

Framing an Analytics Problem

Case 3 - Kiva Crowdfunding

Case 3 – Kiva Crowdfunding - Analyse the the poverty levels of residents in the regions where Kiva has active loans and assessing borrower welfare levels.

- The dataset we use for this case study is has been sourced from Kiva.org
- Kiva.org is an online crowdfunding platform to extend financial services to poor and financially excluded people around the world.
- Kiva lenders have provided over \$1 billion dollars in loans to over 2 million people.
- The objective of this case is to set investment priorities, help inform lenders, and understand their target communities, knowing the level of poverty of each borrower is critical. However, this requires inference based on a limited set of information for each borrower.
- We will analyse the the poverty levels of residents in the regions where Kiva has active loans and assessing borrower welfare levels.

Data Information

Sr. No	Column	descriptions
1	id	Unique ID for loan (Loan ID)
2	funded_amount	The amount disbursed by Kiva to the field agent(USD)
3	loan_amount	The amount disbursed by the field agent to the borrower(USD)
4	activity	More granular category
5	sector	High level category
6	use	Exact usage of loan amount
7	country_code	ISO country code of country in which loan was disbursed
8	country	Full country name of country in which loan was disbursed
9	region	Full region name within the country
10	currency	The currency in which the loan was disbursed
11	partner_id	ID of partner organization
12	posted_time	The time at which the loan is posted on Kiva by the field agent
13	disbursed_time	The time at which the loan is disbursed by the field agent to the borrower
14	funded_time	The time at which the loan posted to Kiva gets funded by lenders completely
15	term_in_months	The duration for which the loan was disbursed in months
16	lender_count	The total number of lenders that contributed to this loan
17	tags	Tag
18	borrower_genders	Comma separated M,F letters, where each instance represents a single male/female in the group
19	repayment_interval	Repayment Time
20	date	Date

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Our first task here would be to look at the type of data that has been made available to us for analyzing. Let's take a look at the datatypes of the variables.

Categorical Variables:

activity
sector
use
country_code
country
region
currency
Tags
borrower_genders
repayment_interval

Date Time Type Variables:

posted_time
disbursed_time
funded_time
term_in_months
Date

Continuous Variables:

id
funded_amount
loan_amount
partner_id
lender_count

Task at Hand

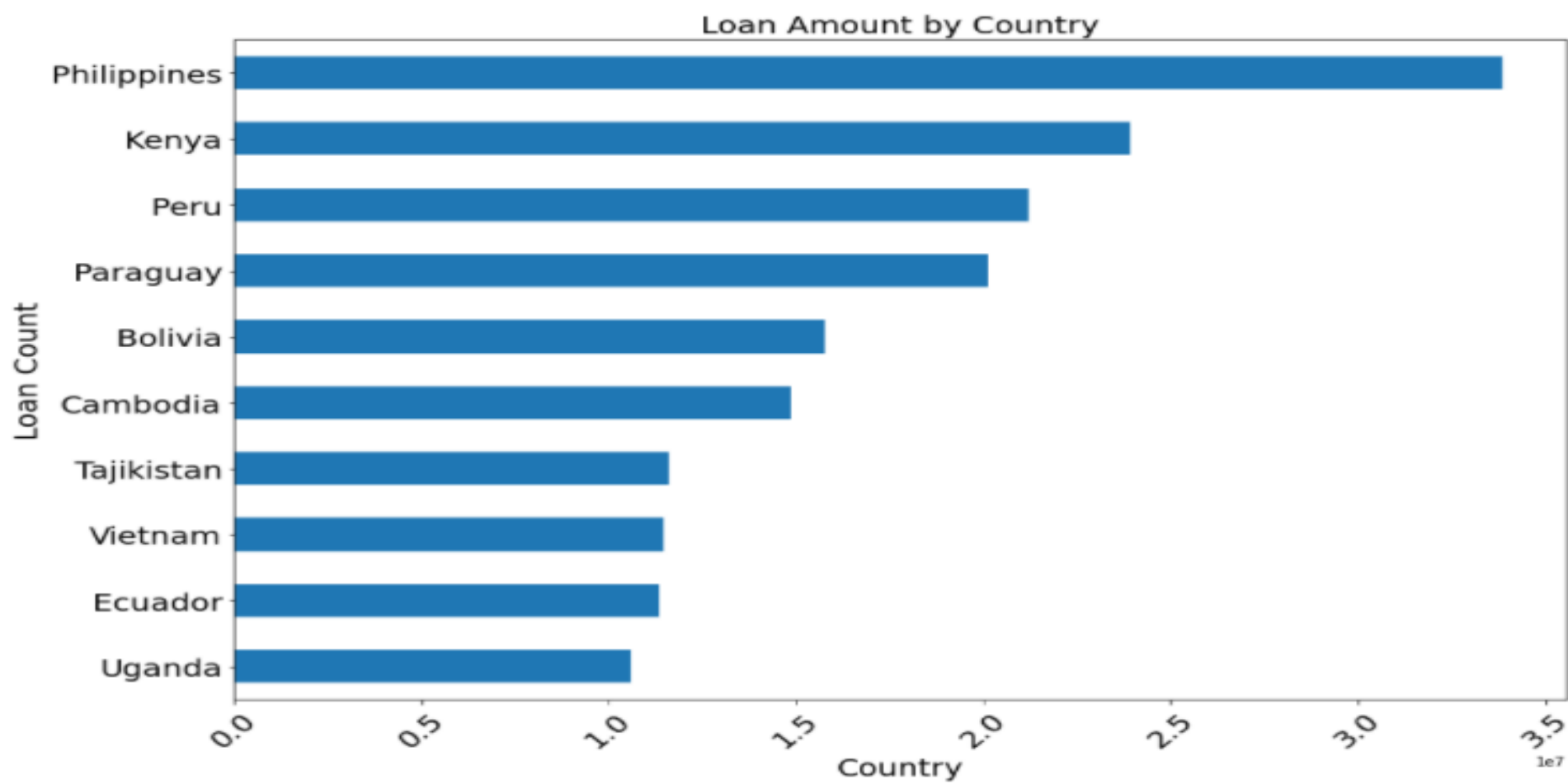
- The Data Scientists in the team have access to this data and they need to figure out how they can use this available data to find out different factors that can contribute to the Kiva Organisation to find the welfare level of loan borrowers in specific area, based on shared economic and demographic characteristics.
- With a stronger understanding of their borrowers and their poverty levels, Kiva will be able to better assess and maximize the impact of their work.

Some questions that can be raised initially that can act as a starting point to analyse the dataset

- Amongst all countries which countries got the most loans?
- How is the loan duration in months distributed? What can we infer from it?
- Which is the most popular sectors in which maximum amount of loans are taken?
- What is the ratio of loan distribution gender wise?
- How many loans were funded Sector Wise? Was there any impact of gender on this distribution?
- What are top activities for which Kiva loans were funded?
- Which are the top countries who funded maximum loan amount in Kiva?
- Does the count of lenders affect the loan amount funded ?
- Which are the most popular sectors in India where maximum amount of loans are taken?
- Which regions in India received most number of loans?
- Which country is having highest mean MPI ?

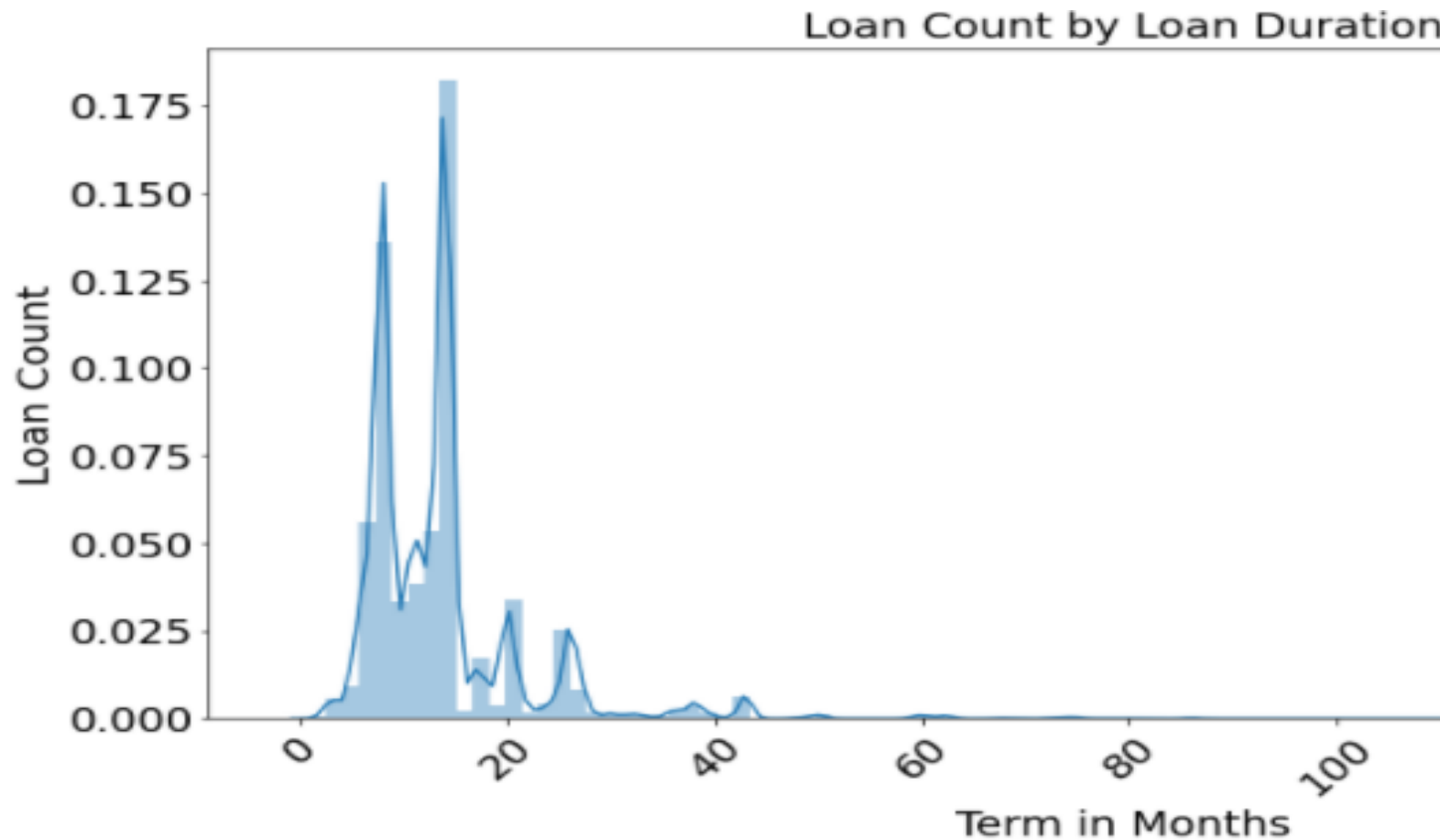
Lets start answering these questions using the data at our disposal.

Amongst all countries which countries got the most loans?



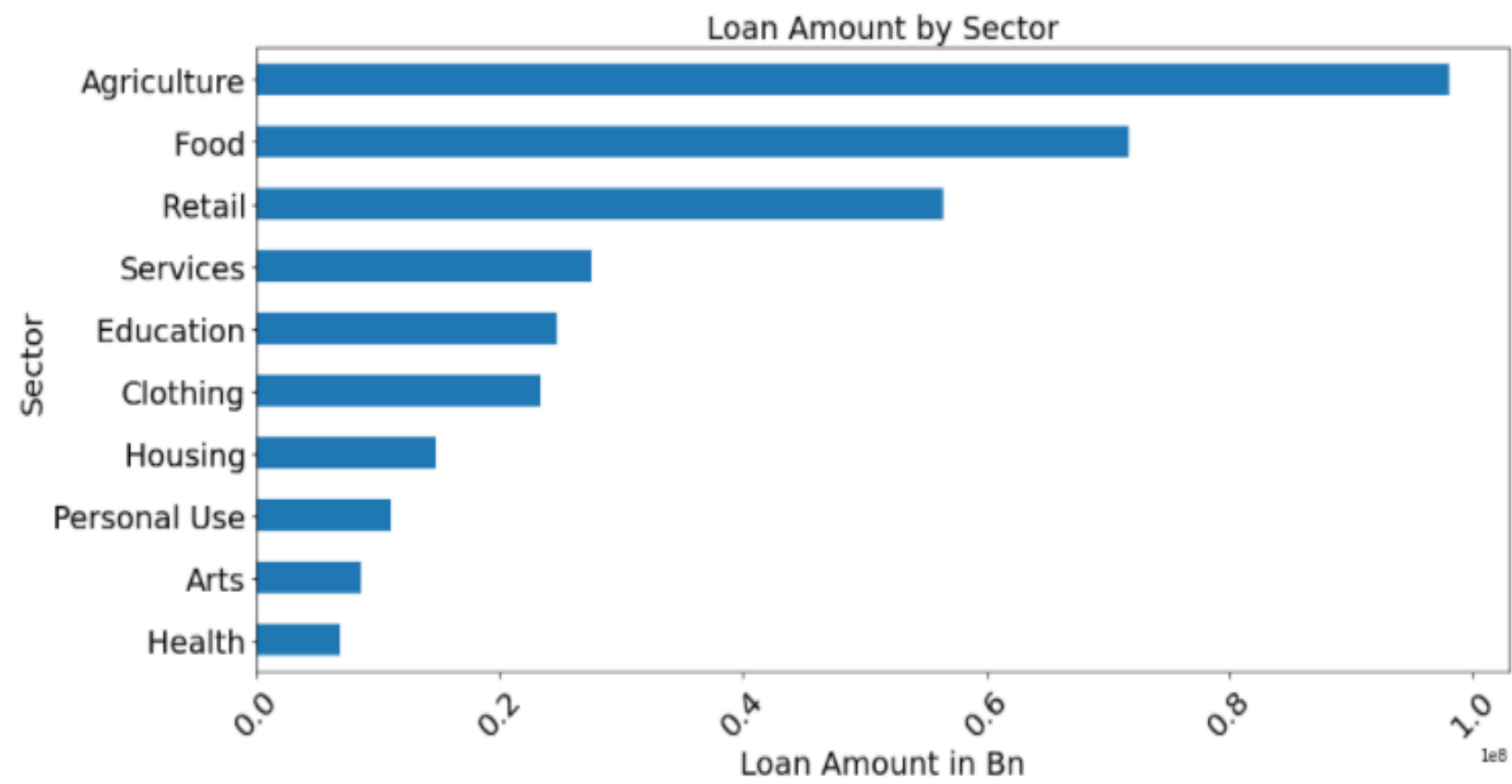
Philippines, Kenya, United States, Peru, Paraguay, El Salvador, Cambodia, Bolivia, Rwanda, Uganda are the top countries got the most loans

How is the loan duration in months distributed? What can we infer from it?



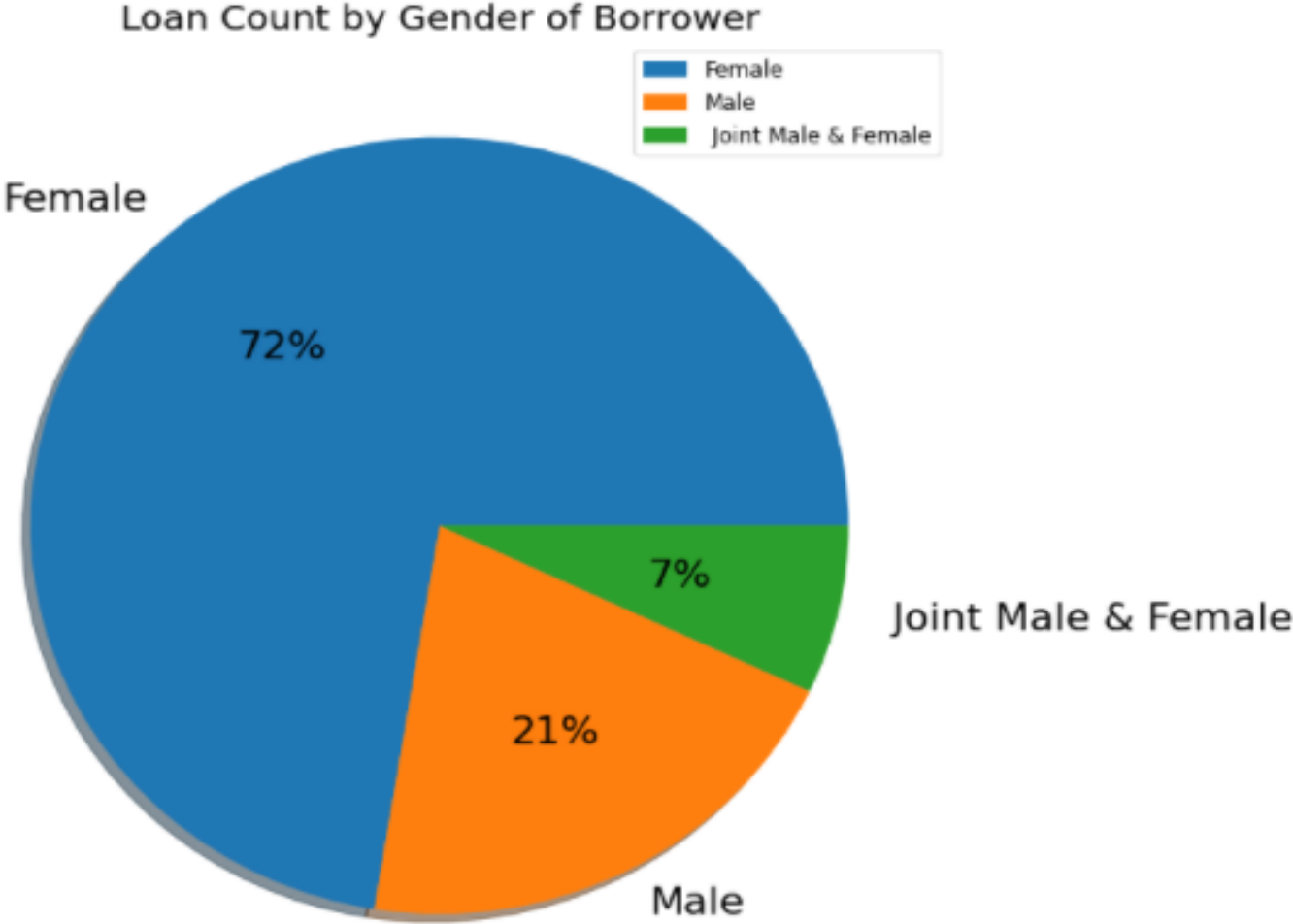
From above distribution we can see most loans are short term loans less than 24 months. So we can conclude that the maximum loan funded are short term loans.

Which is the most popular sectors in which maximum amount of loans are taken?



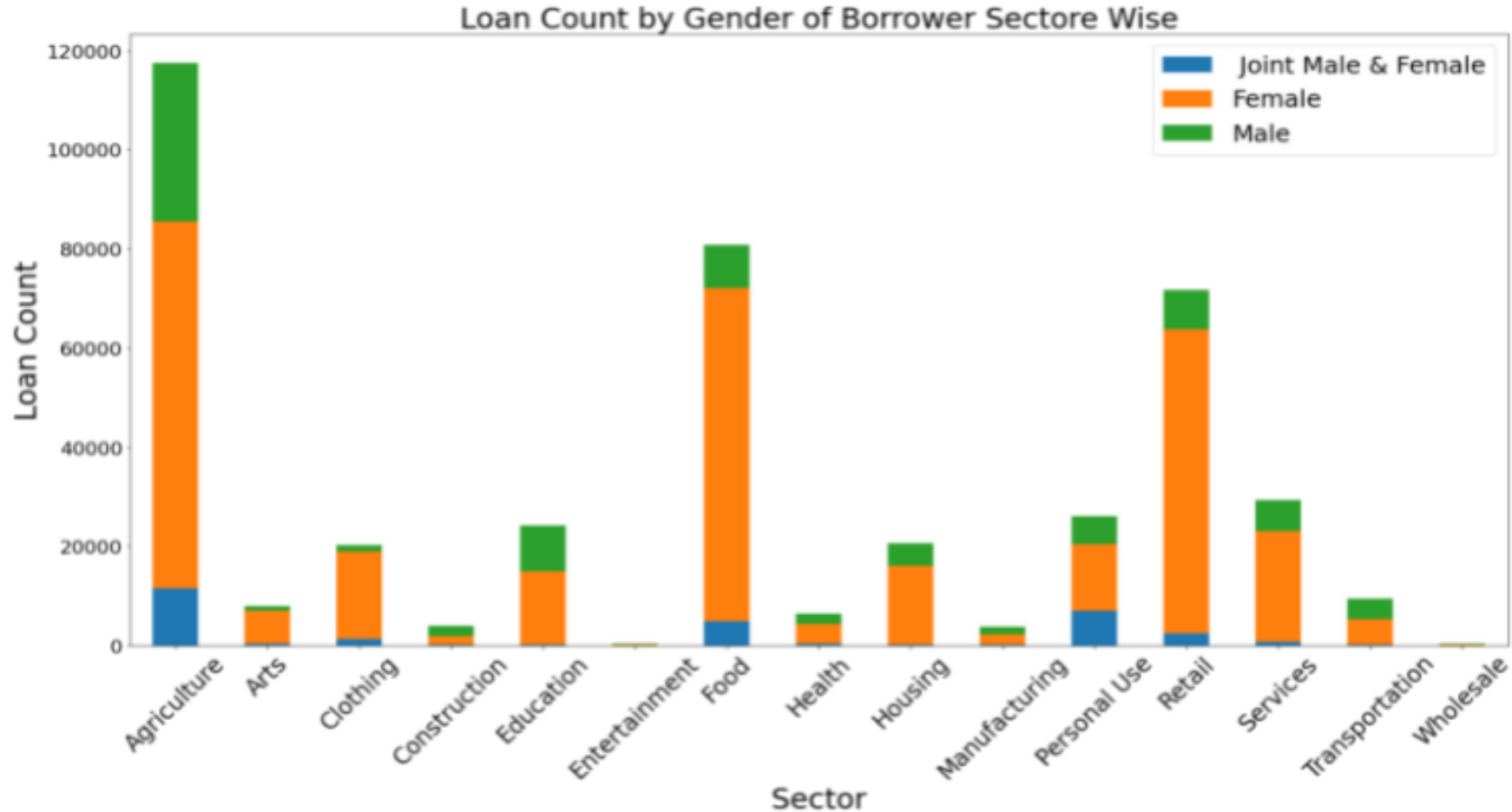
Agriculture, Food, Retail, Services, Clothing, Education, Housing, Personal Use, Arts, Transportation are the most popular sectors in which loans are taken.

What is the ratio of loan distribution gender wise?



For female 72%, Male 21%, Male & Female (Joint Account) 7% loan is funded gender wise. So, we can say maximum loan is funded to the Females.

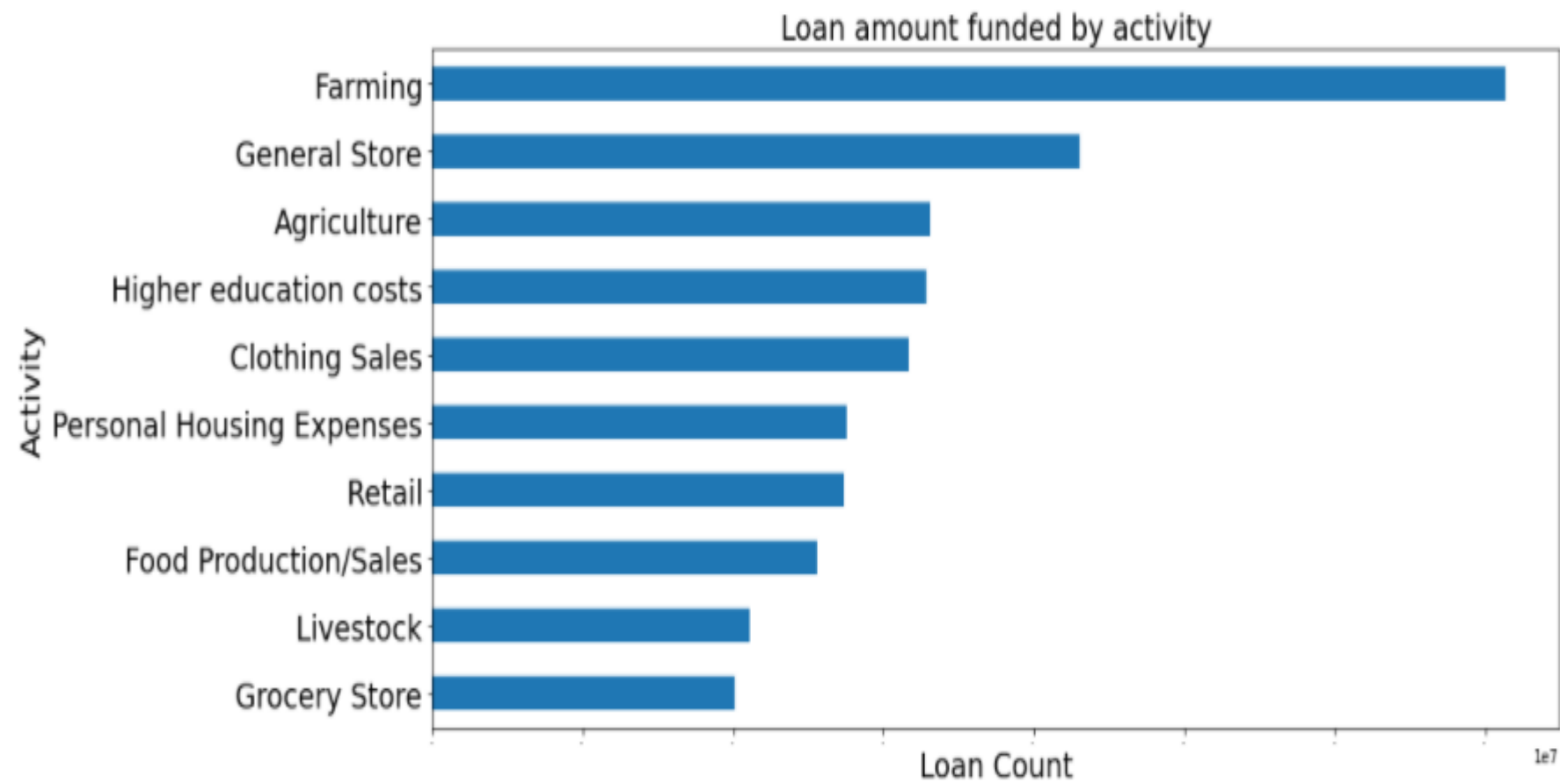
How many loans were funded Sector Wise? Was there any impact of gender on this distribution?



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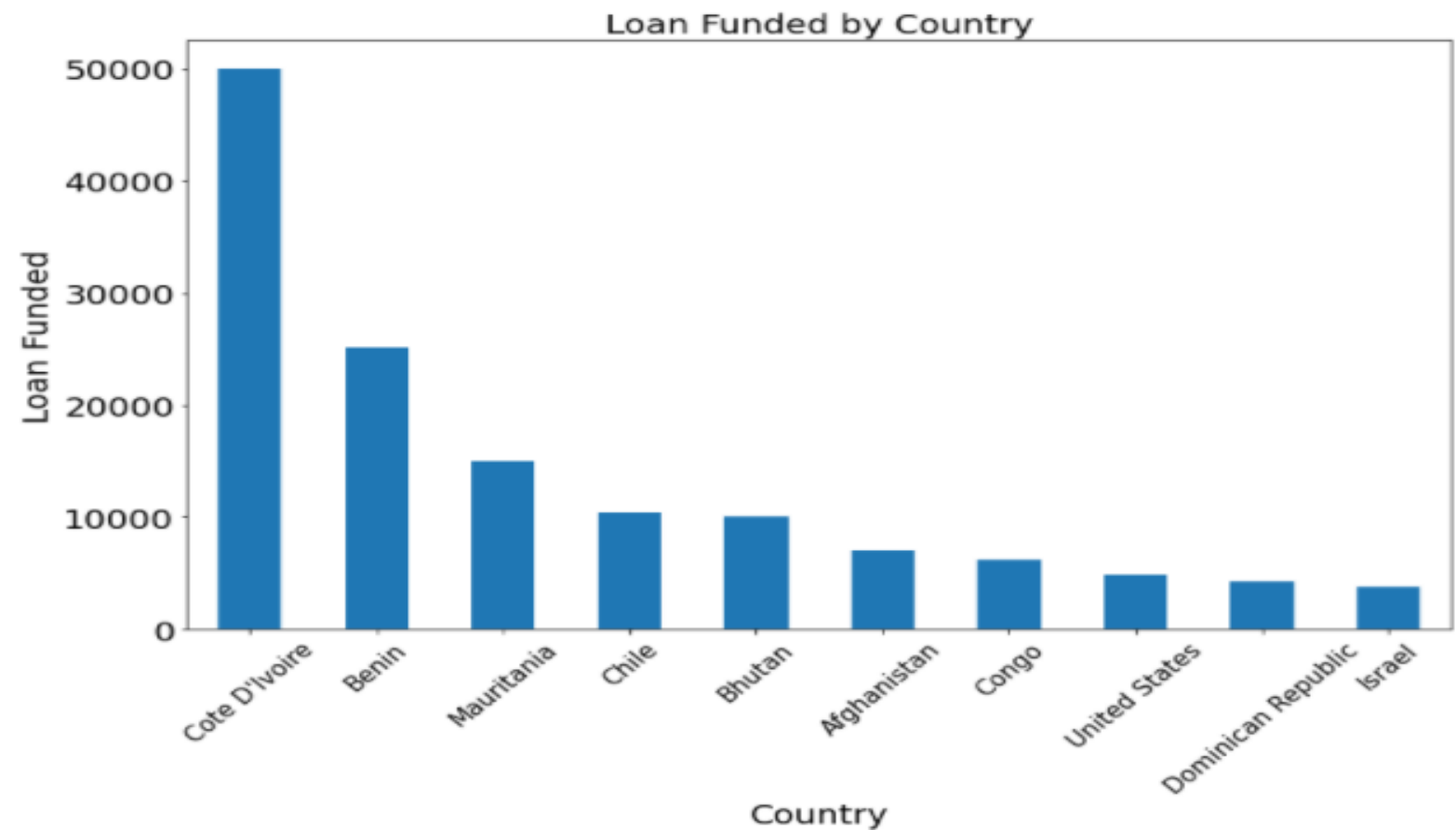
Sector Wise chart also indicates that Maximum loan is funded to Female.

What are top activities for which Kiva loans were funded?



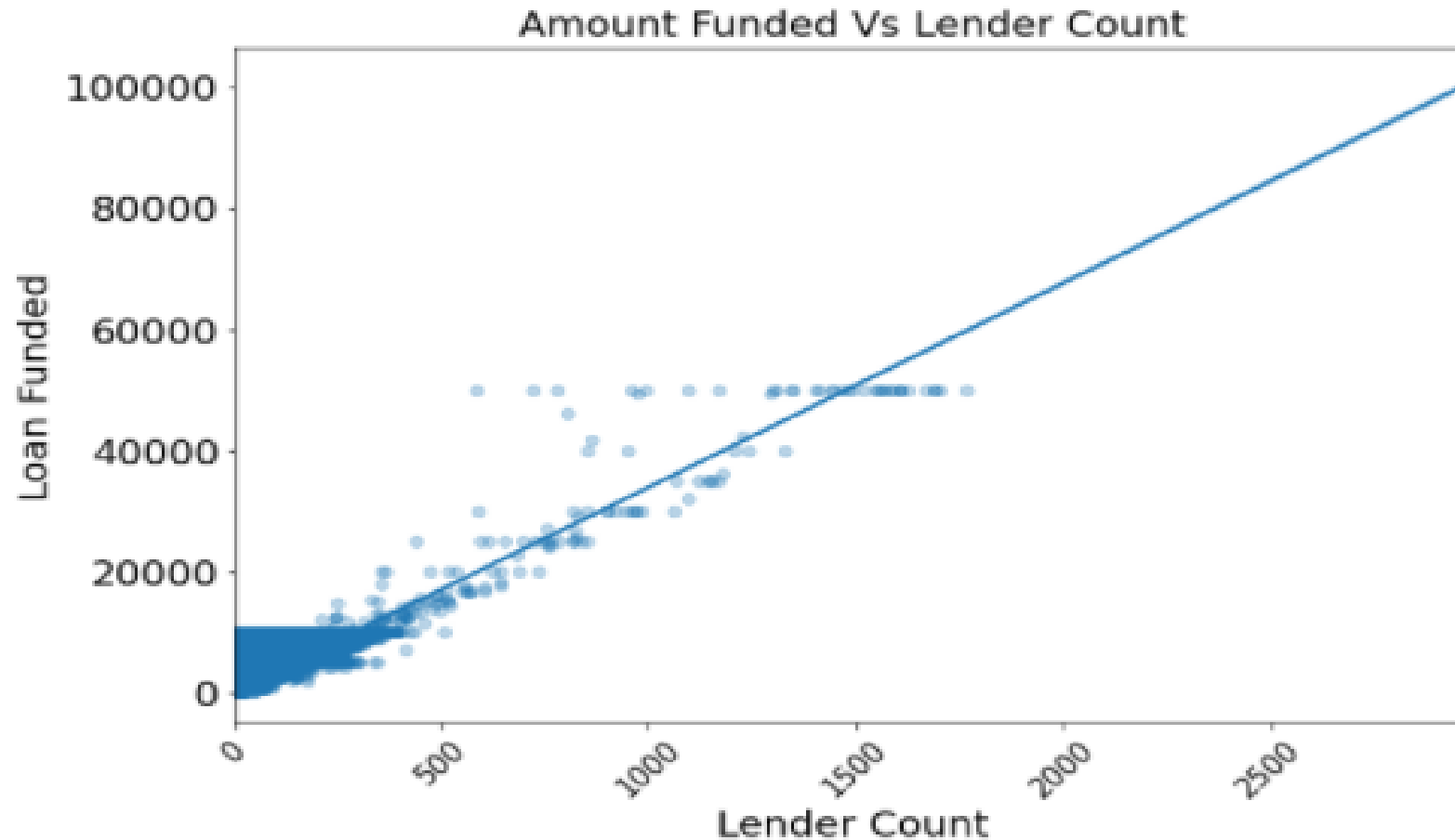
Farming, General Store, Agriculture, Food Production/Sales, Retail, Clothing Sales, Personal Housing Expenses, Higher education costs, Grocery Store, Livestock Are top are top activities for which Kiva loans were funded

Which are the top countries who funded maximum loan amount in Kiva?



Cote D'Ivoire, Mauritania, Bhutan, Chile, Afghanistan, Congo, Puerto Rico, Dominican Republic, Namibia, United States are the top countries who funded maximum loan amount in Kiva.

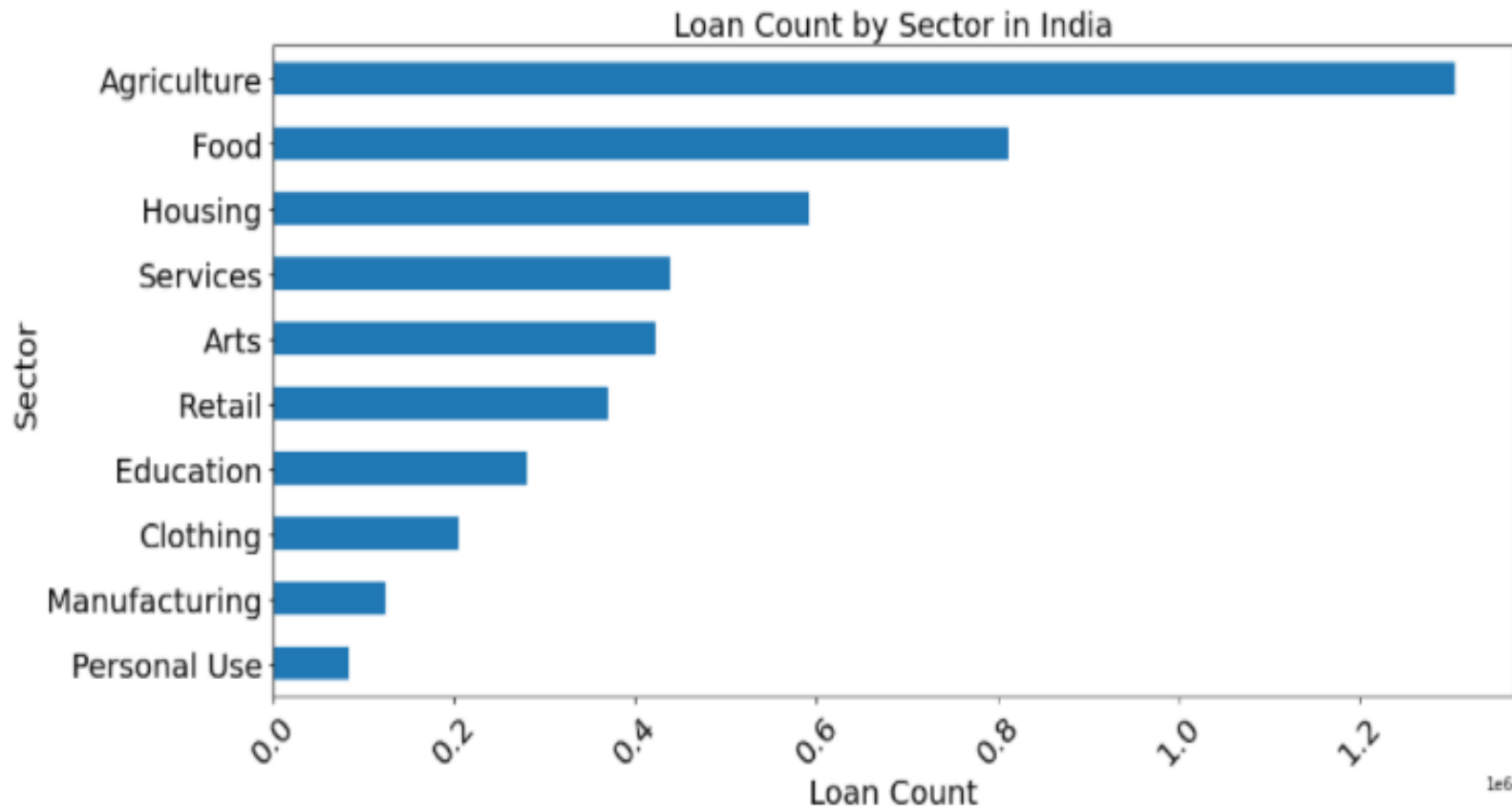
Does the count of lenders affect the loan amount funded ?



There is a positive association between **lender_count** and **funded_amount**.

We can see there is a high density in between 0-20000 Funded Amount and 0-500 Lender Count So, we can conclude from this that maximum funded amount is between 0-20000

Which are the most popular sectors in India where maximum amount of loans are taken?



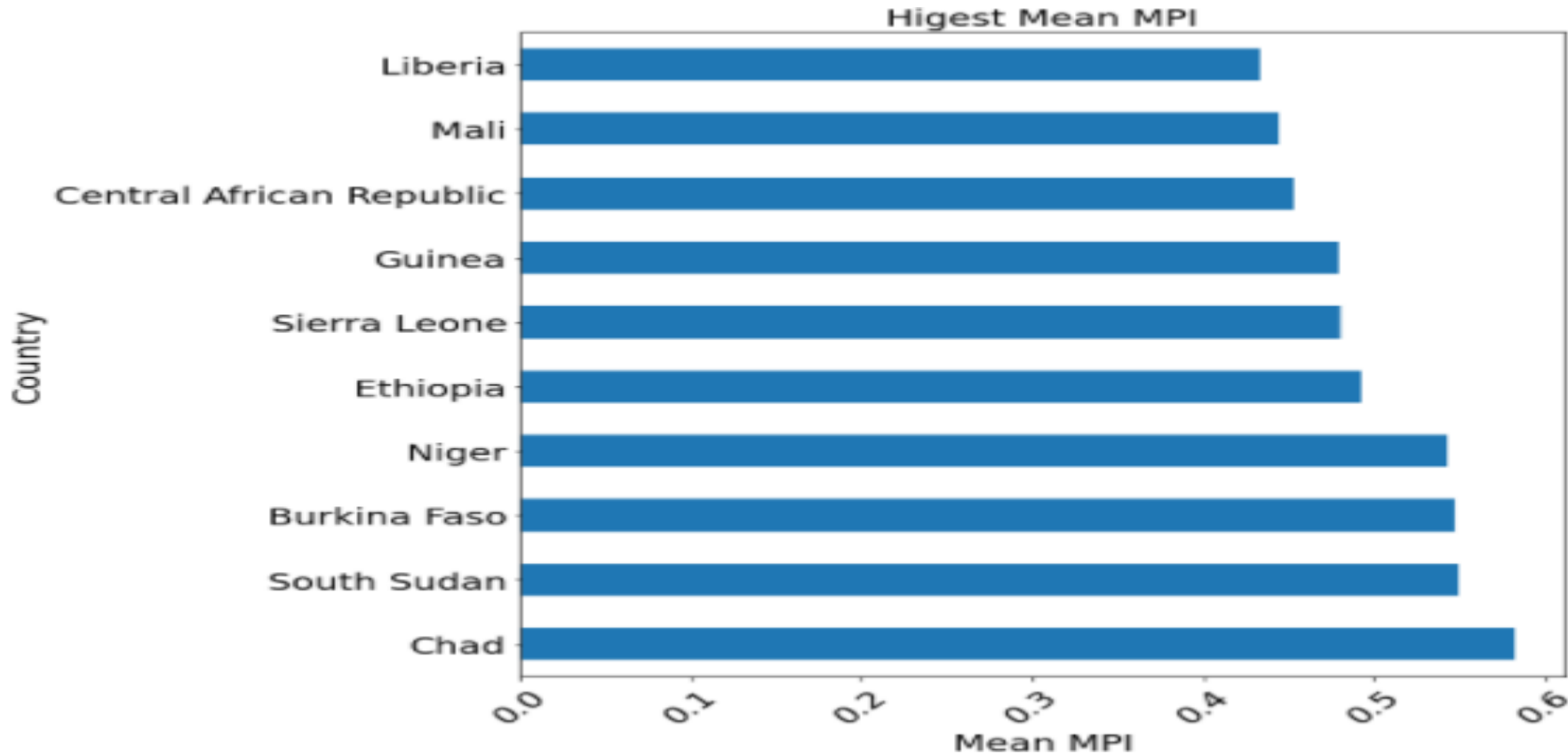
Agriculture, Food, Housing, Retail, Services, Arts, Education, Clothing, Manufacturing, Personal Use are the most popular sectors in India where maximum amount of loans are taken

Which regions in India received most number of loans?



Dhupguri, Falakata, Maynaguri, Jeypore, Khurda, Kandi, Surendranagar, Dahod, Jhabua, Jaipur are the Top regions in India received most number of loans from Kiva.

Which country is having highest mean MPI ?



The MPI refers to Global Multidimensional Poverty Index. As we can see from the above plot, **Chad** in Central Africa, **South Sudan** in North Africa, **Burkina Faso & Niger** in West Africa, **Ethiopia** in East Africa are the countries having highest MPI. So it is indicates a higher level of poverty.

Summary & Recommendations:

- Philippines & Kenya are the countries who got the maximum loans.
- The maximum loan funded are short term loans. (Between 0-24 Months)
- Agriculture, Food, Housing & Retail are the most popular sectors in which loans are taken.
- **'To buy a water filter'** & **'to build a sanitary toilet'** is the top reason for which loan is taken
- Maximum loan is funded to the **Females**.
- **Cote D'Ivoire & Mauritania** are the countries who funded maximum amount.
- **Chad** Country in Central Africa is having Highest MPI and we have conclude that the higher level of poverty is belongs to Africa Continent.

Thank You!
END!