

Project Title: Bank Loan Performance Analysis

Problem Statement:

In today's data-driven world, understanding how borrower details and loan characteristics impact loan performance is very important for banking institutions. This project seeks to delve deep into a lending loan dataset to uncover the relationship between borrower behavior (such as employment length, income, and debt-to-income ratio) and loan characteristics (including amount, term, and interest rate) to unearth critical insights into loan performance metrics. By examining patterns in loan statuses such as fully paid, charged off, or late payments, this analysis aims to empower banking institutions with actionable insights to optimize loan lending strategies, mitigate credit risk, and enhance overall portfolio performance.

Dataset Download:

<https://drive.google.com/uc?export=download&id=1yNL9gfv-DID3cEW9o2GJvtJ9Bzbm37R7>

The dataset "bank loan.xlsx" contains two sheets:

1. **LoanDetails:** This sheet contains information about each loan.
2. **BorrowerDetails:** This sheet provides details about the borrowers.

Data Dictionary:

Table Name Field Name Description

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Data Dictionary:

Table Name	Field Name	Description
LoanDetails	id	Unique identifier for each loan.
	loan_amnt	The amount of money requested by the borrower.
	funded_amnt	The actual amount of money funded for the loan.
	term	The duration of the loan in months.
	int_rate	The interest rate of the loan.
	installment	The monthly payment owed by the borrower.
	grade	The loan grade assigned by the lending company.
	sub_grade	The loan subgrade assigned by the lending company.
	issue_d	The month in which the loan was funded.
	purpose	The reason provided by the borrower for the loan.

	id	Unique identifier for each loan.
BorrowerDetails	member_id	Unique identifier for each borrower.
	emp_length	Employment length in years.
	home_ownership	The status of home ownership reported by the borrower.
	annual_inc	The annual income reported by the borrower.
	verification_status	Indicates if the borrower's income was verified.
	dti	The debt-to-income ratio of the borrower.
	delinq_2yrs	The number of past-due incidences in the borrower's credit file.
	last_pymnt_d	The month of the last payment received.
	total_pymnt	The total amount received in payments.
	out_prncp	The remaining outstanding principal amount of the loan.

Project Steps and Objectives:

1) Importing Data

➤ Import the "LoanDetails" and "BorrowerDetails" sheets from the "bank loan.xlsx"

file into Power BI.

➤ Replace missing values (null) in the 'emp_length' column of the "BorrowerDetails" table with '0 year'.

powerpi capstone projects 1

File **Home** Transform Add Column View Tools Help

Close & Apply New Recent Enter Data source settings Parameters Refresh Advanced Editor Properties Choose Remove Columns Columns Keep Remove Rows Rows Split Column Group By Replace Values Data Type: Text Use First Row as Headers Append Queries Text Analytics Vision Close New Query Data Sources Parameters Query Manage Columns Reduce Rows Sort Transform Combine Files Azure Machine Learning AI Insights

Queries [2]

= Table.SelectRows("#Replaced Value", each ([emp_length] = "0 years"))

	member_id	loan_id	emp_length	home_ownership	annual_inc	verification_status	dti
1	1302032	1067644	0 years	OWN		12000	Source Verified
2	1290516	1058717	0 years	MORTGAGE		60000	Verified
3	1298394	1064582	0 years	RENT		24000	Source Verified
4	1298164	1064366	0 years	RENT		18408	Not Verified
5	1296491	1063312	0 years	MORTGAGE		31500	Verified
6	1295380	1062897	0 years	MORTGAGE		37800	Not Verified
7	1294654	1062781	0 years	MORTGAGE		70000	Source Verified
8	1294602	1062535	0 years	MORTGAGE		42000	Not Verified
9	1266720	1036838	0 years	MORTGAGE		32000	Verified
10	1292992	1061194	0 years	OWN		41100	Not Verified
11	1292813	1060848	0 years	MORTGAGE		46212	Verified
12	1292242	1060485	0 years	MORTGAGE		45696	Verified
13	1290942	1059128	0 years	MORTGAGE		25000	Not Verified
14	1287582	1056011	0 years	MORTGAGE		17352	Verified
15	1282516	1051228	0 years	OWN		34848	Verified
16	1246619	1018385	0 years	MORTGAGE		24000	Verified
17	1289493	1057726	0 years	RENT		60000	Verified
18	1288882	1057318	0 years	RENT		35000	Not Verified
19	1146931	926180	0 years	OWN		40000	Source Verified
20	1287654	1056081	0 years	OWN		57000	Source Verified
21	1287282	1055716	0 years	RENT		27050	Source Verified
22	1287125	1055566	0 years	RENT		84855	Verified
23	1286548	1054695	0 years	MORTGAGE		100000	Source Verified
24	1286863	1055300	0 years	OWN		25000	Not Verified
25	1286778	1055222	0 years	MORTGAGE		48000	Not Verified
26	1286555	1054702	0 years	RENT		40800	Verified
27	1285571	1053966	0 years	RENT		30000	Not Verified
28							

11 COLUMNS, 199+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 12:33

Breaking news Vinesh Phogat R...

Search

16:28 06-09-2024 ENG IN

➤ Remove rows with missing values in the 'last_pymnt_d' columns.

The screenshot shows the Power BI Desktop interface with the following details:

- File**: Home, Transform, Add Column, View, Tools, Help
- Transform ribbon tools**: Close & Apply, New, Recent, Enter Data, Data source settings, Manage Parameters, Refresh, Advanced Editor, Properties, Choose Columns, Remove Columns, Keep Rows, Remove Rows, Split Column, Group By, Replace Values, Data Type: Date, Use First Row as Headers, Merge Queries, Append Queries, Combine Files, Text Analytics, Vision, Azure Machine Learning, Close, New Query, Data Sources, Parameters, Query, Manage Columns, Reduce Rows, Sort, Transform, Combine, AI Insights.
- Queries [2]**: LoanDetails, BorrowerDetails
- BorrowerDetails table preview**:

	verification_status	1.2 dti	1.2 delinq_2yrs	last_pymnt_d	1.2 total_pymnt	1.2 out_prncp
1	24000 Verified	27.65	0	01-01-2015	5861.071414	
2	30000 Source Verified	1	0	01-04-2020	1008.71	
3	12252 Not Verified	8.72	0	01-06-2021	3003.653644	
4	49200 Source Verified	20	0	01-01-2015	12226.30221	
5	80000 Source Verified	17.94	0	01-01-2016	3242.17	76
6	36000 Source Verified	11.2	0	01-01-2015	5631.377753	
7	47004 Not Verified	23.51	0	01-01-2016	8136.84	1889
8	48000 Source Verified	5.35	0	01-01-2015	3938.144334	
9	40000 Source Verified	5.55	0	01-04-2019	646.02	
10	15000 Verified	18.08	0	01-11-2019	1476.19	
11	72000 Not Verified	16.12	0	01-06-2020	7677.52	
12	75000 Source Verified	10.78	0	01-09-2020	13943.08	
13	30000 Source Verified	10.08	0	01-07-2019	2270.7	
14	15000 Source Verified	12.56	0	01-01-2015	3478.381915	
15	100000 Source Verified	7.06	0	01-10-2020	7471.99	
16	28000 Not Verified	20.31	0	01-01-2015	1270.171106	
17	42000 Not Verified	18.6	0	01-01-2015	12519.26045	
18	110000 Not Verified	10.52	0	01-05-2020	3785.02	
19	84000 Verified	18.44	2	01-02-2015	7164.499852	
20	77385.19 Not Verified	9.86	0	01-07-2019	9459.96	
21	43370 Verified	26.53	0	01-08-2015	27663.04267	
22	105000 Verified	13.22	0	01-09-2020	14025.4	
23	50000 Source Verified	11.18	0	01-01-2015	11902.56157	
24	50000 Not Verified	16.01	0	01-10-2020	11536.31	
25	76000 Not Verified	2.4	0	01-10-2019	2050.14	
26	92000 Verified	29.44	0	01-09-2019	15823.48	
27	60000 Not Verified	15.22	0	null	0	
28						
- Query Settings**: Name: BorrowerDetails, All Properties
- Applied Steps**:
 - Source
 - Navigation
 - Promoted Headers
 - Changed Type
 - Replaced Value
 - Remove rows 1
 - Filtered Rows1 (selected)
 - Remove rows 2
 - Filtered Rows
- System status bar**: 11 COLUMNS, 999+ ROWS, Column profiling based on top 1000 rows, PREVIEW DOWNLOADED ON FRIDAY, 93°F Partly sunny, Search, Weather icon, 11:51 IN, 07-09-2024, Battery icon.

➤ Remove rows with missing values in the 'delinq_2yrs' columns.

The screenshot shows the Microsoft Power BI desktop interface. The main area displays a table titled "Table.SelectRows(#"Remove rows 2", each true)". The table has 28 rows and 6 columns. The columns are: verification_status, dti, delinq_2yrs, last_pymnt_d, total_pymnt, and out_prncp. The "delinq_2yrs" column contains numerical values ranging from 0 to 29.44. The "last_pymnt_d" column shows dates from 01-01-2015 to 01-12-2019. The "total_pymnt" and "out_prncp" columns show monetary values. The "Query Settings" pane on the right shows the query name is "BorrowerDetails". The "APPLIED STEPS" pane lists the following steps: Source, Navigation, Promoted Headers, Changed Type, Replaced Value, Remove rows 1, Filtered Rows1, Remove rows 2, and Filtered Rows. The status bar at the bottom indicates "PREVIEW DOWNLOADED ON FRIDAY".

	verification_status	dti	delinq_2yrs	last_pymnt_d	total_pymnt	out_prncp
1	24000 Verified	27.65	0	01-01-2015	5861.071414	
2	30000 Source Verified	1	0	01-04-2020	1008.71	
3	12252 Not Verified	8.72	0	01-06-2021	3003.653644	
4	49200 Source Verified	20	0	01-01-2015	12226.30221	
5	80000 Source Verified	17.94	0	01-01-2016	3242.17	76
6	360000 Source Verified	11.2	0	01-01-2015	5631.377753	
7	47004 Not Verified	23.51	0	01-01-2016	8136.84	1889
8	480000 Source Verified	5.35	0	01-01-2015	3938.144334	
9	400000 Source Verified	5.55	0	01-04-2019	646.02	
10	15000 Verified	18.08	0	01-11-2019	1476.19	
11	72000 Not Verified	16.12	0	01-06-2020	7677.52	
12	75000 Source Verified	10.78	0	01-09-2020	1343.08	
13	300000 Source Verified	10.08	0	01-07-2019	2270.7	
14	150000 Source Verified	12.56	0	01-01-2015	3478.901915	
15	1000000 Source Verified	7.06	0	01-10-2020	7471.99	
16	28000 Not Verified	20.31	0	01-01-2015	1270.71106	
17	42000 Not Verified	18.6	0	01-01-2015	12519.26045	
18	110000 Not Verified	10.52	0	01-05-2020	3785.02	
19	84000 Verified	18.44	2	01-02-2015	7164.499852	
20	77385.19 Not Verified	9.86	0	01-07-2019	9459.96	
21	43370 Verified	26.53	0	01-08-2015	27663.04267	
22	105000 Verified	13.22	0	01-09-2020	14025.4	
23	500000 Source Verified	11.18	0	01-01-2015	11902.56157	
24	50000 Not Verified	16.01	0	01-10-2020	11536.31	
25	76000 Not Verified	2.4	0	01-10-2019	2050.14	
26	92000 Verified	29.44	0	01-09-2019	15823.48	
27	50004 Not Verified	13.97	3	01-12-2019	1609.12	
28						

> Remove duplicate rows in the 'id' column of the "LoanDetails" table.

The screenshot shows the Microsoft Power BI desktop interface. The top ribbon has tabs for File, Home, Transform, Add Column, View, Tools, and Help. The 'Transform' tab is selected. The main area displays a table titled 'LoanDetails' with 28 rows and 7 columns: id, loan_amnt, funded_amnt, term, int_rate, installment, and grade. The formula bar at the top shows the query: = Table.SelectRows(#"Removed Duplicates", each true). To the right of the table are two panes: 'Query Settings' and 'APPLIED STEPS'. The 'APPLIED STEPS' pane lists the following steps: Source, Navigation, Promoted Headers, Changed Type, Removed Duplicates, and Filtered Rows. At the bottom of the screen, there is a taskbar with various icons and a system tray showing the date and time as 07-09-2024.

	id	loan_amnt	funded_amnt	term	int_rate	installment	grade
1	1077501	5000	4975	36 months	10.65	162.87	B
2	1077430	2500	2500	60 months	15.27	59.83	C
3	1077175	2400	2400	36 months	15.96	84.33	C
4	1076863	10000	10000	36 months	13.49	339.31	C
5	1075358	3000	3000	60 months	12.69	67.79	B
6	1075269	5000	5000	36 months	7.9	156.46	A
7	1069639	7000	7000	60 months	15.96	170.08	C
8	1072053	3000	3000	36 months	18.64	109.43	E
9	1071795	5600	5600	60 months	21.28	152.39	F
10	1071570	5375	5350	60 months	12.69	121.45	B
11	1070078	6500	6500	60 months	14.65	153.45	C
12	1069908	12000	12000	36 months	12.69	402.54	B
13	1064687	9000	9000	36 months	13.49	305.38	C
14	1069866	3000	3000	36 months	9.91	96.68	B
15	1069057	10000	10000	36 months	10.65	325.74	B
16	1069759	1000	1000	36 months	16.29	35.31	D
17	1065775	10000	10000	36 months	15.27	347.98	C
18	1069971	3600	3600	36 months	6.03	109.57	A
19	1062474	6000	6000	36 months	11.71	198.46	B
20	1069742	9200	9200	36 months	6.03	280.01	A
21	1069740	20250	19142.16108	60 months	15.27	484.63	C
22	1039153	21000	21000	36 months	12.42	701.73	B
23	1069710	10000	10000	36 months	11.71	330.76	B
24	1069700	10000	10000	36 months	11.71	330.76	B
25	1069559	6000	6000	36 months	11.71	198.46	B
26	1069697	15000	15000	36 months	9.91	483.38	B
27	1069800	15000	8725	36 months	14.27	514.64	C
28							

> Ensure words in the 'purpose' column are separated by spaces instead of underscores (e.g., "credit card" instead of "credit_card").

The screenshot shows the Microsoft Power BI Data Editor interface. The top navigation bar includes File, Home, Transform, Add Column, View, Tools, and Help. The Transform ribbon tab is selected, showing various data manipulation tools like Close & Apply, Data source settings, Manage Parameters, Refresh Preview, Properties, Advanced Editor, Choose Columns, Remove Columns, Keep Rows, Remove Rows, Split Column, Group By, Replace Values, Use First Row as Headers, Merge Queries, Append Queries, Text Analytics, Vision, Combine Files, Azure Machine Learning, and AI Insights.

The main area displays a table titled "LoanDetails" with 28 rows and 6 columns. The columns are: installment, grade, sub_grade, issue_d, loan_status, and purpose. The "purpose" column contains values such as "credit card", "car", "small business", "other", "wedding", etc.

A query bar at the top indicates the formula: = Table.ReplaceValue(#"Filtered Rows", " ", " ", Replacer.ReplaceText,{"purpose"}).

The right side of the screen shows the "Query Settings" pane, which includes sections for Properties (Name: LoanDetails) and Applied Steps. The Applied Steps section lists the following steps:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Removed Duplicates
- Filtered Rows
- Replaced Value

At the bottom, there is a status bar showing "11 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows", "PREVIEW DOWNLOADED ON FRIDAY", and a weather widget indicating "94°F Mostly cloudy".

	installment	grade	sub_grade	issue_d	loan_status	purpose	
1	10.65	162.87	B	B2	01-12-2018	Fully Paid	credit card
2	15.27	59.83	C	C4	01-12-2018	Charged Off	car
3	15.96	84.33	C	C5	01-12-2018	Fully Paid	small business
4	13.49	339.31	C	C1	01-12-2018	Fully Paid	other
5	12.69	67.79	B	B5	01-12-2018	Current	other
6	7.9	156.46	A	A4	01-12-2018	Fully Paid	wedding
7	15.96	170.08	C	C5	01-12-2018	Current	debt consolidation
8	18.64	109.43	E	E1	01-12-2018	Fully Paid	car
9	21.28	152.39	F	F2	01-12-2018	Charged Off	small business
10	12.69	121.45	B	B5	01-12-2018	Charged Off	other
11	14.65	153.45	C	C3	01-12-2018	Fully Paid	debt consolidation
12	12.69	402.54	B	B5	01-12-2018	Fully Paid	debt consolidation
13	13.49	305.38	C	C1	01-12-2018	Charged Off	debt consolidation
14	9.91	96.68	B	B1	01-12-2018	Fully Paid	credit card
15	10.65	325.74	B	B2	01-12-2018	Charged Off	other
16	16.29	35.31	D	D1	01-12-2018	Fully Paid	debt consolidation
17	15.27	347.98	C	C4	01-12-2018	Fully Paid	home improvement
18	6.03	109.57	A	A1	01-12-2018	Fully Paid	major purchase
19	11.71	198.46	B	B3	01-12-2018	Fully Paid	medical
20	6.03	280.01	A	A1	01-12-2018	Fully Paid	debt consolidation
21	15.27	484.63	C	C4	01-12-2018	Fully Paid	debt consolidation
22	12.42	701.73	B	B4	01-12-2018	Charged Off	debt consolidation
23	11.71	330.76	B	B3	01-12-2018	Fully Paid	credit card
24	11.71	330.76	B	B3	01-12-2018	Fully Paid	debt consolidation
25	11.71	198.46	B	B3	01-12-2018	Charged Off	major purchase
26	9.91	483.38	B	B1	01-12-2018	Fully Paid	credit card
27	14.27	514.64	C	C2	01-12-2018	Charged Off	debt consolidation
28							

➤ Format the 'purpose' columns to proper case.

Queries [2]

LoanDetails

BorrowerDetails

Format

Change casing of text or cleanse text.

=Table.TransformColumns(#"Replaced Value", {{"purpose", "Capitalize", "Text"}, {"purpose", "Text", "Text"}})

	installment	grade	issue_d	loan_status	purpose	
1	10.65	162.87 B	B2	01-12-2018	Fully Paid	Credit Card
2	15.27	59.83 C	C4	01-12-2018	Charged Off	Car
3	15.96	84.33 C	C5	01-12-2018	Fully Paid	Small Business
4	13.49	339.31 C	C1	01-12-2018	Fully Paid	Other
5	12.69	67.79 B	B5	01-12-2018	Current	Other
6	7.9	156.46 A	A4	01-12-2018	Fully Paid	Wedding
7	15.96	170.08 C	C5	01-12-2018	Current	Debt Consolidation
8	18.64	109.43 E	E1	01-12-2018	Fully Paid	Car
9	21.28	152.39 F	F2	01-12-2018	Charged Off	Small Business
10	12.69	121.45 B	B5	01-12-2018	Charged Off	Other
11	14.65	153.45 C	C3	01-12-2018	Fully Paid	Debt Consolidation
12	12.69	402.54 B	B5	01-12-2018	Fully Paid	Debt Consolidation
13	13.49	305.38 C	C1	01-12-2018	Charged Off	Debt Consolidation
14	9.91	96.68 B	B1	01-12-2018	Fully Paid	Credit Card
15	10.65	325.74 B	B2	01-12-2018	Charged Off	Other
16	16.29	35.31 D	D1	01-12-2018	Fully Paid	Debt Consolidation
17	15.27	347.98 C	C4	01-12-2018	Fully Paid	Home Improvement
18	6.03	109.57 A	A1	01-12-2018	Fully Paid	Major Purchase
19	11.71	198.46 B	B3	01-12-2018	Fully Paid	Medical
20	6.03	280.01 A	A1	01-12-2018	Fully Paid	Debt Consolidation
21	15.27	484.63 C	C4	01-12-2018	Fully Paid	Debt Consolidation
22	12.42	701.73 B	B4	01-12-2018	Charged Off	Debt Consolidation
23	11.71	330.76 B	B3	01-12-2018	Fully Paid	Credit Card
24	11.71	330.76 B	B3	01-12-2018	Fully Paid	Debt Consolidation
25	11.71	198.46 B	B3	01-12-2018	Charged Off	Major Purchase
26	9.91	483.38 B	B1	01-12-2018	Fully Paid	Credit Card
27	14.27	514.64 C	C2	01-12-2018	Charged Off	Debt Consolidation
28						

11 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED ON FRIDAY

Hot weather Now

Search

ENG IN 12:43 07-09-2024

Properties

Name: LoanDetails

All Properties

Applied Steps

- Source
- Navigation
- Promoted Headers
- Changed Type
- Removed Duplicates
- Filtered Rows
- Replaced Value
- Capitalized Each Word

➤ Format the 'home_ownership' columns to proper case.

The screenshot shows the Microsoft Power BI desktop interface. The main area displays a table titled "BorrowerDetails" with 28 rows and 8 columns. The columns are: member_id, loan_id, emp_length, home_ownership, annual_inc, verification_status, and dti. The "home_ownership" column contains values like "Rent", "Own", and "Mortgage". The "annual_inc" column shows numerical values ranging from 12252 to 77385.19. The "verification_status" column includes entries such as "Verified", "Source Verified", and "Not Verified".

The top ribbon bar includes File, Home, Transform, Add Column, View, Tools, Help, and various data management icons. The "Transform" tab is selected. The "Properties" pane on the right shows the query name is "BorrowerDetails" and lists applied steps: Capitalized Each Word, Changed Type1, Renamed Columns, Added Custom, and Added Conditional Column.

	member_id	loan_id	emp_length	home_ownership	annual_inc	verification_status	dti
1	1296599	1077501	10+ years	Rent	24000	Verified	
2	1314167	1077430	<1 year	Rent	30000	Source Verified	
3	1313524	1077175	10+ years	Rent	12252	Not Verified	
4	1277178	1076863	10+ years	Rent	49200	Source Verified	
5	1311748	1075358	1 year	Rent	80000	Source Verified	
6	1311441	1075269	3 years	Rent	36000	Source Verified	
7	1304742	1069639	8 years	Rent	47004	Not Verified	
8	1288686	1072053	9 years	Rent	48000	Source Verified	
9	1306957	1071795	4 years	Own	40000	Source Verified	
10	1306721	1071570	<1 year	Rent	15000	Verified	
11	1305201	1070078	5 years	Own	72000	Not Verified	
12	1305008	1069908	10+ years	Own	75000	Source Verified	
13	1298717	1064687	<1 year	Rent	30000	Source Verified	
14	1304956	1065986	3 years	Rent	15000	Source Verified	
15	1303503	1069057	3 years	Rent	100000	Source Verified	
16	1304871	1069759	<1 year	Rent	28000	Not Verified	
17	1299699	1065775	4 years	Rent	42000	Not Verified	
18	1304884	1069971	10+ years	Mortgage	110000	Not Verified	
19	1294539	1062474	1 year	Mortgage	84000	Verified	
20	1304855	1069742	6 years	Rent	77385.19	Not Verified	
21	1284848	1069740	3 years	Rent	43370	Verified	
22	1269083	1039153	10+ years	Rent	105000	Verified	
23	1304821	1069710	10+ years	Own	50000	Source Verified	
24	1304810	1069700	5 years	Rent	50000	Not Verified	
25	1304634	1069559	1 year	Rent	76000	Not Verified	
26	1273773	1069697	2 years	Mortgage	92000	Verified	
27	1304764	1069657	2 years	Rent	50004	Not Verified	
28							

11 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 16:07

ENG IN 22:43 13-09-2024

> Change the data type of the 'total_pymnt' column to 'Fixed decimal number'.

The screenshot shows the Microsoft Power BI desktop interface. The main area displays a table with 28 rows and 6 columns. The columns are labeled: verification_status, dti, delinq_2yrs, last_pymnt_d, total_pymnt, and out_prncp. The 'total_pymnt' column contains numerical values such as 5,861.07, 1,008.71, etc. The 'out_prncp' column contains values like 1,226.30, 3,242.17, etc. The 'last_pymnt_d' column shows dates from 01-01-2015 to 01-12-2019. The 'dti' and 'delinq_2yrs' columns show various numerical values. The 'verification_status' column shows categories like 'Verified', 'Source Verified', and 'Not Verified'. The properties pane on the right shows the 'APPLIED STEPS' section, which includes 'Changed Type' and 'Capitalized Each Word' steps. The status bar at the bottom indicates '11 COLUMNS, 999+ ROWS' and 'Column profiling based on top 1000 rows'.

	verification_status	dti	delinq_2yrs	last_pymnt_d	total_pymnt	out_prncp
1	24000 Verified	27.65	0	01-01-2015	5,861.07	
2	30000 Source Verified	1	0	01-04-2020	1,008.71	
3	12252 Not Verified	8.72	0	01-06-2021	3,003.65	
4	49200 Source Verified	20	0	01-01-2015	12,226.30	
5	80000 Source Verified	17.94	0	01-01-2016	3,242.17	761
6	36000 Source Verified	11.2	0	01-01-2015	5,631.38	
7	47004 Not Verified	23.51	0	01-01-2016	8,136.84	1889
8	48000 Source Verified	5.35	0	01-01-2015	3,938.14	
9	40000 Source Verified	5.55	0	01-04-2019	646.02	
10	15000 Verified	18.08	0	01-11-2019	1,476.19	
11	72000 Not Verified	16.12	0	01-06-2020	7,677.52	
12	75000 Source Verified	10.78	0	01-09-2020	13,943.08	
13	30000 Source Verified	10.08	0	01-07-2019	2,270.70	
14	15000 Source Verified	12.56	0	01-01-2015	3,478.98	
15	100000 Source Verified	7.06	0	01-10-2020	7,471.99	
16	28000 Not Verified	20.31	0	01-01-2015	1,270.17	
17	42000 Not Verified	18.6	0	01-01-2015	12,519.26	
18	110000 Not Verified	10.52	0	01-05-2020	3,785.02	
19	84000 Verified	18.44	2	01-02-2015	7,164.50	
20	77385.19 Not Verified	9.86	0	01-07-2019	9,459.96	
21	43370 Verified	26.53	0	01-08-2015	27,663.04	
22	105000 Verified	13.22	0	01-09-2020	14,025.40	
23	50000 Source Verified	11.18	0	01-01-2015	11,902.56	
24	50000 Not Verified	16.01	0	01-10-2020	11,536.31	
25	76000 Not Verified	2.4	0	01-10-2019	2,050.14	
26	92000 Verified	29.44	0	01-09-2019	15,823.48	
27	50004 Not Verified	13.97	3	01-12-2019	1,609.12	
28						

11 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED ON FRIDAY

96°F Mostly cloudy

Search

ENG IN 12:56 07-09-2024

➤ Round off the numbers in the 'funded_amnt' column to 2 decimal places.

powerpi capstone projects 1

File Home Transform Add Column View Tools Help

Close & Apply New Recent Enter Data source Manage Refresh Properties Advanced Editor Choose Columns Remove Rows Keep Rows Group By Split Column Replace Values Use First Row as Headers Merge Queries Text Analytics Close New Query Data Sources Parameters Query Manage Columns Reduce Rows Sort Transform Combine AI Insights

Queries [2]

= Table.TransformColumns(#"Replaced Value",{{"funded_amnt", each Number.Round(_, 2), type number}})

	i3 id	i3 loan_amnt	1.2 funded_amnt	1.2 term	1.2 int_rate	1.2 installment	1.2 grade
1	1077501	5000	4975	36 months	10.65	162.87	B
2	1077430	2500	2500	60 months	15.27	59.83	C
3	1077175	2400	2400	36 months	15.96	84.33	C
4	1076863	10000	10000	36 months	13.49	339.31	C
5	1075358	3000	3000	60 months	12.69	67.79	B
6	1075269	5000	5000	36 months	7.9	156.46	A
7	1069639	7000	7000	60 months	15.96	170.08	C
8	1072053	3000	3000	36 months	18.64	109.43	E
9	1071795	5600	5600	60 months	21.28	152.39	F
10	1071570	5375	5350	60 months	12.69	121.45	B
11	1070078	6500	6500	60 months	14.65	153.45	C
12	1069908	12000	12000	36 months	12.69	402.54	B
13	1064687	9000	9000	36 months	13.49	305.38	C
14	1069866	3000	3000	36 months	9.91	96.68	B
15	1069057	10000	10000	36 months	10.65	325.74	B
16	1069759	1000	1000	36 months	16.29	35.31	D
17	1065775	10000	10000	36 months	15.27	347.98	C
18	1069971	3600	3600	36 months	6.03	109.57	A
19	1062474	6000	6000	36 months	11.71	198.46	B
20	1069742	9200	9200	36 months	6.03	280.01	A
21	1069740	20250	19142.16	60 months	15.27	484.63	C
22	1039153	21000	21000	36 months	12.42	701.73	B
23	1069710	10000	10000	36 months	11.71	330.76	B
24	1069700	10000	10000	36 months	11.71	330.76	B
25	1069559	6000	6000	36 months	11.71	198.46	B
26	1069697	15000	15000	36 months	9.91	483.38	B
27	1069800	15000	8725	36 months	14.27	514.64	C
28							

11 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 16:07

Search ENG IN 22:46 13-09-2024

> Rename the column 'issue_d' to 'issue_date'.

S | powerpi capstone projects 1

File Home Transform Add Column View Tools Help

Transpose Data Type: Date Replace Values Unpivot Columns Merge Columns ABC Extract Statistics Standard Scientific Information Date Time Duration Run R script Run Python script

Reverse Rows Detect Data Type Fill Move Split Column Format abc Parse

Group Use First Row By as Headers Count Rows Rename Pivot Column Convert to List

Table Any Column Text Column Number Column Date & Time Column Scripts

Queries [2] X ✓ fx = Table.RenameColumns(#"Rounded Off", {"issue_d", "issue_date"})

LoanDetails

	1.2 installment	A grade	B sub_grade	issue_date	C loan_status	D purpose
1	10.65	162.87	B	01-12-2018	Fully Paid	credit card
2	15.27	59.83	C	01-12-2018	Charged Off	car
3	15.96	84.33	C	01-12-2018	Fully Paid	small business
4	13.49	339.31	C	01-12-2018	Fully Paid	other
5	12.69	67.79	B	01-12-2018	Current	other
6	7.9	156.46	A	01-12-2018	Fully Paid	wedding
7	15.96	170.08	C	01-12-2018	Current	debt consolidation
8	18.64	109.43	E	01-12-2018	Fully Paid	car
9	21.28	152.39	F	01-12-2018	Charged Off	small business
10	12.69	121.45	B	01-12-2018	Charged Off	other
11	14.65	153.45	C	01-12-2018	Fully Paid	debt consolidation
12	12.69	402.54	B	01-12-2018	Fully Paid	debt consolidation
13	13.49	305.38	C	01-12-2018	Charged Off	debt consolidation
14	9.91	96.68	B	01-12-2018	Fully Paid	credit card
15	10.65	325.74	B	01-12-2018	Charged Off	other
16	16.29	35.31	D	01-12-2018	Fully Paid	debt consolidation
17	15.27	347.98	C	01-12-2018	Fully Paid	home improvement
18	6.03	109.57	A	01-12-2018	Fully Paid	major purchase
19	11.71	198.46	B	01-12-2018	Fully Paid	medical
20	6.03	280.01	A	01-12-2018	Fully Paid	debt consolidation
21	15.27	484.63	C	01-12-2018	Fully Paid	debt consolidation
22	12.42	701.73	B	01-12-2018	Charged Off	debt consolidation
23	11.71	330.76	B	01-12-2018	Fully Paid	credit card
24	11.71	330.76	B	01-12-2018	Fully Paid	debt consolidation
25	11.71	198.46	B	01-12-2018	Charged Off	major purchase
26	9.91	483.38	B	01-12-2018	Fully Paid	credit card
27	14.27	514.64	C	01-12-2018	Charged Off	debt consolidation
28						

11 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED ON FRIDAY

USD/GBP +0.40%

Search

ENG IN 13:31 07-09-2024

Query Settings X

PROPERTIES Name LoanDetails All Properties

APPLIED STEPS Source Navigation Promoted Headers Changed Type Removed Duplicates Filtered Rows Replaced Value Rounded Off Renamed Columns

> Rename the column 'last_pymnt_d' to 'last_pymnt_date'.

Screenshot of Microsoft Power BI Data Editor showing the transformation process for the 'BorrowerDetails' query.

The ribbon shows the 'Transform' tab selected. The formula bar displays the command: `= Table.RenameColumns(#"Changed Type1", {"last_pymnt_d", "last_pymnt_date"})`.

The main area shows the 'BorrowerDetails' table with 28 rows and 7 columns. The columns are: verification_status, dti, delinq_2yrs, last_pymnt_date, total_pymnt, and out_prncp.

The 'APPLIED STEPS' pane on the right lists the following steps:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Replaced Value
- Remove rows 1
- Filtered Rows1
- Remove rows 2
- Filtered Rows
- Capitalized Each Word
- Changed Type1
- Renamed Columns

Column profiling information at the bottom left: 11 COLUMNS, 999+ ROWS. Column profiling based on top 1000 rows.

System tray icons at the bottom right include: Hot weather Now, Search, File Explorer, Task View, Mail, Microsoft Edge, Microsoft Store, Microsoft Teams, Microsoft Word, and Microsoft Excel. Language settings: ENG IN. Date and time: 13:33 07-09-2024.

> Create a new custom column named 'total_amount_paid' to calculate the total

amount paid by each borrower by subtracting 'out_prncp' from 'total_pymnt'.

The screenshot shows the Power BI desktop interface with the following details:

- Title Bar:** powerpi capstone projects 1
- File Menu:** File, Home, Transform, Add Column, View, Tools, Help
- Transform ribbon:** Conditional Column, Merge Columns, Index Column, Duplicate Column, Extract, Statistics, Standard, Scientific, Rounding, Date, Time, Duration, Text, Vision, Azure Machine Learning, General, From Text, From Number, From Date & Time, AI Insights.
- Queries [2]:** LoanDetails, BorrowerDetails
- Table Preview:** A table with columns: dti, delinq_2yrs, last_pymnt_date, total_pymnt, out_prncp, and total_amount_paid. The preview shows 28 rows of data.
- Query Settings Panel:** Shows the query `= Table.AddColumn(#"Renamed Columns", "total_amount_paid", each [out_prncp]-[total_pymnt])`.
- Properties Panel:** Shows the 'Name' field set to 'BorrowerDetails'.
- Applied Steps Panel:** Lists steps taken: Source, Navigation, Promoted Headers, Changed Type, Replaced Value, Remove rows 1, Filtered Rows 1, Remove rows 2, Filtered Rows, Capitalized Each Word, Changed Type1, Renamed Columns, and Added Custom.
- Bottom Status Bar:** 12 COLUMNS, 999+ ROWS, Column profiling based on top 1000 rows, PREVIEW DOWNLOADED ON FRIDAY, Weather icon (95°F, Mostly cloudy), Search bar, Start button, Taskbar icons (File Explorer, Mail, Microsoft Edge, File, Task View, Taskbar Icons, Taskbar Icons, Taskbar Icons, Taskbar Icons, Taskbar Icons, Taskbar Icons, Taskbar Icons), Language and Region (ENG IN), Date and Time (13:58, 07-09-2024).

> Add a new conditional column named 'delinquency_status' to identify if the

borrower has any delinquencies. If the number of delinquencies in 'delinq_2yrs' is

greater than 0, the status should be "Delinquent", otherwise "Not Delinquent".

The screenshot shows the Microsoft Power BI Data Editor interface. The ribbon at the top includes File, Home, Transform, Add Column, View, Tools, and Help. The 'Add Column' tab is selected, showing various options like Conditional Column, Merge Columns, Index Column, Duplicate Column, Format, Parse, Statistics, Standard, Scientific, Date, Time, Duration, Text, Vision, Azure Machine Learning, and All Insights.

The main area displays a table with 13 columns and 999+ rows. The columns are: delinq_2yrs, last_pymnt_date, total_pymnt, out_prncp, total_amount_paid, and delinquency_status. The formula for the 'Added Custom' column is: `=Table.AddColumn(#"Added Custom", "delinquency_status", each if [delinq_2yrs] > 0 then "Delinquent" else "Not Delinquent")`.

The 'Query Settings' pane on the right shows the 'Name' set to 'BorrowerDetails'. The 'APPLIED STEPS' pane lists the following steps:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Replaced Value
- Remove rows 1
- Filtered Rows1
- Remove rows 2
- Filtered Rows
- Capitalized Each Word
- Changed Type1
- Renamed Columns
- Added Custom
- Added Conditional Column

At the bottom, there is a weather widget showing 95°F and Mostly cloudy, along with a taskbar with icons for Search, Mail, Calendar, Task View, File Explorer, Edge, Task Manager, and others. The system tray shows ENG IN, 14:14, 07-09-2024, and a battery icon.

	delinq_2yrs	last_pymnt_date	total_pymnt	out_prncp	total_amount_paid	delinquency_status
1	27.65	0	01-01-2015	5,861.07	0	-5861.0714 Not Delinquent
2	1	0	01-04-2020	1,008.71	0	-1008.71 Not Delinquent
3	8.72	0	01-06-2021	3,003.65	0	-3003.6536 Not Delinquent
4	20	0	01-01-2015	12,226.30	0	-12226.3022 Not Delinquent
5	17.94	0	01-01-2016	3,242.17	766.9	-2475.27 Not Delinquent
6	11.2	0	01-01-2015	5,631.38	0	-5631.3778 Not Delinquent
7	23.51	0	01-01-2016	8,136.84	1889.15	-6247.69 Not Delinquent
8	5.35	0	01-01-2015	3,938.14	0	-3938.1443 Not Delinquent
9	5.55	0	01-04-2019	646.02	0	-646.02 Not Delinquent
10	18.08	0	01-11-2019	1,476.19	0	-1476.19 Not Delinquent
11	16.12	0	01-06-2020	7,677.52	0	-7677.52 Not Delinquent
12	10.78	0	01-09-2020	13,943.08	0	-13943.08 Not Delinquent
13	10.08	0	01-07-2019	2,270.70	0	-2270.7 Not Delinquent
14	12.56	0	01-01-2015	3,478.98	0	-3478.9819 Not Delinquent
15	7.06	0	01-10-2020	7,471.99	0	-7471.99 Not Delinquent
16	20.31	0	01-01-2015	1,270.17	0	-1270.1711 Not Delinquent
17	18.6	0	01-01-2015	12,519.26	0	-12519.2604 Not Delinquent
18	10.52	0	01-05-2020	3,785.02	0	-3785.02 Not Delinquent
19	18.44	2	01-02-2015	7,164.50	0	-7164.4999 Delinquent
20	9.86	0	01-07-2019	9,459.96	0	-9459.96 Not Delinquent
21	26.53	0	01-08-2015	27,663.04	0	-27663.0427 Not Delinquent
22	13.22	0	01-09-2020	14,025.40	0	-14025.4 Not Delinquent
23	11.18	0	01-01-2015	11,902.56	0	-11902.5616 Not Delinquent
24	16.01	0	01-10-2020	11,536.31	0	-11536.31 Not Delinquent
25	2.4	0	01-10-2019	2,050.14	0	-2050.14 Not Delinquent
26	29.44	0	01-09-2019	15,823.48	0	-15823.48 Not Delinquent
27	13.97	3	01-12-2019	1,609.12	0	-1609.12 Delinquent
28						

➤ Remove the 'sub_grade' column as that does not significantly contribute to the analysis.

The screenshot shows the Microsoft Power BI Data Editor interface. The top navigation bar includes File, Home, Transform, Add Column, View, Tools, and Help. The Transform tab is selected. The ribbon below the navigation bar has sections for General, From Text, From Number, From Date & Time, and All Insights. The main area displays a table titled "LoanDetails" with 28 rows and 5 columns: int_rate, installment, grade, issue_date, and loan_status. A formula bar at the top shows the query: `= Table1.RemoveColumns("#Renamed Columns",{"sub_grade"})`. To the right of the table is a "Query Settings" pane with sections for PROPERTIES (Name set to "LoanDetails") and APPLIED STEPS (listing steps like Source, Navigation, Promoted Headers, etc., with "Removed Columns" highlighted). Below the table, a status bar indicates "10 COLUMNS, 999+ ROWS" and "Column profiling based on top 1000 rows". The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray.

	int_rate	installment	grade	issue_date	loan_status	purpose
1	10.65	162.87	B	01-12-2018	Fully Paid	credit card
2	15.27	59.83	C	01-12-2018	Charged Off	car
3	15.96	84.33	C	01-12-2018	Fully Paid	small business
4	13.49	339.31	C	01-12-2018	Fully Paid	other
5	12.69	67.79	B	01-12-2018	Current	other
6	7.9	156.46	A	01-12-2018	Fully Paid	wedding
7	15.96	170.08	C	01-12-2018	Current	debit consolidation
8	18.64	109.43	E	01-12-2018	Fully Paid	car
9	21.28	152.39	F	01-12-2018	Charged Off	small business
10	12.69	121.45	B	01-12-2018	Charged Off	other
11	14.65	153.45	C	01-12-2018	Fully Paid	debit consolidation
12	12.69	402.54	B	01-12-2018	Fully Paid	debit consolidation
13	13.49	305.38	C	01-12-2018	Charged Off	debit consolidation
14	9.91	96.68	B	01-12-2018	Fully Paid	credit card
15	10.65	325.74	B	01-12-2018	Charged Off	other
16	16.29	35.31	D	01-12-2018	Fully Paid	debit consolidation
17	15.27	347.98	C	01-12-2018	Fully Paid	home improvement
18	6.03	109.57	A	01-12-2018	Fully Paid	major purchase
19	11.71	198.46	B	01-12-2018	Fully Paid	medical
20	6.03	280.01	A	01-12-2018	Fully Paid	debit consolidation
21	15.27	484.63	C	01-12-2018	Fully Paid	debit consolidation
22	12.42	701.73	B	01-12-2018	Charged Off	debit consolidation
23	11.71	330.76	B	01-12-2018	Fully Paid	credit card
24	11.71	330.76	B	01-12-2018	Fully Paid	debit consolidation
25	11.71	198.46	B	01-12-2018	Charged Off	major purchase
26	9.91	483.38	B	01-12-2018	Fully Paid	credit card
27	14.27	514.64	C	01-12-2018	Charged Off	debit consolidation
28						

➤ Identify the common column between both the tables and establish relationships

between the two tables. Ensure the cross-filter direction is set to "Both". This step

is crucial for enabling cross-table analysis and ensuring data integrity within the

The screenshot shows the Microsoft Power BI Data Editor interface. On the left, there are two tables: 'BorrowerDetails' and 'LoadDetaild'. A relationship is being established between them. The 'BorrowerDetails' table has columns like annual_inc, delinq_2yrs, delinquency_status, dti, emp_length, home_ownership, last_pymnt_date, loan_id, and member_id. The 'LoadDetaild' table has columns like funded_amnt, grade, id, installment, int_rate, issue_date, loan_amnt, loan_status, and purpose. A relationship is being created between the 'loan_id' column in 'BorrowerDetails' and the 'id' column in 'LoadDetaild'. The relationship properties pane on the right shows the 'Table' as 'LoadDetaild' and the 'Column' as 'funded_amnt'. The 'Cardinality' is set to 'Many to one (*:1)'. The 'Cross-filter direction' is set to 'Both'. The 'Apply security filter in both directions' option is turned off. There is a button to 'Apply changes' and another to 'Open relationship editor'. The status bar at the bottom shows the date as 13-09-2024 and the time as 22:53.

➤ Create a new calculated column named 'remaining_installments' using DAX in the

"BorrowerDetails" table to calculate the number of remaining installments by

dividing the remaining principal amount ('out_prncp') by the monthly installment

amount ('installment') and round up the result using the CEILING() function to

The screenshot shows the Power BI desktop interface with the 'BorrowerDetails' table selected. The ribbon menu is visible at the top, and the data grid below contains 4,65,909 rows of data. A calculated column 'Remaining installment' is highlighted in the grid. The data model pane on the right shows various tables and their relationships, such as 'BorrowerDetails', 'annual_inc', 'delinq_2yrs', 'dti', 'emp_length', 'FULLY Paid loans percentage', 'home_ownership', 'last_pymnt_date', 'loan_id', 'member_id', 'Non verified', 'out_prncp', 'total_amount_paid', 'total_pymnt', 'verification_status', 'LoadDetaild', and 'LoanDetails'. The calculated column formula is shown as:

```
1 Remaining installment = CALCULATE(COUNT(BorrowerDetails[delinquency_status]))
```

home_ownership	annual_inc	verification_status	dti	delinq_2yrs	last_pymnt_date	total_pymnt	out_prncp	total_amount_paid	delinquency_status	Remaining installment
Mortgage	70000	Verified	6.21	0	01 November 2020	23996.94	0	-23996.94	Not Delinquent	1
Mortgage	70000	Verified	21.5	0	01 June 2021	22756.2027	0	-22756.2027	Not Delinquent	1
Mortgage	70000	Verified	18.45	0	01 February 2015	20596.97	0	-20596.97	Not Delinquent	1
Mortgage	70000	Verified	21.45	0	01 June 2020	16632.6	0	-16632.6	Not Delinquent	1
Mortgage	70000	Verified	14.61	0	01 June 2021	21630.52	0	-21630.52	Not Delinquent	1
Mortgage	70000	Verified	23.34	0	01 January 2019	4587.44	0	-4587.44	Not Delinquent	1
Mortgage	70000	Verified	6.15	0	01 March 2019	8314.15	0	-8314.15	Not Delinquent	1
Mortgage	70000	Verified	11.71	0	01 June 2021	13303.6626	0	-13303.6626	Not Delinquent	1
Mortgage	70000	Verified	19.66	0	01 May 2019	15848.53	0	-15848.53	Not Delinquent	1
Mortgage	70000	Verified	12.33	0	01 October 2018	20191.73	0	-20191.73	Not Delinquent	1
Mortgage	70000	Verified	8.73	0	01 January 2020	7471.48	0	-7471.48	Not Delinquent	1
Mortgage	70000	Verified	21.62	0	01 July 2021	21624.7793	0	-21624.7793	Not Delinquent	1
Mortgage	70000	Verified	12.57	0	01 February 2021	41662.89	0	-41662.89	Not Delinquent	1
Mortgage	70000	Verified	14.14	0	01 February 2021	11630.13	0	-11630.13	Not Delinquent	1
Mortgage	70000	Verified	6.84	0	01 January 2020	6815.21	0	-6815.21	Not Delinquent	1
Mortgage	70000	Verified	8.88	0	01 August 2019	10436.19	0	-10436.19	Not Delinquent	1
Mortgage	70000	Verified	8.31	0	01 July 2018	219.11	0	-219.11	Not Delinquent	1
Mortgage	70000	Verified	16.63	0	01 June 2021	7609.7545	0	-7609.7545	Not Delinquent	1
Mortgage	70000	Verified	13.78	0	01 August 2020	22944.69	0	-22944.69	Not Delinquent	1
Mortgage	70000	Verified	12.65	0	01 February 2020	27552.36	0	-27552.36	Not Delinquent	1
Mortgage	70000	Verified	16.13	0	01 February 2019	8731.4	0	-8731.4	Not Delinquent	1
Mortgage	70000	Verified	20.31	0	01 November 2021	35494.4771	0	-35494.4771	Not Delinquent	1
Mortgage	70000	Verified	19.8	0	01 February 2021	4441.12	0	-4441.12	Not Delinquent	1
Mortgage	70000	Verified	7.32	0	01 May 2019	6797.16	0	-6797.16	Not Delinquent	1
Mortgage	70000	Verified	11.79	0	01 May 2020	17940.85	0	-17940.85	Not Delinquent	1
Mortgage	70000	Verified	12.82	0	01 January 2021	1103.65	0	-1103.65	Not Delinquent	1
Mortgage	70000	Verified	16.61	0	01 January 2021	28875.76	0	-28875.76	Not Delinquent	1

Table: BorrowerDetails (4,65,909 rows) Column: Remaining installment (2 distinct values)

The taskbar at the bottom of the screen displays several pinned icons, including Microsoft Edge, File Explorer, Task View, File History, Task Scheduler, Task Manager, and File Explorer. On the right side, the system tray shows the language (ENG IN), battery level (22:55), and date/time (13-09-2024).

➤ Create a measure named 'Non-Verified Borrowers Count' using DAX to count the number of loans that have been 'Not Verified'.

The screenshot shows the Microsoft Power BI interface. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, Table tools, and Measure tools. The Measure tools tab is selected. The ribbon also shows Name (Non verified), Format (Whole number), and Data category (Uncategorized). A message in the ribbon indicates "New measure measure".

The main workspace displays a donut chart titled "Non verified" with the value "148K". The chart has two segments: a large blue segment labeled "OK" and a smaller grey segment labeled "286K".

The right side of the screen features the "Visualizations" pane, which lists various chart and report types, and the "Data" pane, which shows the data model with tables like "BorrowerDetails" and measures like "annual_inc", "dti", and "out_prncp".

At the bottom, there are page navigation buttons (Page 1, Page 2, Page 3, Page 4, Page 5) and a search bar. The status bar at the bottom right shows the date and time as 15-09-2024 11:46.

➤ Create a measure named 'Fully Paid Loan Percentage' to calculate the percentage

of fully paid loans. Divide the number of loans with a "Fully Paid" loan status by

the total number of loans and then format this measure as Percentage.

The screenshot shows the Microsoft Power BI desktop interface. At the top, the ribbon has tabs: File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, Table tools, and Measure tools. The Measure tools tab is selected. In the top left, there's a search bar and a sign-in button. On the right, there's a share button and a close button.

In the center-left, there's a card visual displaying the value "39.62%" with the text "FULLY Paid loans percentage" below it. Above the card, a formula bar shows: 1 FULLY Paid loans percentage = DIVIDE(COUNTROWS(FILTER(LoanDetails,LoanDetails[loan_status] = "FULLY PAID")),COUNTA(LoanDetails[loan_status])),0). The formula is highlighted with a red X and a green checkmark.

To the right of the card, there are several filter panes:

- Filters on this visual:** Fully Paid loans perc... is (All)
- Filters on this page:** Add data fields here
- Filters on all pages:** Add data fields here
- Fields:** Fully Paid loans perc... (selected)
- Drill through:** Off
- Cross-report:** On
- Keep all filters:** On
- Add drill-through fields here:**

On the far right, there's a large list of fields from the "BorrowerDetails" table, many of which are checked (indicated by a green checkmark). Some fields include:

- annual_inc
- delinq_2yrs
- delinquency_s...
- dti
- emp_length
- FULLY Paid ... (checked)
- home_owners...
- last_pymnt_da...
- loan_id
- member_id
- Non verified
- out_prncp
- Remaining ins...
- total_amount...
- total_pymnt
- verification_st...
- LoadDetail
- funded_amnt
- grade
- id
- installment
- int_rate

At the bottom, there are navigation buttons for Page 1, Page 2, Page 3, Page 4, Page 5, and a plus sign. The status bar at the bottom right shows "Page 1 of 5", "73%", "11:48", "15-09-2024", and icons for language (ENG IN), battery, signal, and network.

Report 1: Loan Performance Analysis

The Loan Performance Analysis report aims to provide insights into the performance of loans based on various factors such as loan amount, loan status, term, interest rate, and purpose.

- Total Funded Amount: Create a card visual to display the total funded amount.
- Fully Paid Loan Percentage: Create a gauge chart to display the 'Fully Paid Loan Percentage' measure.
- Average Interest Rate by Term: Create a multi-row card to show the average interest rate for each term.
- Loan Status Distribution: Create a pie chart to visualize the sum of total payments by loan status.
- Loan Amount by Purpose: Create a treemap to show the average loan amount by purpose.
- Installment Over Time: Create a line chart to visualize the sum of installments by Year and Quarter of the issue date.
- Maximum Total Amount Paid by Loan Status: Create a column chart to display the maximum total amount paid by loan status.
- Minimum Annual Income by Grade: Create a funnel chart to show the minimum annual income by grade.
- Issue Date Slicer: Add a slicer for the Month of the issue date to enable dynamic data exploration.

Report 1: Loan Performance Analysis

The Loan Performance Analysis report aims to provide insights into the performance of

loans based on various factors such as loan amount, loan status, term, interest rate, and

purpose.

The screenshot displays a Microsoft Power BI dashboard titled "powerpi capstone projects 1". The dashboard includes the following visualizations:

- A large text card showing "68.98K" with a subtitle "Sum of funded_amnt" and "36 months".
- A treemap chart titled "Average of loan_amnt by purpose" showing proportions for small business, credit card, car, vacation, other, home imp., debt consolid..., moving, and educational.
- A pie chart titled "Sum of total_pymnt by loan_status" showing percentages for Fully Paid (55.86%), Does not... (31.31%), and Delinquent (12.83%).
- A gauge chart titled "FULLY Paid loans percentage" showing 47.62%.
- A calendar heatmap titled "issue_date" showing data for July 2014.
- A line chart titled "Sum of installment by Year, Quarter, Month and Day" showing values from 8K to 14K over time.

The dashboard also features a navigation bar at the bottom with tabs for Page 1, Page 2 (selected), Page 3, Page 4, and Page 5, along with a search bar and system icons at the bottom right.

powerpi capstone projects 1 • Last saved: Today at 6:08 PM ▾

File Home Insert Modeling View Optimize Help

Cut Copy Format painter Paste Get Excel OneLake SQL Enter Dataverse Recent data workbook data hub Server data sources Transform Refresh data New visual New quick measure measure Insert Calculations Sensitivity Share Copilot

Clipboard Data Queries Insert Calculations Sensitivity Share Copilot

Count of total_amount_paid by loan_status

loan_status	Count of total_amount_paid
Current	~0.18M
Fully Paid	~0.15M
Charged Off	~0.02M
Late (31-120 days)	~0.005M
In Grace Period	~0.002M
Does not meet the criteria	~0.001M
Does not meet the criteria	~0.001M

Sum of annual_inc by grade

grade	Sum of annual_inc
B	~9.90bn
C	~8.81bn
A	~6.19bn
D	~5.36bn
E	~2.62bn
F	~0.99bn
G	~0.29bn

Filters Visualizations Data

Build visual

Search

Filters on this page ... Add data fields here

Filters on all pages ... Add data fields here

Values Add data fields here

Drill through Cross-report Keep all filters On Add drill-through fields here

BorrowerDetails

- $\sum \text{annual_inc}$
- $\sum \text{delinq_2yrs}$
- delinquency_st...
- $\sum \text{dti}$
- emp_length
- $\text{Fully Paid loan...}$
- home_ownership
- last_pymnt_date
- loan_id
- $\sum \text{member_id}$
- Non verified
- $\sum \text{out_prncp}$
- Remaining inst...
- total_amount_p...
- $\sum \text{total_pymnt}$
- $\text{verification_stat...}$

LoadDetail

LoanDetails

Page 3 of 5

Page 1 Page 2 Page 3 Page 4 Page 5 +

73%

ENG IN 23:03 13-09-2024

Report 2: Borrower Profile Analysis

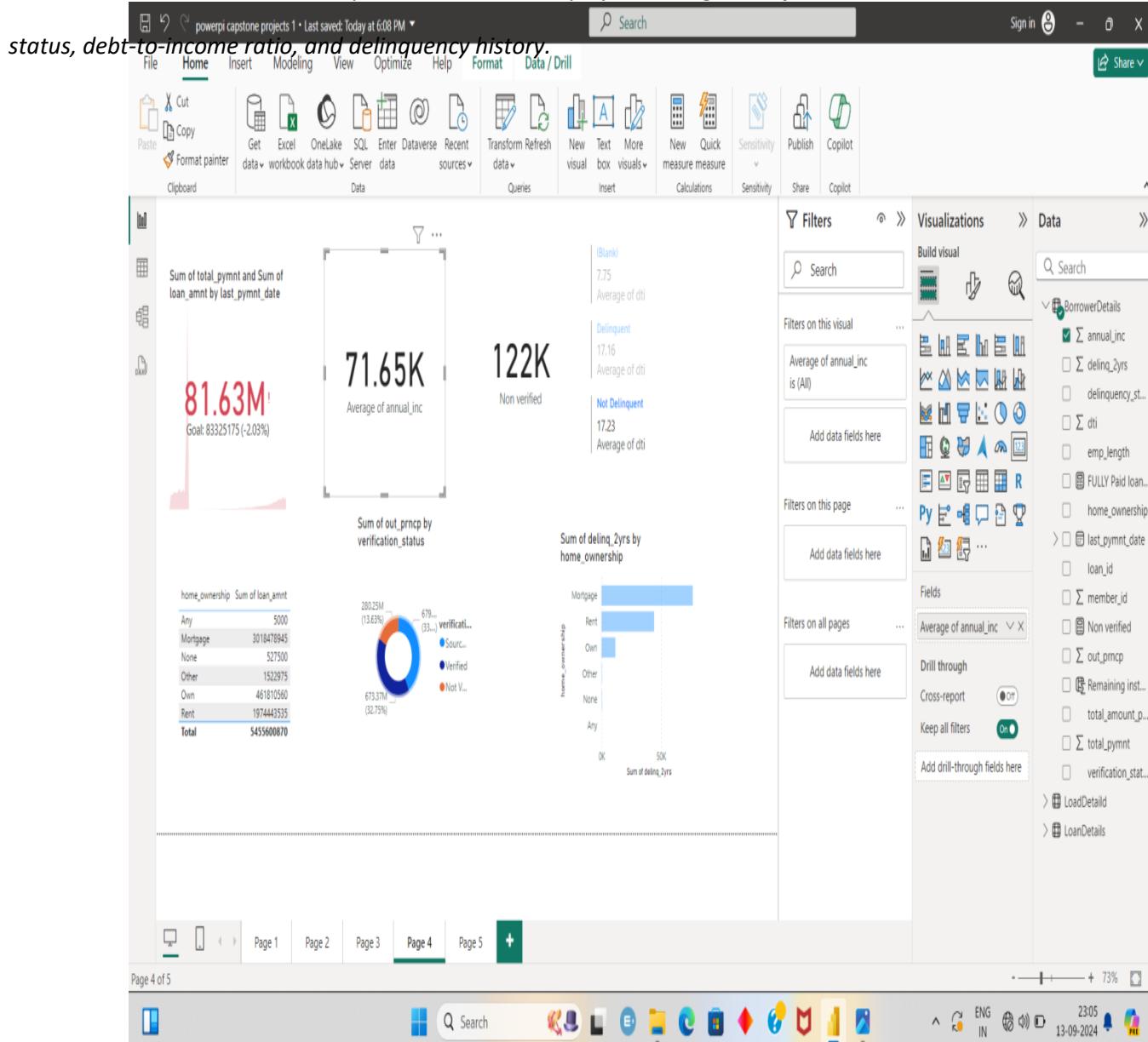
The Borrower Profile Analysis report aims to provide insights into the characteristics of borrowers such as home ownership, annual income, employment length, verification status, debt-to-income ratio, and delinquency history.

- KPI Visual: Create a KPI visual with the sum of total payment as the value, the year of last payment date as the trend axis, and the sum of loan amount as the target. Round off to 2 decimal points and format as \$ currency.
- Average of Annual Income: Display the average of annual income using a card visual.
- Non-Verified Borrowers Count: Display the count of non-verified borrowers using a card visual.
- Average Debt-to-Income by Delinquency Status: Create a multi-row card to show the average debt-to-income ratio by delinquency status.
- Sum of Loan Amount by Home Ownership: Create a table to show the total loan amount by home ownership.
- Average Remaining Principal by Verification Status: Create a donut chart to display the average remaining outstanding principal by verification status.
- Sum of Delinquencies by Home Ownership: Create a bar chart to show the total number of delinquencies in the past 2 years by home ownership and filter the visual to display only Mortgage, Rent, and Own.
- Max Remaining Installments by Employment Length: Create a treemap to show the maximum remaining installments by employment length.
- Total Amount Paid and Funded Amount Over Time: Create a line chart to display the sum of total amount paid and the sum of funded amount by the year of last payment date.
- Purpose Slicer: Add a slicer for loan purpose to enable dynamic data exploration.

Report 2: Borrower Profile Analysis

The Borrower Profile Analysis report aims to provide insights into the characteristics of

borrowers such as home ownership, annual income, employment length, verification



powerpi capstone projects 1 • Last saved: Yesterday at 11:25 PM

File Home Insert Modeling View Optimize Help

New page ▾ Visuals More visual visuals ▾ Q&A Key influencers Decomposition Narrative Paginated Power report Power Automate Power Platform Elements Add a sparkline Sparklines

Pages Visuals AI visuals

Sum of installment by emp.length

emp.length	purpose	Value
0 years	car	~10%
0 years	credit card	~10%
0 years	debt...	~10%
1 year	educational	~10%
1 year	home...	~10%
1 year	house	~10%
10+ years	major...	~10%
10+ years	medical	~10%
10+ years	moving	~10%

Sum of funded_amnt by Year and total_amount_paid

Year	total_amount_paid	sum of funded_amnt
2015	~0.03	~60
2016	~0.17	~80

Filters

Build visual

Visualizations Data

Search

Add data fields here

Filters on this page ...

Add data fields here

Filters on all pages ...

Add data fields here

Values

Add data fields here

LoanDetails

- $\sum \text{funded_amt}$
- grade
- id
- $\sum \text{installment}$
- $\sum \text{int_rate}$
- $\sum \text{issue_date}$
- $\sum \text{loan_amt}$
- loan_status
- purpose
- term

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Page 5 of 5

82°F Partly sunny

Search

73% Update available (click to download)

ENG IN 10:12 10-09-2024

