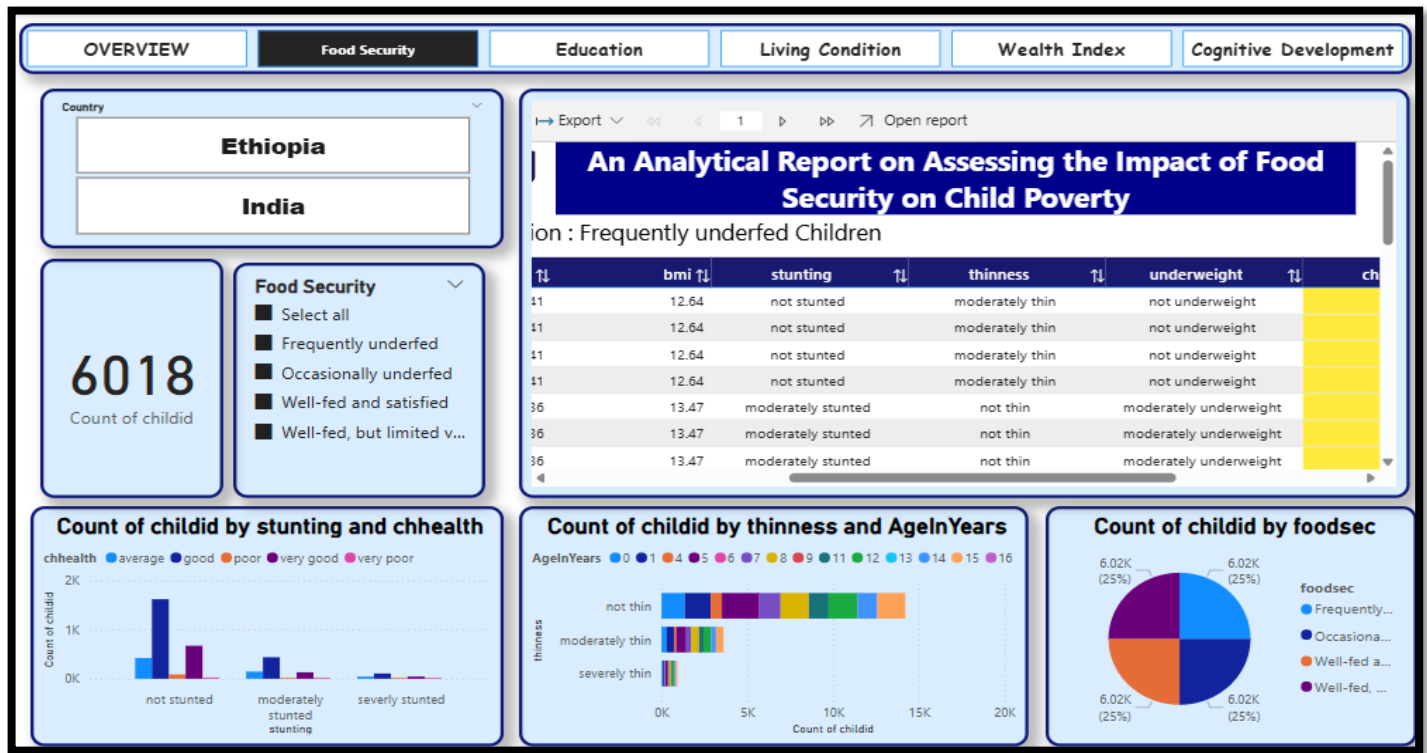
III. DATA INSIGHTS

[1] Overview Page



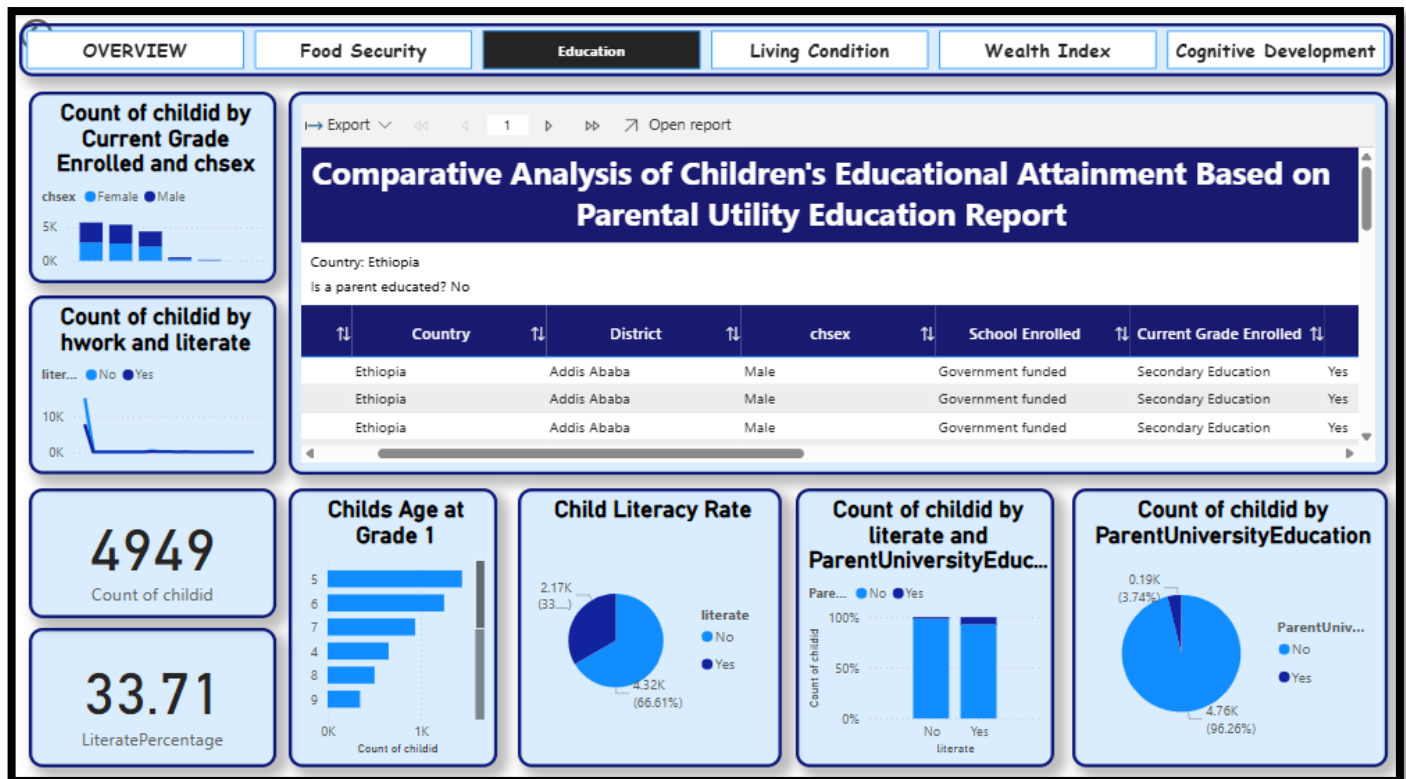
The **CHILD WELL-BEING MONITOR** analyzes the data of Ethiopia and India. The total children participated in the study are 6018 including males and females of similar composition. In addition, Gender composition for different age ranges too was equal. Most children were present throughout the study from 2002-2017. The number of children from rural areas doubled the number of children from urban areas. This suggests that the study was mainly focused on children from rural areas.

[2] Second Page: Food Security



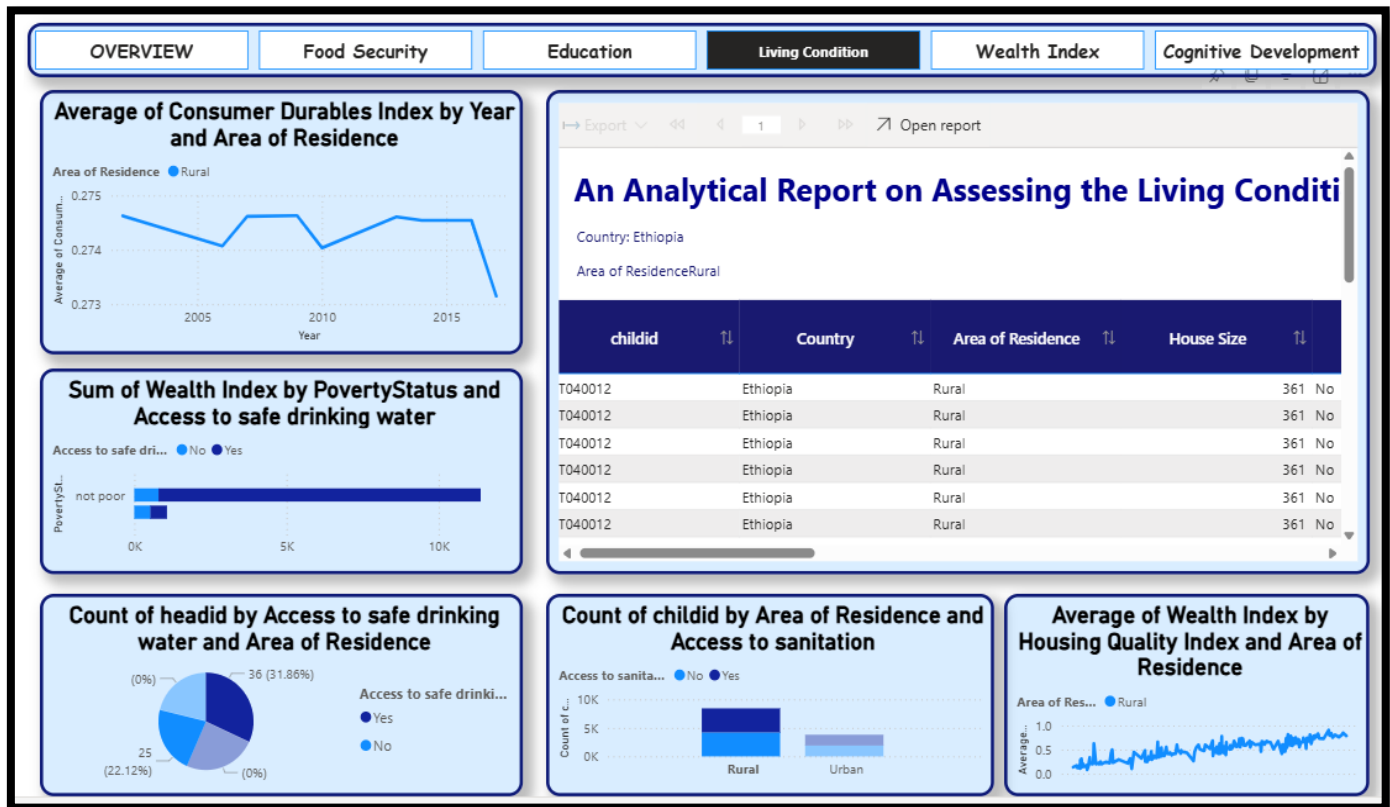
This page summarizes the food impact of children on child Poverty. The distribution of children across the categories—frequently underfed, occasionally underfed, well-fed but with limited variety, and well-fed and satisfied—was relatively balanced. The paginated report gives data for food security for children by their stunting, thinness, and underweight. According to the column chart most of the not stunted children have good health. Thinness is the variable for Low BMI for age. We can see that most of the children aren't thin and their age ranges thereby. Users can download the report for each food security category and filter the data by gender.

[3] Third Page: Education



This report shows that most of the parents were not university educated. Literacy rates were significantly higher among children whose parents had university education. The literacy rate was only 33.71%. Most children did not begin their schooling at the expected age.

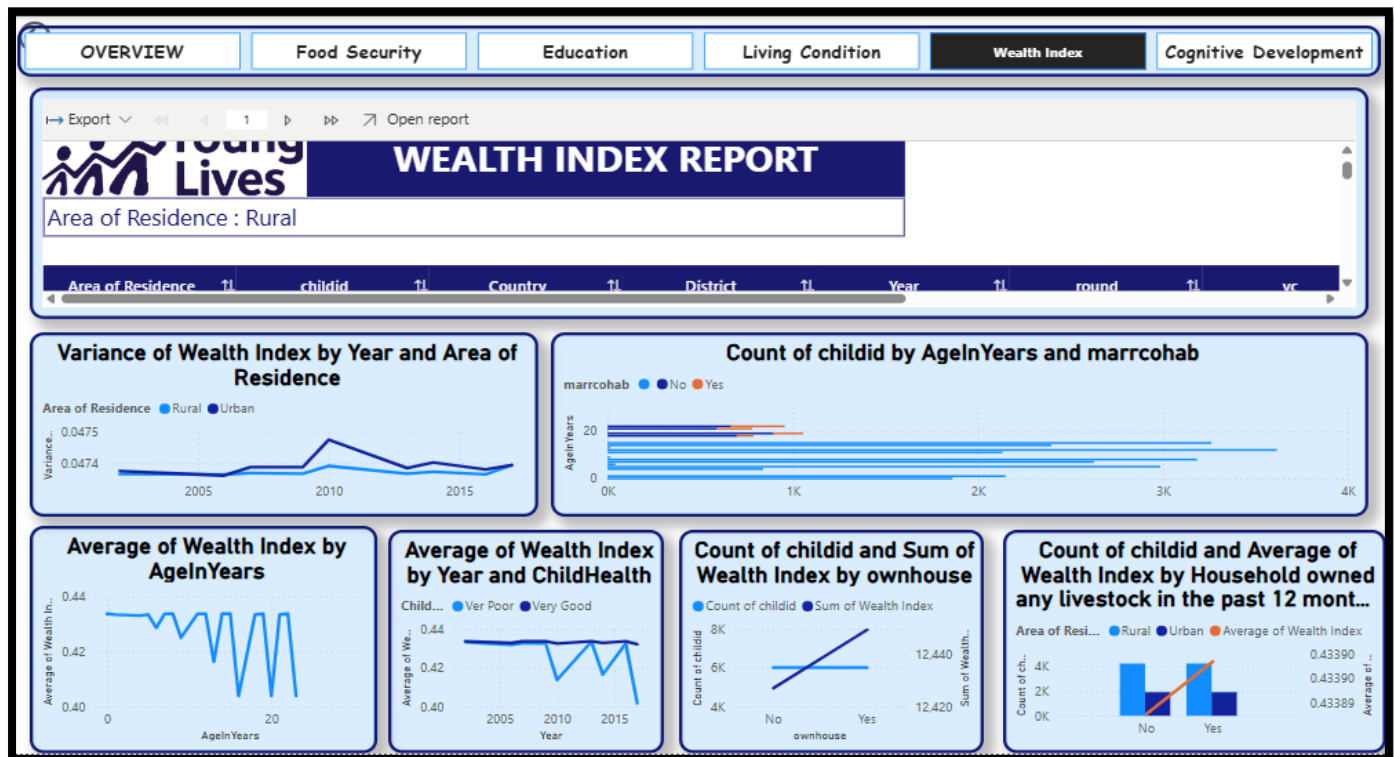
[4] Fourth Page: Living Condition



The **Living Condition** page of the dashboard provides insights into the well-being of children in Ethiopia and India by analyzing key aspects such as wealth, sanitation, housing, and access to basic services. It highlights trends in consumer durable ownership over time, reflecting economic conditions in rural areas. Additionally, it explores disparities in access to safe drinking water and sanitation based on poverty status and place of residence, emphasizing the challenges faced by underprivileged communities. The dashboard also examines the correlation between wealth and housing quality, showcasing how economic status influences living conditions.

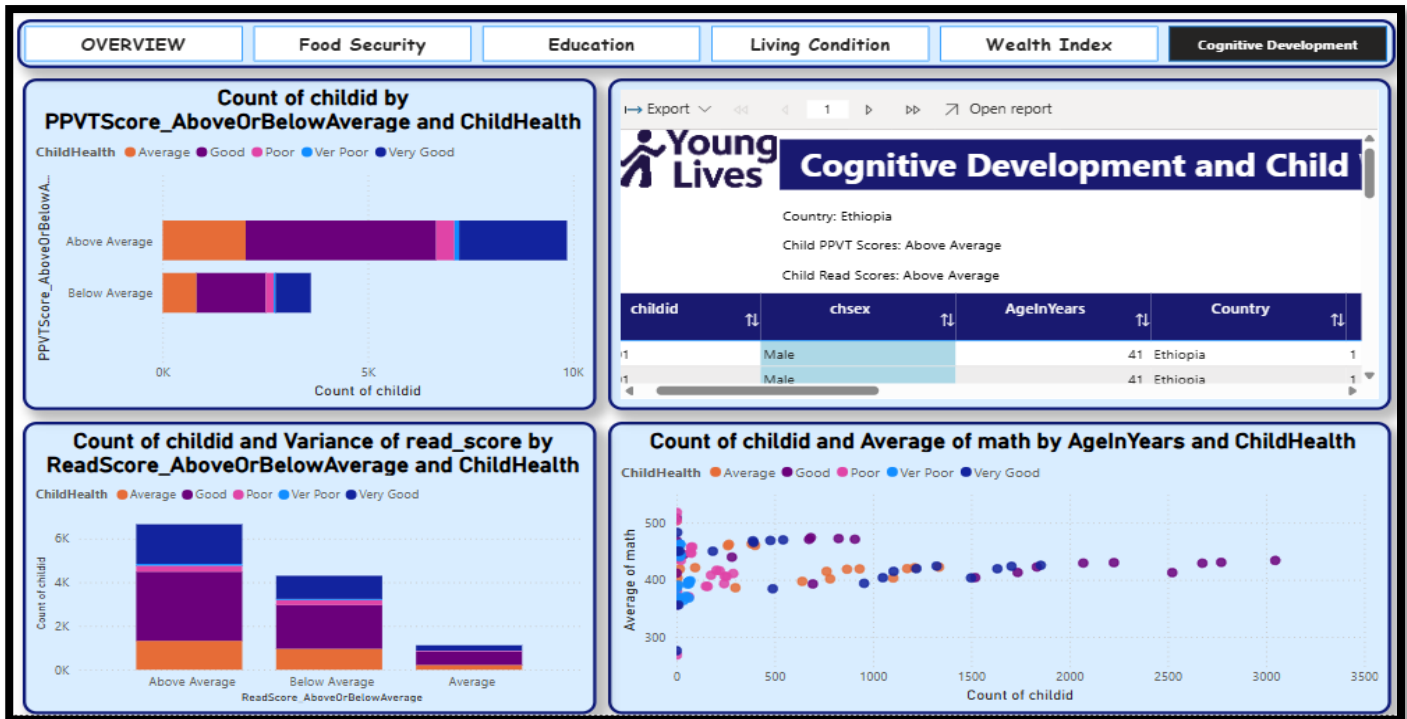
This dashboard highlights socioeconomic disparities, particularly between rural and urban areas. The data reveals fluctuations in household asset ownership, with recent declines suggesting economic instability. Wealthier households have significantly better access to safe drinking water and improved sanitation, while poorer communities, especially in rural areas, face persistent challenges. The correlation between wealth and housing quality further underscores inequalities in living standards. These insights emphasize the urgent need for targeted interventions to improve child well-being and align with the **Sustainable Development Goals (SDGs)** to combat poverty and enhance basic services.

[5] Fifth Page: Wealth Index



The wealth Index(WI) of Urban areas was higher than that of rural. The increase in the wealth index was consistent across both rural and urban areas. 25th percentile was selected to label the wealth index as poor and not poor. We can see that very poor health children have unstable WI while children's in good health have stable WI. The Wealth Index appears stable during early childhood but declines around the age of 20, possibly due to life events such as marriage and financial independence. The decline seems to be because of marriages as this age. House ownership is strongly associated with a higher Wealth Index.

[6] Sixth Page: Cognitive Development



This analyzes the impact of health on cognitive development of children. DAX measures were used to calculate PPVT score average, above average etc. Children in good health tended to achieve higher math scores, whereas those with health issues performed at an average level. The majority of students scored above average in both PPVT (Peabody Picture Vocabulary Test) and reading assessments.

CONCLUSION

The CHILD WELL-BEING MONITOR report presents a comprehensive analysis of children's health, cognitive development, and socio-economic conditions in Ethiopia and India, based on data from 6018 participants over 15 years. The study primarily focuses on rural areas and examines how food security, parental education, and living conditions influence child well-being. Notably, only 33.71% of children were literate, with literacy strongly linked to parents' university education. The report also shows that children's cognitive abilities, such as math and reading scores, are positively impacted by good health, while those in poorer health show average performance. Wealth index stability further correlates with health and living conditions. Additionally, the paginated reports are optimized for exporting and printing detailed child-specific data.

3. REFERENCES

1. Briones, K. (2018). *A Guide to Young Lives Rounds 1 to 5 Constructed Files*. [online] Available at: <https://www.younglives.org.uk/sites/default/files/migrated/YL%20Technical%20Note%2048%20A%20Guide%20to%20R1%20to%205%20Constructed%20Files.pdf> [Accessed 15 Oct. 2024].