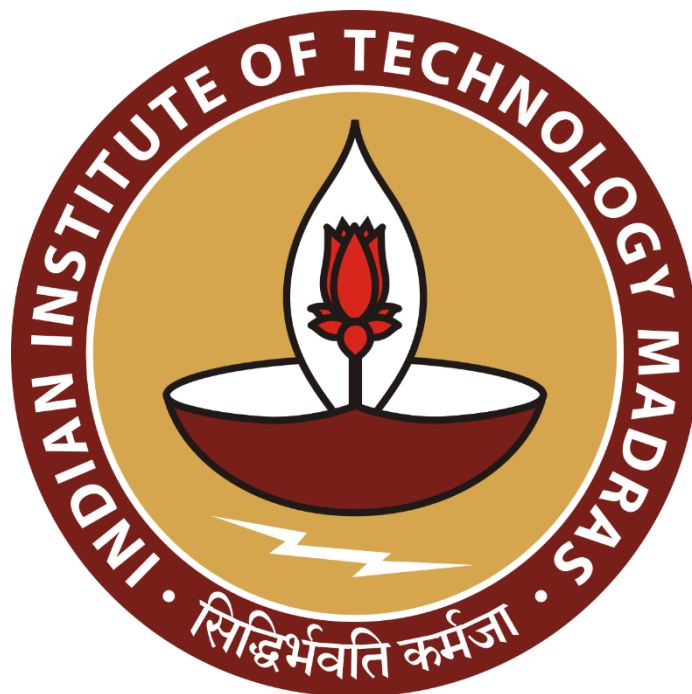# Impact of COVID-19 on Insurance Sales: A Data-Driven Approach to Revitalize the Business of a Senior LIC Agent

A Mid-term report for the BDM capstone Project

Submitted by

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Declaration Statement

I am working on a Project titled "**Impact of COVID-19 on Insurance Sales: A Data-Driven Approach to Revitalize the Business of a Senior LIC Agent**". I extend my appreciation to **Mr. K R Naveen Kumar**, for providing the necessary resources that enabled me to conduct my project.

I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered from primary sources and carefully analyzed to assure its reliability.

Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the principles of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I understand that all recommendations made in this project report are within the context of the academic project taken up towards course fulfillment in the BS Degree Program offered by IIT Madras. The institution does not endorse any of the claims or comments.

Signature of Candidate:

Name: Pavan Kumar K N

Date: 08 July 2025

1 Executive Summary

This mid-term report presents a comprehensive data-driven analysis aimed at understanding and addressing the decline in insurance policy sales and sum assured for Mr. K R Naveen Kumar, a senior LIC agent and Chairman's Club member since 1991. Operating in a hybrid mode with both online and offline channels, Mr. Naveen caters to a diverse customer base. The project leverages historical policy data spanning FY 2010–11 to FY 2024–25 to extract actionable insights into customer behaviour, policy trends, and sales performance.

The document begins with proof of originality, including processed datasets with sensitive customer details anonymized, an official letter from Mr. Naveen Kumar authorizing the project, photographs of the office premises, and a short video clip interacting with the him to understand operational nuances.

The metadata section provides an overview of primary dataset, transformations performed, and newly derived features such as Financial Year, Annual Adjusted Premium, Segment, and Policy Name, which were crucial for the analysis. In the descriptive statistics section, key metrics such as mean, median, range, and variability for numerical fields like Sum Assured and Premium are reported, along with segment-wise policy distribution.

The report further explains the analysis process, highlighting data preparation, cleaning, feature engineering, and exploratory visualization performed entirely in Excel using PivotTables and charts. In the results and findings, clear trends and patterns, such as a drop in policy uptake post-COVID-19 and segment contributions, are presented using line and pie charts.

This analysis lays the groundwork for more advanced methods that are yet to be explored in the final term for strategic recommendations to improve sales performance.

2 Proof of Originality of the Data

The dataset used for this analysis was directly obtained from Mr. K R Naveen Kumar, and includes policy-level data collected since 2010. Supporting proof includes an authorization letter from Mr. Naveen, photographs of his office space, a recorded interview video where he discusses his business operations and challenges, and processed dataset (.xlsx file). All transformations and derived insights in the report are based on this original dataset, ensuring authenticity of the analysis.

2.1 Letter From Organization

Image 2.1.1: Letter of Approval from Mr. Naveen

2.2   Images of the Firm/Servicescape

Image 2.2.1: LIC City Branch – 8, Hyderabad

Image 2.2.2: Mr. Naveen Submitting a Client's Policy to LIC

Image 2.2.3: Personal Space where Mr. Naveen Explains LIC Policies to Clients

2.3 Links to Short Video with Mr. Naveen and Primary Data

Video link:

https://drive.google.com/drive/u/1/folders/1MWfQ1DVcnhoT8RZaVpxNGKkw3DE9Tocf

Processed Primary Data Link:

https://drive.google.com/drive/u/1/folders/17ar7O1i-lfTEGGWuRz1guBnw82QenDFJ

3 Metadata

The processed subset dataset was derived from the primary LIC policy records by carefully cleaning and transforming the raw data to make it suitable for analysis. Since beginning his career in 1991, Mr. Naveen has served over 4,000 customers, of which 1,013 are active policyholders at present, while others have either matured or lapsed policies. The active policyholder count was cross-verified using the LIC Agent Database, which provides real-time insights into customer activity. For this analysis, historical policy data from 2010 onwards was consolidated from 15 annual sheets into a single dataset for easier handling and visualization. Sensitive customer information such as policyholder names and policy numbers were excluded to ensure privacy and data security. Several derived fields were created to support meaningful analysis. Here's a brief explanation of each column:

3.1 Columns Ported Directly from Raw Dataset

Column Name	Description
Date of Commencement	The date on which the LIC policy was activated.
Sum Assured (₹)	The total insurance coverage amount promised under policy.
Payment Mode	The payment frequency chosen by the policyholder (e.g., MLY=Monthly, QLY=Quarterly, etc.).
Premium (₹)	The periodic premium amount paid by the customer according to the selected payment mode.
Table-Term	A code representing the Plan Number and Term of the policy (e.g., 14 10 = Endowment Assurance Policy for a 10-year term.

Table 3.1: Columns Ported from Raw Dataset

3.2 Derived Columns (Created for Analysis)

Column Name	Description
Financial Year	Derived from Date of Commencement; groups policies into Indian financial years (April–March).
Annual Adjusted Premium (₹)	Standardizes premium amounts to yearly terms for comparison across different payment modes.
Plan Number	Extracted from Table-Term to map policies to their product names.
Policy Name	Mapped from Plan Number for easier interpretation of LIC's diverse products.
SA Segment	Categorizes policies into Low (SA<₹3L), Medium (₹3L–₹7.99L), and High (SA≥₹8L) based on sum assured.
Count Policy	A helper field with value = 1 for each row, used to calculate total policy counts in PivotTables.

Table 3.2: Columns Derived from Primary Columns for Analysis

3.3   In addition to the column descriptions above, two supplementary reference tables have been included to provide further clarity on critical dataset elements. They are:

3.3.1   The elaboration of payment mode abbreviations.

Payment Mode	Full Form	Description
MLY	Monthly	Premium is paid every month.
QLY	Quarterly	Premium is paid every three months.
HLY	Half-Yearly	Premium is paid every six months.
YLY	Yearly	Premium is paid once every year.
SSS	Salary Savings Scheme	Premium is deducted monthly from the policyholder's salary through employer arrangements.
SP	Single Premium	A one-time premium payment made at the start of the policy.
ECS	Electronic Clearing Service	Premium is auto-debited from the policyholder's bank account.
NACH	National Automated Clearing House	Premium auto-payment system replacing ECS in some cases.

Payment Mode	Full Form	Description
ENACH	Electronic Nach	Advanced electronic auto-debit system for premium payments.

Table 3.3.1: Payment Mode Abbreviations

3.3.2   Mapping between Plan Numbers and Policy Names

Plan Number	Policy Name
714, 814, 914	New Endowment Plan
720, 820, 920	New Money Back Plan (20 Yrs)
721, 821, 921	New Money Back Plan (25 Yrs)
745, 815, 915	New Jeevan Anand
733, 833, 933	Jeevan Lakshya
732, 832, 932	New Children's Money Back Plan
717, 817, 917	Single Premium Endowment Plan
736, 836	Jeevan Labh
774	Amritbaal
760	Bima Jyoti
768	Jeevan Azad
745	Jeevan Umang
771	Jeevan Utsav
748	Bima Shree
764	Bima Ratna
75	Money Back Policy (20 Yrs)
14	Endowment Assurance Policy
149	Jeevan Anand Plan
93	Money Back Policy (25 Yrs)
191	Jeevan Saral
103	Jeevan Chhaya
107	Jeevan Surabhi (20 Yrs)
102	Jeevan Kishore
802	Endowment Plus
803	Pension Plus
106	Jeevan Surabhi (15 Yrs)
175	Jeevan Anurag
903	Jeevan Arogya (Old)
816	New Bima Bachat
827	Jeevan Rakshak
904	LIC's Jeevan Arogya (Updated)
849	Nivesh Plus
944	Aadhaar Shila
943	Aashaar Stambh
934	Jeevan Tarun
852	SIIP
855	Jeevan Amar
825	e-Term
822	Anmol Jeevan II

Plan Number	Policy Name
189	Jeevan Akshay VI
164	Anmol Jeevan I
951	Micro Bachat Plan
823	Amulya Jeevan II
828	Varishtha Pension Bima Yojana

Table 3.3.2: Plan Number and Policy Name Mapping

4 Descriptive Statistics

4.1 Overview of Numerical Data:

The dataset contains key numerical variables such as *Sum Assured, Premium*, and *Annual Adjusted Premium*. Descriptive statistics were calculated to understand the distribution, central tendency, and variability in these values.

Statistic	Sum Assured	Adjusted Annual Premium
Mean (Average)	4,21,116.11	65,317.22
Median	3,00,000.00	39,240.00
Standard Deviation	4,66,732.04	93759.92
Minimum	20,000.00	1,852.00
Maximum	70,00,000.00	10,18,000.00
Range	69,80,000.00	10,16,148.00
25th Percentile (Q1)	2,00,000.00	23,118.00
75th Percentile (Q3)	5,00,000.00	70,548.00
Coefficient of Variation (%)	110.83	143.55

Table 4.1: Statistics of Numerical Data

The mean Sum Assured is approximately ₹4.2 lakh, while the median is ₹3 lakh, indicating a right-skewed distribution influenced by high-value outliers. Similarly, the Annual Adjusted Premium exhibits high variability, reflecting diverse customer preferences and income levels.

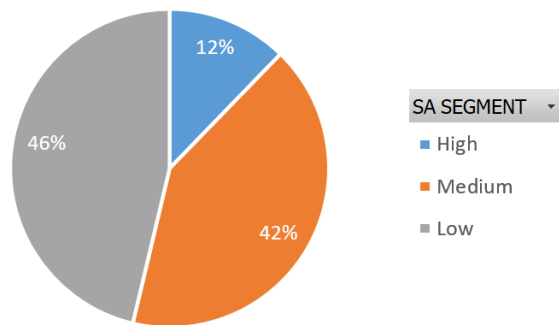4.2 Overview of Categorical Data:

4.2.1 Segment Distribution

Policies are classified into Low, Medium, and High segments based on *Sum Assured* thresholds.

Segment	Policy Count	% Share
Low (SA<3,00,000)	566	46%
Medium (3,00,000<=SA<8,00,000)	507	42%
High (SA>=8,00,000)	150	12%

Table 4.2.1: Sum Assured Segment Distribution

Sum Assured Segment Distribution

Graph 4.2.1: Pie Chart on Sum Assured Segment Distribution

The analysis shows that nearly 46% of policies fall under the Low segment, while Medium segment accounts for 41%. High segment policies form only 12%, indicating a customer base skewed towards lower Sum Assured values.

4.2.2 Policy Distribution

The dataset contains policies across multiple LIC products. The Top 5 Policies by count are shown below:

Policy Name	Policy Count	% Share
New Endowment Plan	211	17%
New Money Back Plan (25 Yrs)	162	13%
Endowment Assurance Policy	123	10%
Jeevan Rakshak	123	10%
Jeevan Anand Plan	73	06%
Others	531	44%

Table 4.2.2: Top 5 Policy Distribution

Top Five Policies Sold

- Jeevan Anand Plan
- Jeevan Rakshak
- Endowment Assurance Policy
- New Money Back Plan (25 Yrs)
- New Endowment Plan
- Others
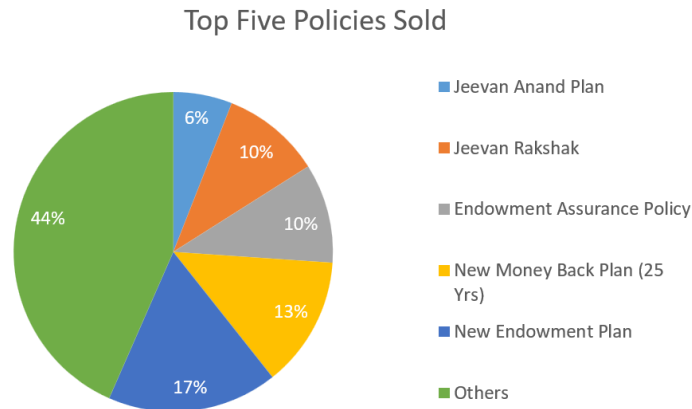
Graph 4.2.2: Pie Chart on Top 5 Policy Distribution

Over 50% of policies are concentrated in the top five products, suggesting targeted marketing on these plans could significantly improve sales.

5   Detailed Explanation of Analysis Process/Methods

5.1 Data Preparation and Cleaning

The raw dataset provided by the Mr. Naveen consisted of multiple yearly sheets covering policies from FY 2010–11 to FY 2024–25. These sheets were consolidated into a single master file in Excel to enable multi-year analysis. Sensitive columns such as *Policy Numbers* and *Customer Names* were removed to ensure data confidentiality. From the raw data, a pruned subset was created by retaining only relevant attributes like *Date of Commencement, Sum Assured, Premium, Mode of Payment,* and others. Further, several derived columns were introduced—such as *Financial Year, Annual Adjusted Premium, Segment, Policy Name,* and *Count Policy*—to enrich the dataset and simplify subsequent analysis.

5.2 Descriptive Analysis and Feature Engineering

Basic descriptive statistics were performed on numerical fields to understand overall trends, central tendencies, and variability in *Sum Assured* and *Premiums*. Categorical variables, such as *Payment Mode* and *Sum Assured Segments*, were analyzed to explore their distributions. Derived fields, including *Financial Year* and *Annual Adjusted Premium*, allowed normalization of payment modes and alignment of policies to fiscal periods, enabling time-series analysis.

5.3 Visualization and Trend Analysis

Exploratory visualizations were created to identify patterns and trends in the data. Key analyses included yearly trends of total policies sold and total sum assured over time, as well as segment-wise premium contributions. PivotTables and charts in Excel were extensively used to aggregate data and present insights visually. Popular policies were identified, and their contribution visualized using pie charts, while yearly trends were showcased through line and stacked column charts.

5.4 Choice of Tools and Methods

Microsoft Excel was chosen for its ability to handle large datasets, perform dynamic aggregations with PivotTables, and generate clear visualizations suitable for reporting. The methods employed provided a strong foundation for descriptive and exploratory analytics at the mid-term stage.

6 Results and Findings

6.1 Yearly Trend of Total Policies Sold (FY 2010–2025)
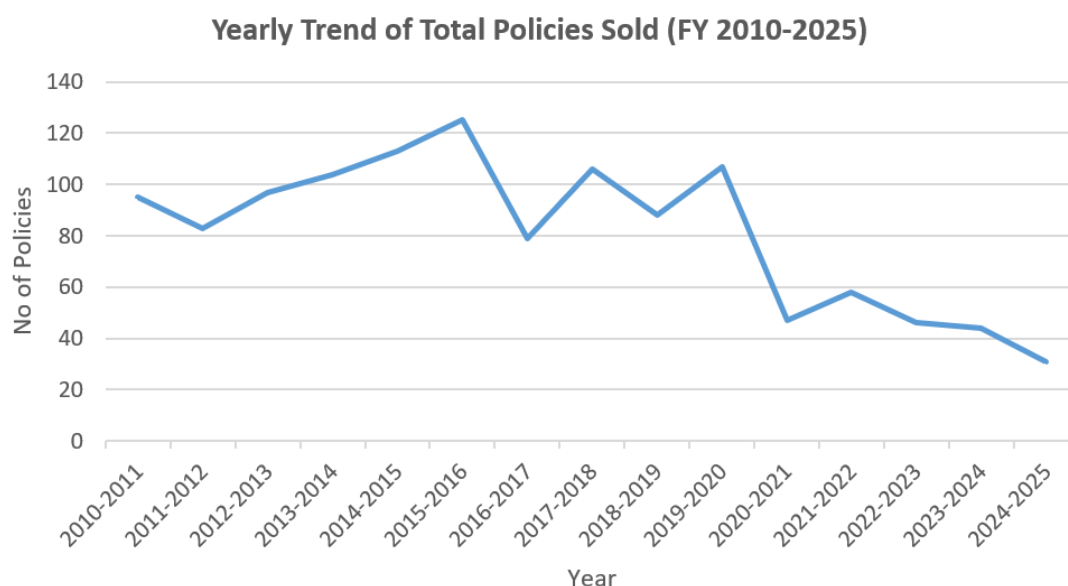
Graph 6.1: Line Graph on Yearly Trend of Total Policies Sold (FY 2010-2025)

This graph illustrates the number of policies sold each year from 2010-2011 to 2024-2025. The trend reveals steady performance till 2019-2020, followed by sharp decline post-2020, likely due to pandemic disrupting customer engagement and sales operations. The gradual decrease in subsequent years highlights need for targeted interventions to revive sales momentum.

6.2 Yearly Trend of Total Sum Assured (FY 2010–2025)
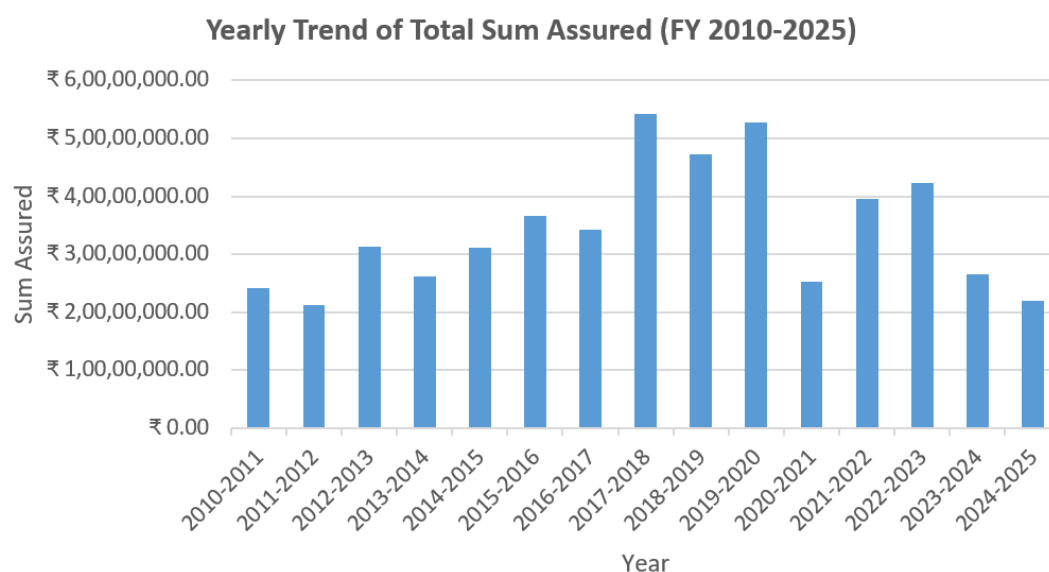
Graph 6.2: Clustered Column Chart on Yearly Trend of Total Sum Assured (FY 2010-2025)

The total sum assured across all policies per year shows fluctuations over the 15-year period. A notable peak is observed in FY 2017–2018, suggesting either a higher volume of policies or larger value policies sold during that year. However, similar to policy count, there is a drop at FY 2020–2021, signaling a decline in customer confidence and investment in higher value policies.

6.3 Segment-Wise Annual Premium Trend Over the Years
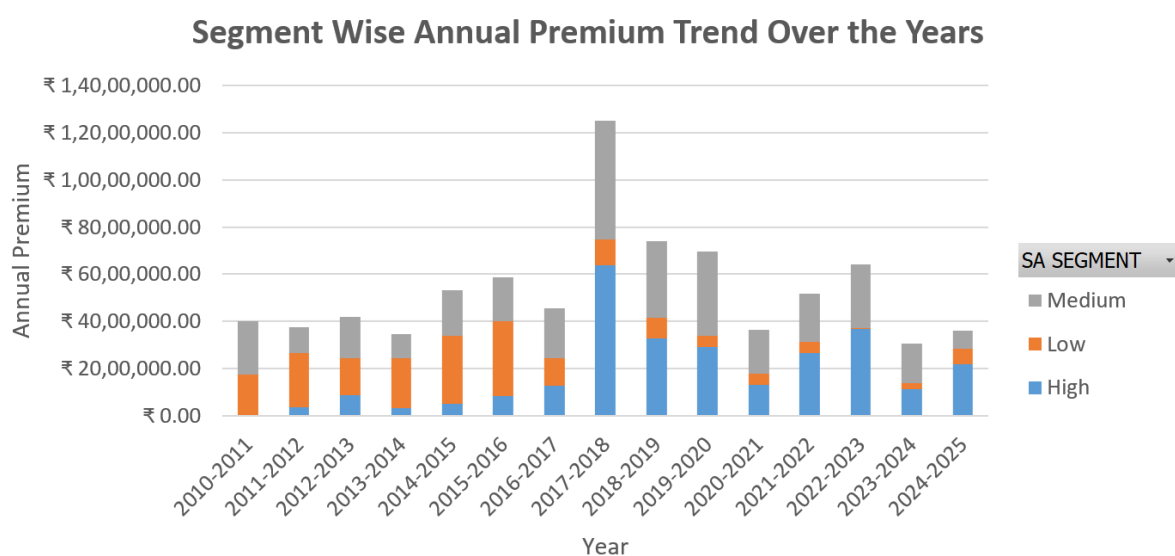
Graph 6.3: Stacked Column Chart on Segment Wise Annual Premium Trend Over the Years

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This stacked column chart presents the contribution of each segment (Low, Medium, and High Sum Assured) to the annual premium over time. It highlights that Medium segment policies consistently contributed the most, while High segment policies spiked briefly in FY 2017–2018. The post-2020 shift shows a decrease in all segments, indicating overall contraction in customer spending capacity or changing preferences.

For the final term, advanced techniques such as Pareto Analysis and ABC Categorization are planned to prioritize high-impact policies and segments. These methods will build upon the current analysis to deliver actionable insights and recommendations.