Loans Data Analysis Report

by

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Overview

This report is based on the analysis on different loans borrowed by various customers from different states across the country. Analysis was also done on follow up calls to the customers related to loans borrowed. Various areas are addressed in the following sections like type of customer base across different states, distribution of loans borrowed across different amounts etc. along with a few visualizations. *Few additional insights are also provided at the end of analysis section.*

Data

Analysis was done on two data sets, Portfolio Data and Communication Data. They contain information regarding the loans taken that are to be cleared between 31-10-2022 to 29-11-2022.

Portfolio Data consists of loan ID (or customer ID), state from which they borrowed the loan, their date of birth ['timestamp' without timezone], due date by which they must clear the loan ['date' data type] and finally the loan amount borrowed.

Communications Data consists of loan ID (or customer ID), campaign ID that got in touch with the customer, operator message ID, time and date of call ['timestamp' with timezone] and finally whether the call is completed or failed.

This data was imported into PostgreSQL server and all queries are executed in PgAdmin. Visualizations are plotted using various libraries in Python.

Analysis

Distribution of customers across different states

We can see a high number of loan borrowers from the state of Maharashtra with a count of **2547 customers**, followed by Karnataka with a count of **1892 customers**, followed by Tamilnadu with a count of **1471 customers** [Refer Fig 1].

Mizoram have the least customer base with a count of one loan followed by Andaman and Nicobar, Dadra Nagar Haveli [Refer Fig 1].

Mumbai and Bangalore are two major cities of India in Maharashtra and Karnataka respectively. These two cities see a huge number of businesses and startups which require loans to grow their business. This might be one of the reasons why there is a huge customer base in these two states.
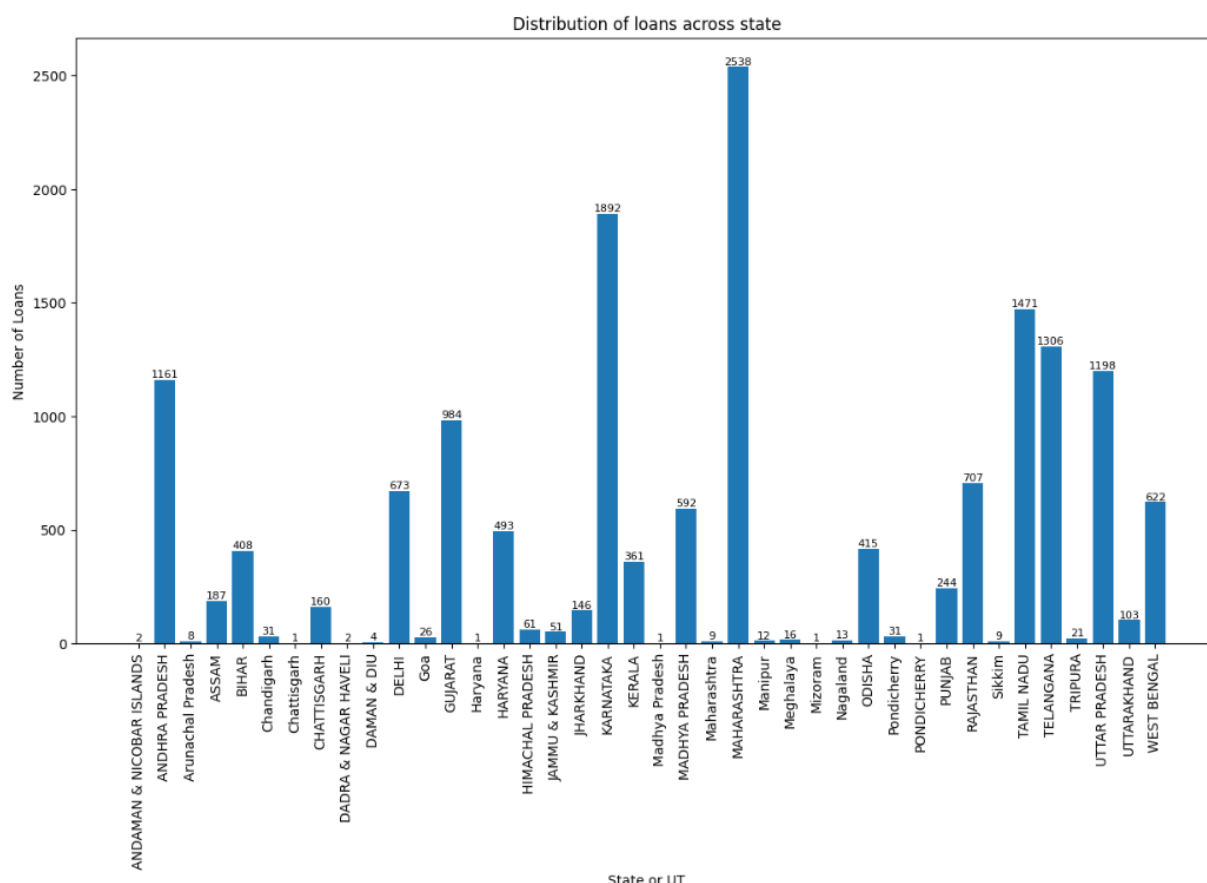

Fig 1 Distribution of loans across various states

Distribution of loans across different amounts

Table 1 shows the distribution of number of loans borrowed in all states across different loan amount ranges.

As shown in Fig 2, about **99.4%** (15872) of the customers borrow a loan of amount in the range Rs 0 - Rs 49999 and only 0.6% of the customers take a loan of more than Rs 50000.

loan_range	no_of_loans
0-49999	15872
50000-99999	87
100000-149999	2

150000-199999	0
200000-249999	1
250000 or more	0

Table 1 Number of loans across different loan amounts
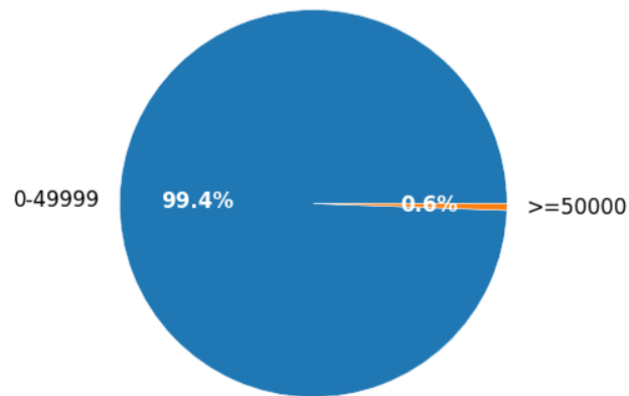
Distribution of loans across amounts

Fig 2 Distribution of loans across amounts

Distribution of customers by age

About **60.71%** of the customers who take loans are between the ages of **19-29** followed by **37.65%** of the customers of age **30-49**.
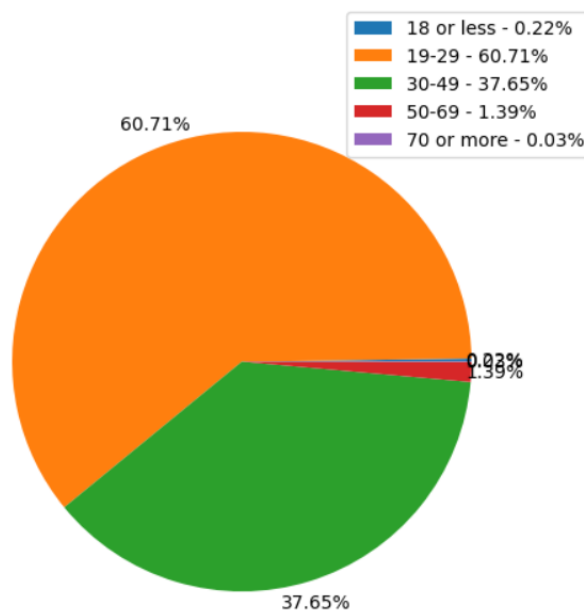
Distribution of customers by age

Fig 3 Distribution of customers by various age groups

age_range	no_of_customers
18 or less	35
19-29	9691
30-49	6010
50-69	222
70 or more	4

Table 2 Number of customers across various age groups

Distribution of loans by due dates

Fig 4 shows bar plot of the number of loans that have to cleared within the specified due date range.

The due dates are between 5th Nov 2022 to 29th Nov 2022.

We can see about **4200** loans that have to be cleared by 5th Nov 2022. In the due date range of 24th Nov 2022 – 29th Nov 2022, comparatively less number of loans of about **1485** have to cleared.
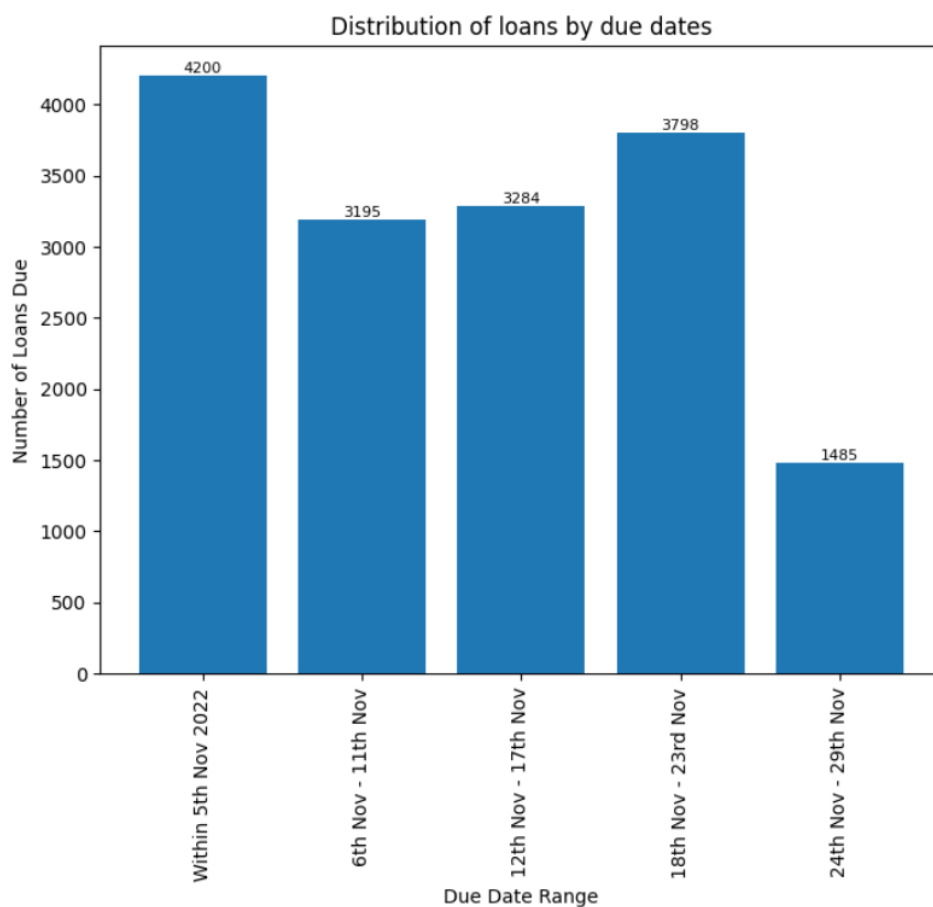

Fig 4 Number of loans due across various due date ranges

Unique number of customers contacted each day – Completed calls

Customers were contacted in between the dates 02-12-2022 to 08-12-2022.

About **7843** unique number of customers were contacted successfully on 02-12-2022. The trend kept on decreasing until 08-12-2022, except on 05-12-2022 where there is a slight increase of about 6287 customers from 6102 customers on 04-12-2022. On 08-12-2022, only about 4 people were contacted successfully.
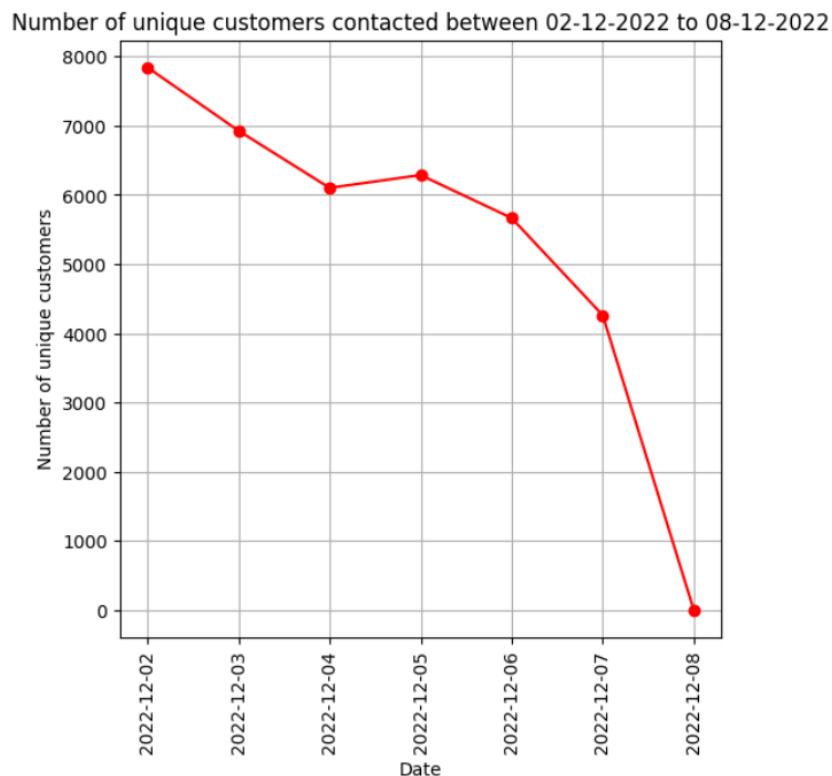
Fig 5 below shows the line chart for the same.

Number of unique customers contacted between 02-12-2022 to 08-12-2022

Fig 5 Line chart for unique customers contacted between 02/12/22 to 02/12/22

day	unq_customers
02-12-2022	7843
03-12-2022	6928
04-12-2022	6102
05-12-2022	6287
06-12-2022	5666
07-12-2022	4262
08-12-2022	4

Table 3 Unique borrowers contacted each day

Number of customers not contacted – Failed calls

Only about a total of 18 unique customers were failed to contact. This number is very low compared to the high unique customer count successfully contacted. Refer Fig 6.
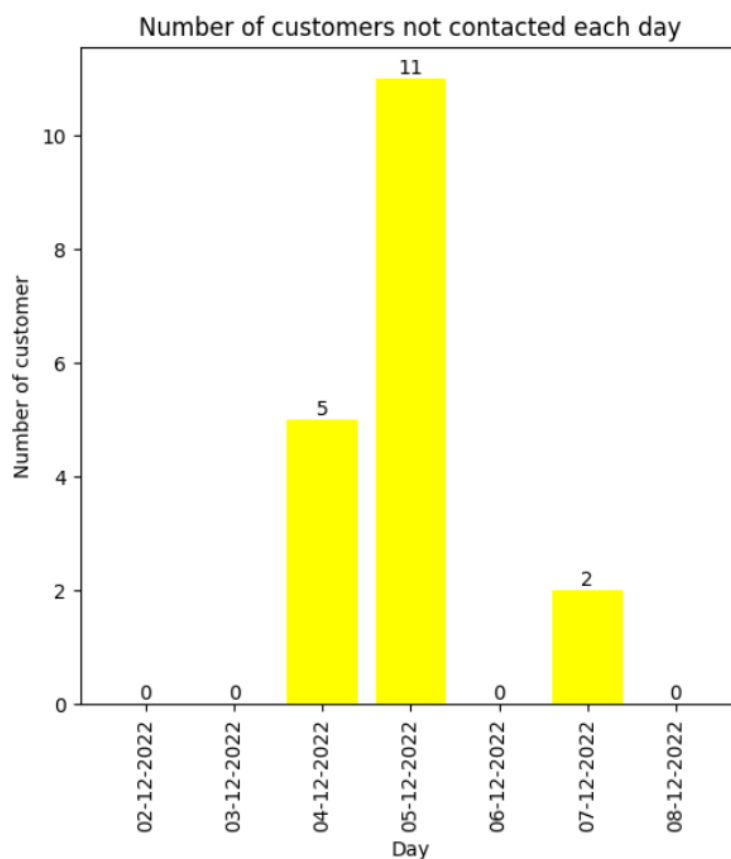

Fig 6 Number of unique customers not contacted or failed each day

Customers who have been contacted the most

The customer with loan ID 1659081, has been contacted the most of about 38 times. The top 10 customers who have been contacted the most can be clearly seen in the charts (Fig 7) and table (Table 4) below.

loan_num	no_of_calls
1659081	38
1580447	30
1564892	28
1542440	28
1817574	27
1759399	27

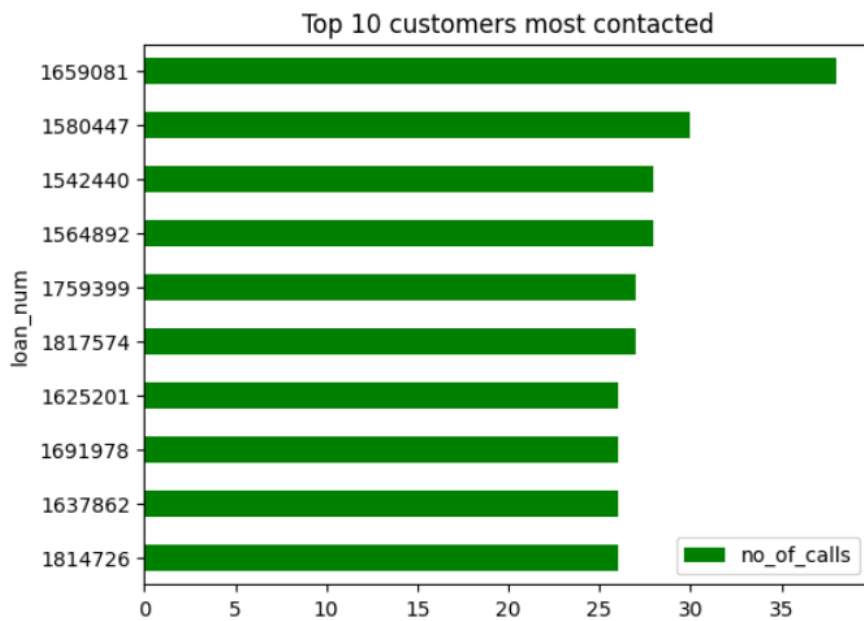|	
1814726	26
1637862	26
1691978	26
1625201	26

Table 4 Top 10 customers most contacted

Fig 7 Horizontal bar chart for top 10 most contacted customers

Customers who have been contacted the least

About **52.9%** (5933) of customers have been contacted less than 5 times and about **47.1%** (5287) of customers have been contacted more than 5 times. As shown in Table 5, about **1858** customers are contacted only one time.

no_of_calls	num_of_customers
contacted 1 times	1858
contacted 2 times	1449
contacted 3 times	1011
contacted 4 times	898
contacted 5 times	717

Table 5 Number of customers that are contacted <5 times
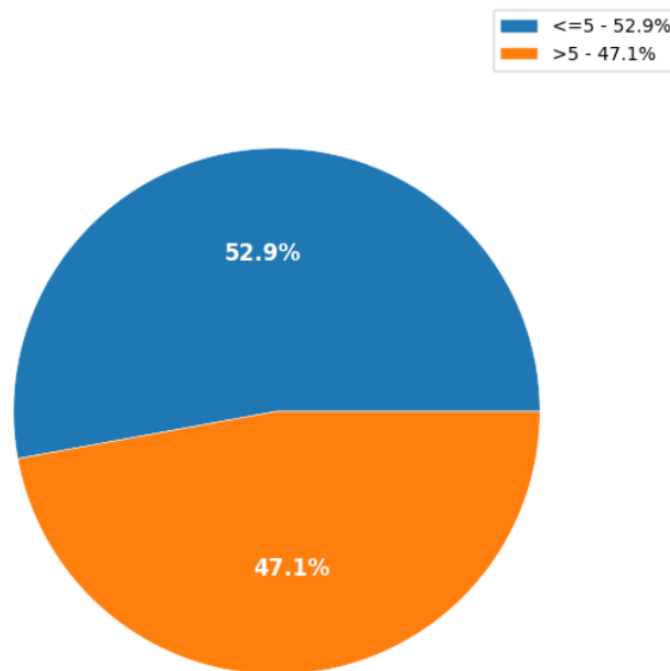
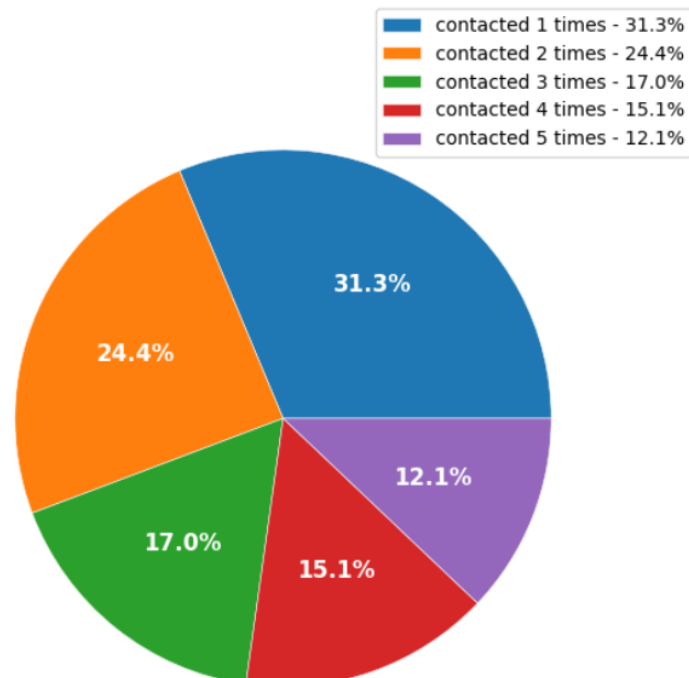**Fig 8** Pie chart indicating customer percentage that are contacted <5 times

Fig 9 Distribution of customers who are contacted the least

(among customer percentage that are contacted <5 times)

loan_num	no_of_calls
1657269	1
1573047	1
1515982	1
1786098	1
1475935	1

Table 6 Five customers (loan IDs) among 1858 who are contacted only once

Number of customers that have never been reached out

About **29.8%** (4752) of customers have never been contacted at all. A total of **70.2%** (11210) of customer**s** have been contacted at least once.

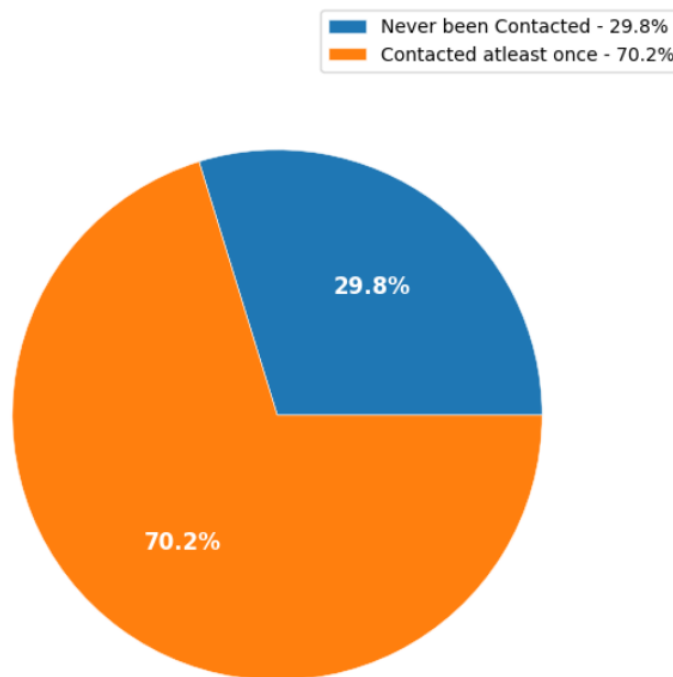**Fig 10** Percentage of customers who have never been contacted at least once

Loan Number	Due Date	State	DOB	Loan Amount
902041	29-11-2022	GUJARAT	21-08-1988 00:00	80000
905612	29-11-2022	MAHARASHTRA	09-07-1990 00:00	75000
1004356	31-10-2022	MAHARASHTRA	23-05-1994 00:00	56000
1004626	01-11-2022	KERALA	14-07-1995 00:00	63000

Table 7 List of details of few customers (among 4752) who have never been contacted

Distribution of calls by state

We can see a high number of calls from the state of Maharashtra with a count of 1751 calls followed by Karnataka with a count of 1332 calls [Refer Fig 11] followed by Tamilnadu. Its not surprising that these two states have the highest number of calls because of highest number of loan borrowers. The distribution can be clearly seen in the bar chart below.
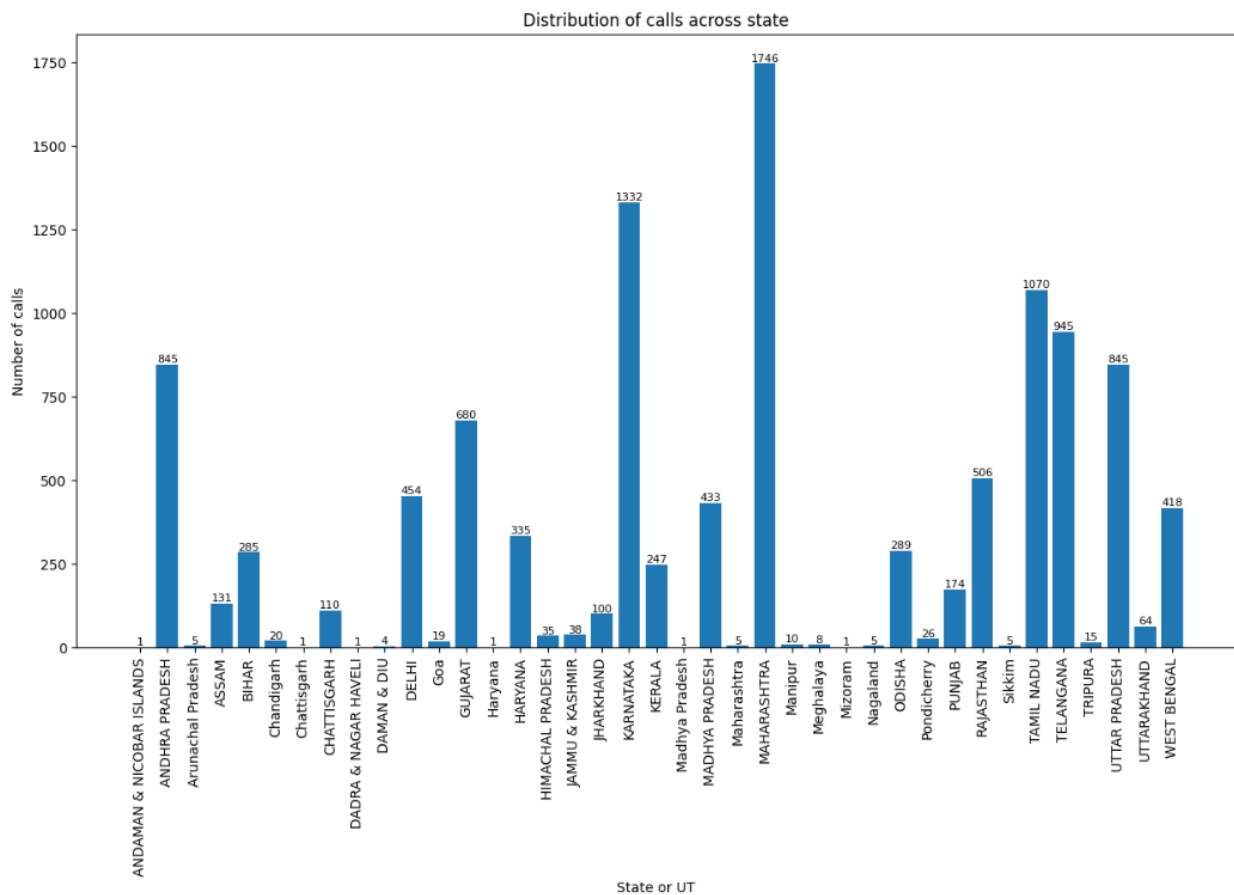

Fig 11 Distribution of calls across all states

Distribution of calls by campaign IDs

Most calls were made by the campaign ID 164168595 with a call count of 6905 calls. This is followed by campaign ID 164661895 with a call count of 6413 calls. The least calls were made by campaign ID 135474249 with only one call.

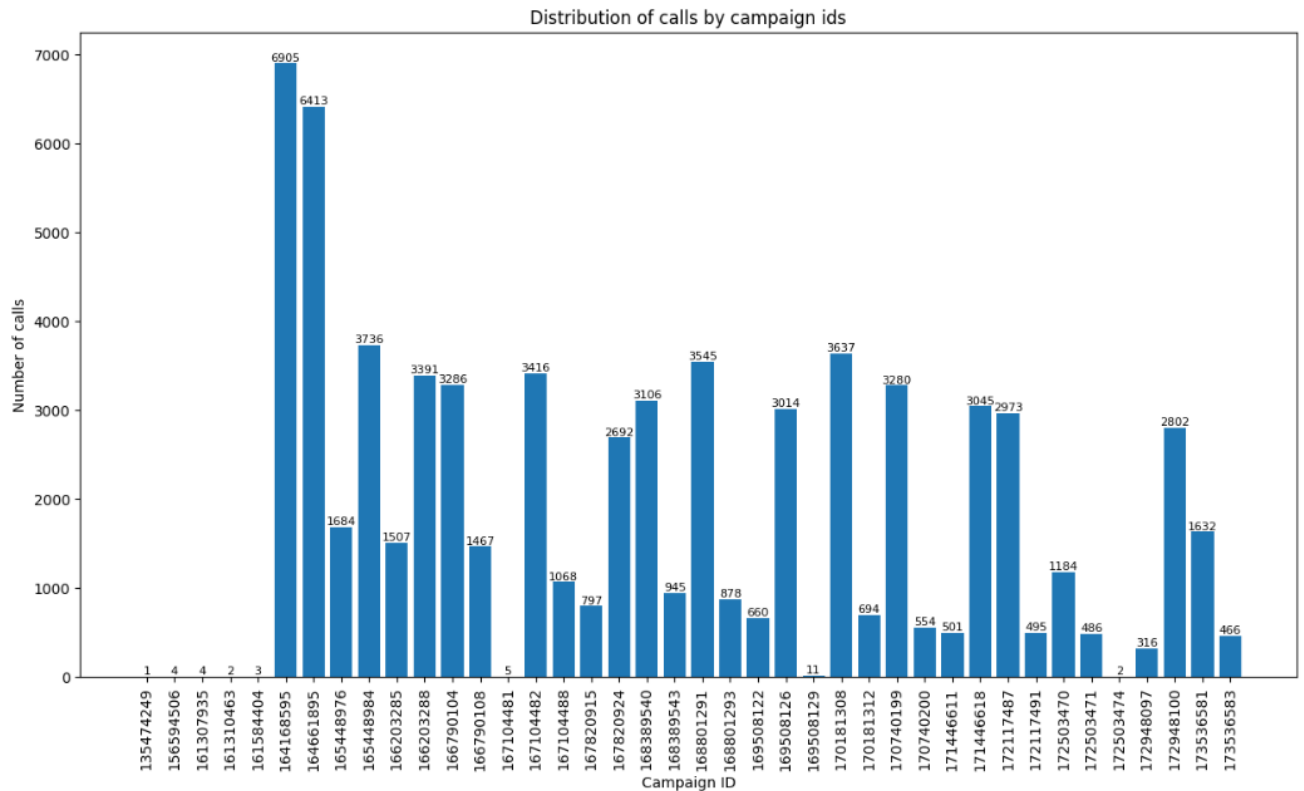The call distribution across all campaigns are shown in the bar graph below Fig 12.

Fig 12 Distribution of calls by campaign IDs

Unique number of customers contacted by campaign ID

About **6306** unique customers were contacted by the campaign ID **164168595**, followed by campaign ID **164661895** a unique customer count of **5833**.
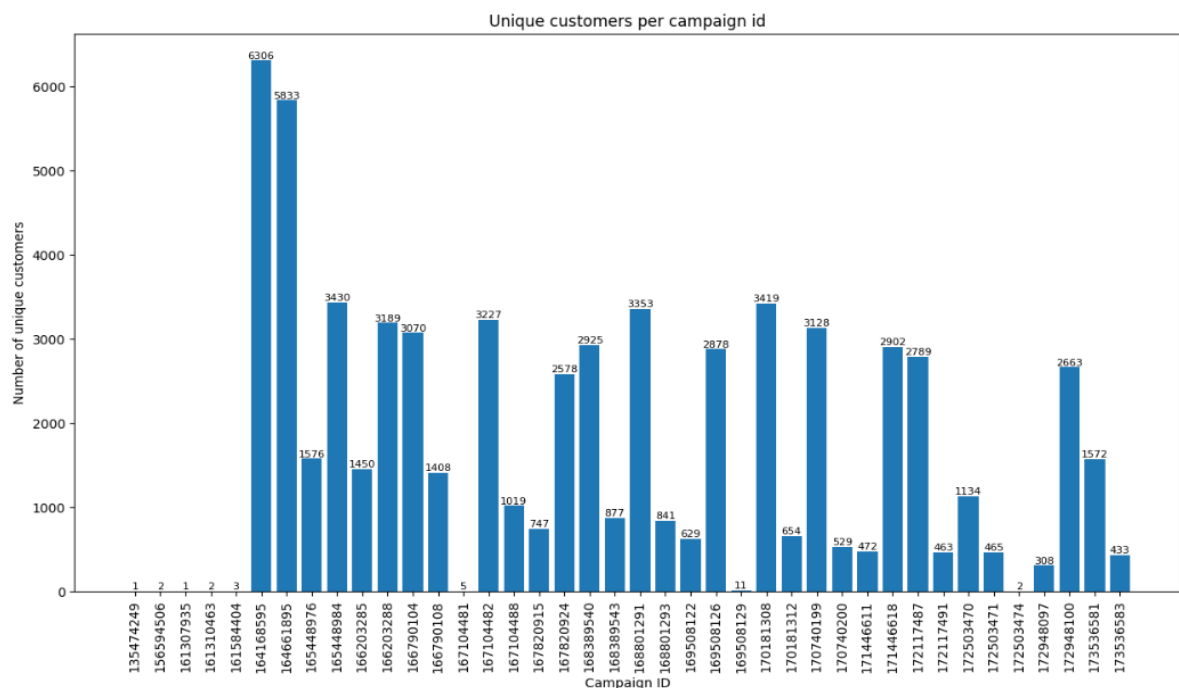

Fig 13 Unique number of customers by campaign ID

Insights on the top 3 highest customer count states

[Maharashtra, Karnataka, Tamilnadu]

From Fig 1, Distribution of calls across different states, the states of Maharashtra, Karnataka and Tamilnadu have the highest customer base among all the states across the country. A few insights can be drawn regarding these 3 states which were presented below.

Distribution of customers across various age groups in these 3 states

Maharashtra :

Among the **2538** customers from Maharashtra, about **56.69%** (1444) of customers are of age group 19-29 followed by **41.93%** (1068) of customers belong to age group 30-49.

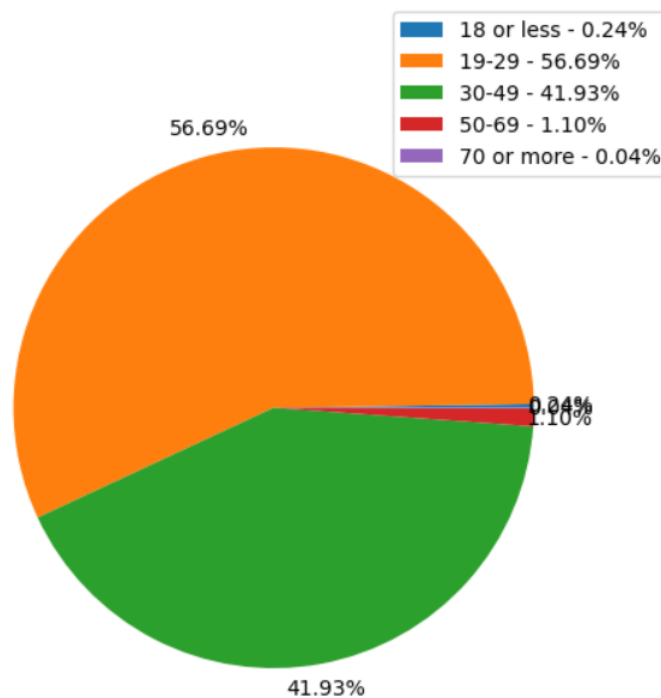Distribution of customers in Maharashtra across various age groups

- 18 or less - 0.24%
- 19-29 - 56.69%
- 30-49 - 41.93%
- 50-69 - 1.10%
- 70 or more - 0.04%

Fig 14 Pie chart representing percentage of different age groups who took loan in the state of Maharashtra

state	age_range	no_of_customers
MAHARASHTRA	18 or less	6
MAHARASHTRA	19-29	1444
MAHARASHTRA	30-49	1068
MAHARASHTRA	50-69	28
MAHARASHTRA	70 or more	1

Table 8 Number of customers of different age groups in Maharashtra

Karnataka :

Among the **1892** customers from Karnataka, about **65.17%** (1233) of customers are of age group 19-29 followed by **33.46%** (633) of customers belong to age group 30-49.

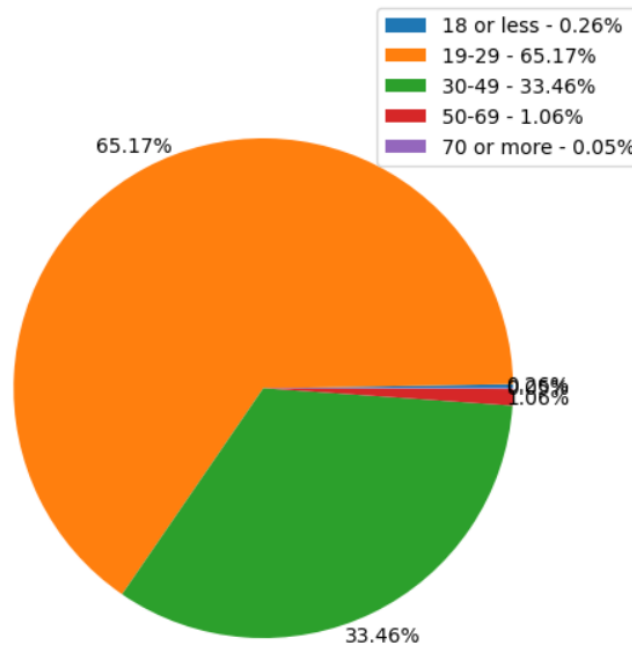Distribution of customers in Karnataka across various age groups

Legend:
- 18 or less - 0.26%
- 19-29 - 65.17%
- 30-49 - 33.46%
- 50-69 - 1.06%
- 70 or more - 0.05%

65.17%

33.46%

0.05%
1.06%

Fig 15 Pie chart representing percentage of different age groups who took loan in the state of Karnataka

state	age_range	no_of_customers
KARNATAKA	18 or less	5
KARNATAKA	19-29	1233
KARNATAKA	30-49	633
KARNATAKA	50-69	20
KARNATAKA	70 or more	1

Table 9 Number of customers of different age groups in Karnataka

Tamil Nadu :

Among the **1471** customers from Tamil Nadu, about **57.38%** (844) of customers are of age group 19-29 followed by **40.92%** (602) of customers belong to age group 30-49.

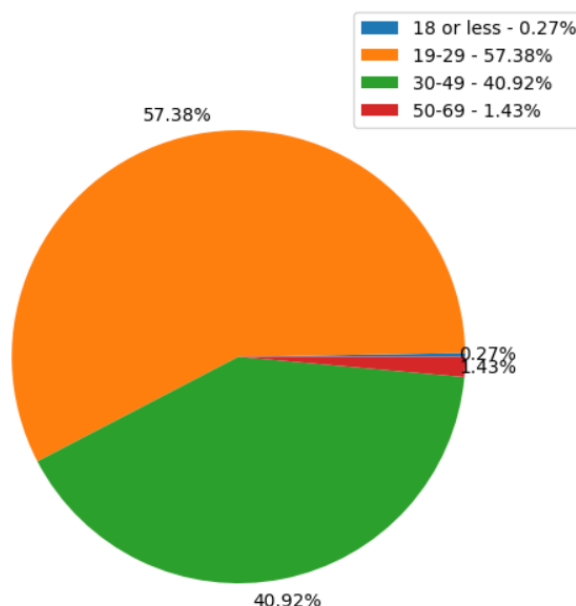Distribution of customers in Tamil Nadu across various age groups

18 or less - 0.27%
19-29 - 57.38%
30-49 - 40.92%
50-69 - 1.43%

57.38%

0.27%
1.43%

40.92%

Fig 15 Pie chart representing percentage of different age groups who took loan in the state of Tamil Nadu

state	age_range	no_of_customers
TAMIL NADU	18 or less	4
TAMIL NADU	19-29	844
TAMIL NADU	30-49	602
TAMIL NADU	50-69	21

Table 10 Number of customers of different age groups in Tamil Nadu

Distribution of loan amounts across various age groups in these 3 states

In Maharashtra, about **1439 and 1059 customers** of age group 19-29 and 30-49 respectively, borrowed a loan in between amounts Rs 0 – Rs 49999 [Ref Fig 16]. In Karnataka, about **1232 and 630 customers** of age group 19-29 and 30-49 respectively, borrowed a loan in between amounts Rs 0 – Rs 49999 [Ref Fig 17]. In Tamil Nadu, about **842 and 598 customers** of age group 19-29 and 30-49 respectively, borrowed a loan in between amounts Rs 0 – Rs 49999 [Ref Fig 18].

We can see a huge number of loans were borrowed with amounts ranging from Rs 0 to Rs 49999 by customers of age group belonging to 19-29 and 30-49 in all three states.
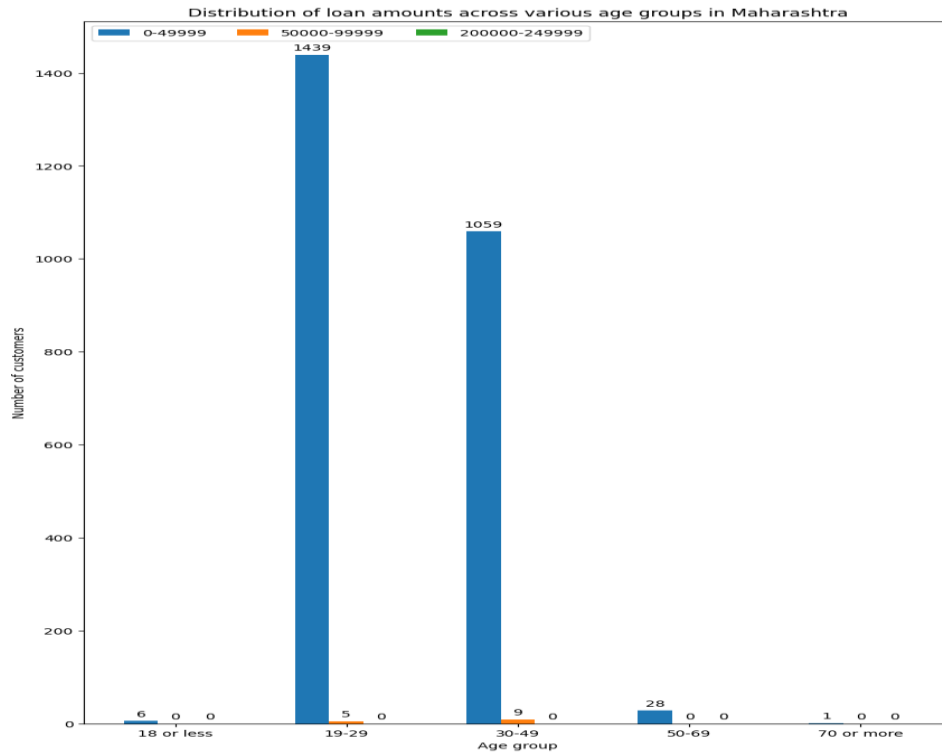
Fig 16 Grouped bar chart showing distribution of loan amounts across
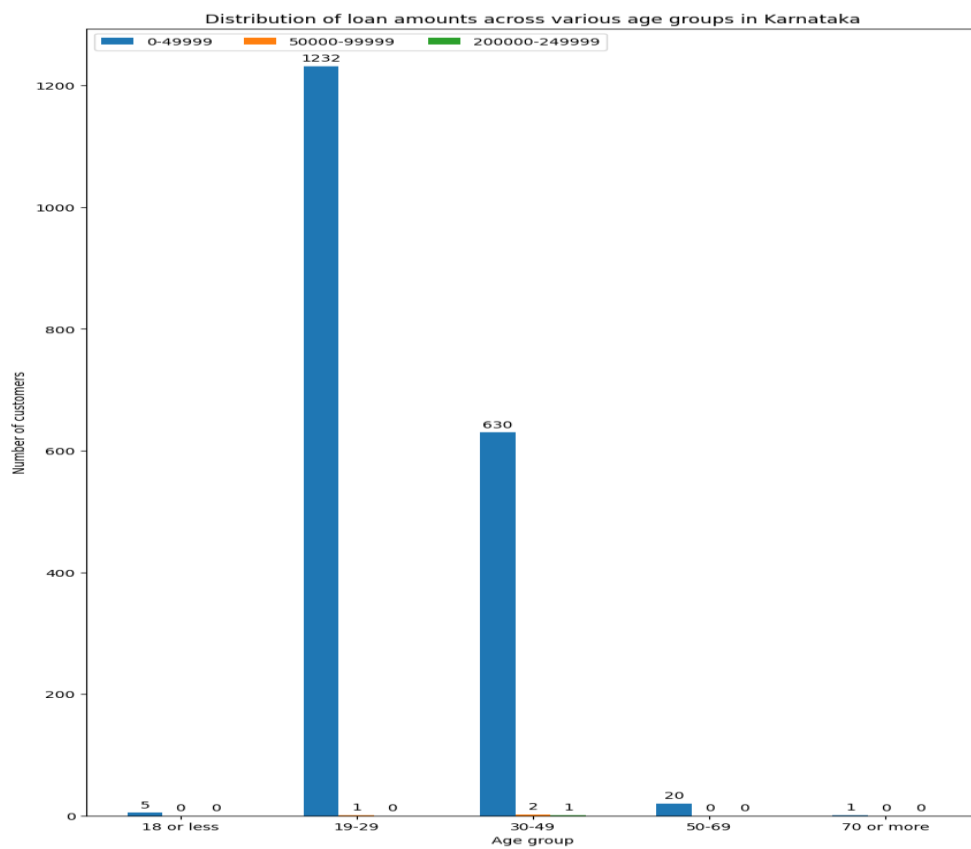
various age groups in Maharashtra

Fig 17 Grouped bar chart showing distribution of loan amounts across
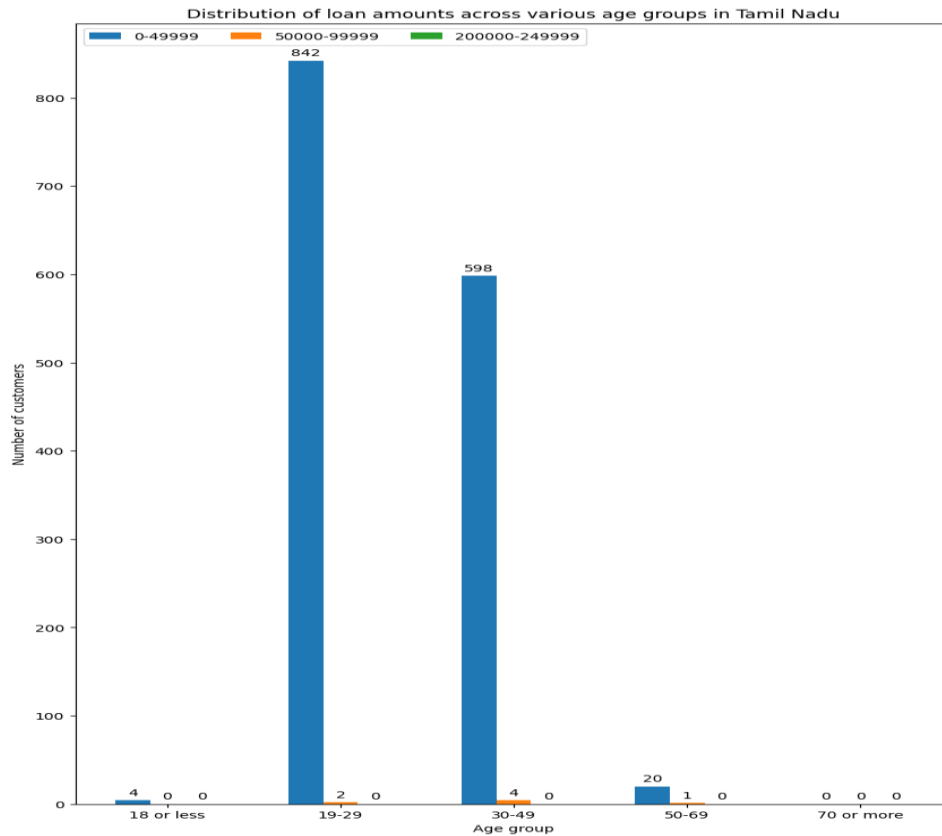
various age groups in Karnataka

Fig 18 Grouped bar chart showing distribution of loan amounts across various age groups in Tamil Nadu

Customers were generally contacted after the due dates, maybe as a reminder call that the due date is over or may be marketing/promotional calls. Calls were made between the dates 02-12-2022 to 08-12-2022.

As shown in Fig 11, about 1751 unique customers from Maharashtra, 1332 customers from Karnataka and 1070 customers from Tamil Nadu were contacted (status: completed or failed) during the afore mentioned period.

Table 11 below shows the number of customers who have never been reached out in each of the three states. This might mean that these customers paid their loans on time.

state	num_customers
MAHARASHTRA	796
KARNATAKA	560
TAMIL NADU	401

Table 11 Number of customers who have never been contacted

Across all the states, about **10 customers**, whose information is unknown (might be missing from the portfolio data) have been contacted. Refer Table 12.

loan_id	no_of_calls_made
989341	1
1646538	1
16748071234	1
1531307	2
16734601234	1
1631580	4
16100491234	1
1553632	1
1529066	3
1690791	1

Table 12 Unknown customers who have been contacted