The Actuary India

Magazine of the Institute of Actuaries of India

February 2025

Culture

Crafting with Integrity and Precision

ईमानदारी और सटीकता से निर्माण

Equation Crossword

Cross-Number Puzzle

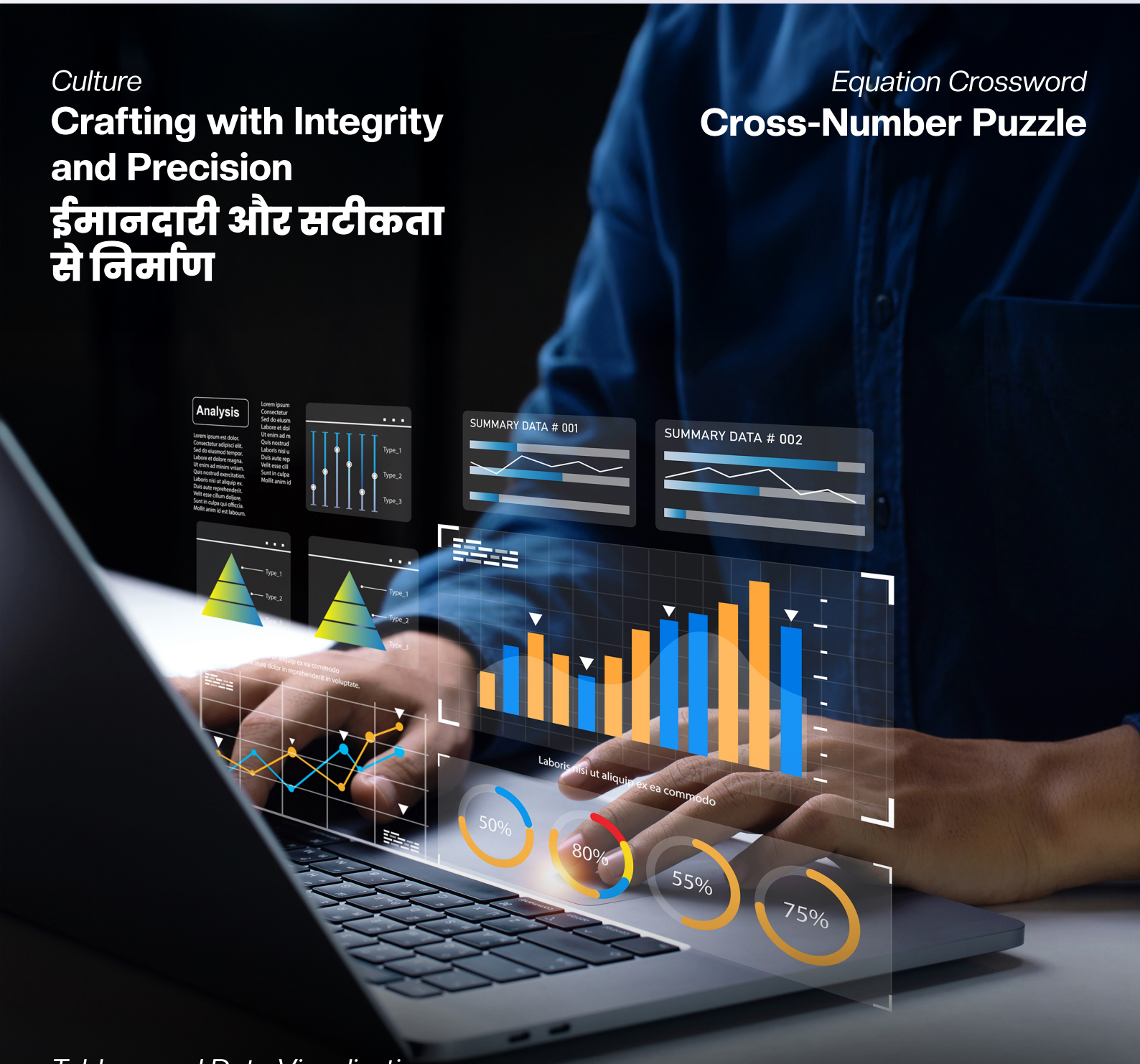


Tableau and Data Visualization

Getting to Know Tableau: Part -3 Assumption and Coding

Tableau and Data Visualization

Getting to Know Tableau: Part -4 Visuals & Dashboards

The Actuary India
Magazine of the Institute of Actuaries of India

Editorial



Whew! February went by so quickly (unlike January which makes one feel each of those 31 days #IYKYK)!

A gentle reminder that the GCA 2025 is happening next month in Mumbai. At the AGFA, we will also be felicitating the best article, best reportage, best non-technical content pieces, and a few surprise awards too! We look forward to welcoming all our readers and interacting with you all soon. Registrations are now open here.

We also recently published an immensely helpful 4-part guide to Tableau. Do share these with anyone looking for to begin their Tableau journey and help along!

As exams draw further closer, we hope our student members are progressing well in their studies. Perhaps you may find our exam tips for the more advanced CP, SP, and SA exams insightful and inspiring. Read more here. Or, if you are bored of studying and looking for an escape, may we suggest solving our fun puzzles (of which we have a plethora to choose from!) or reading some fun actuarial jokes.

Thank you for all your love and support in the TAI journey so far and please do read, share and contribute!

Love & regards,

Kathan "KJ" Jain
Editor, The Actuary India
Magazine of the Institute of Actuaries of India

The Actuary India
Magazine of the Institute of Actuaries of India

In this issue



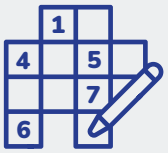
Resources

01



Culture

02



Math Crossword Puzzles

03



Some interesting announcements and job listings!

04



and many more!

05

The Actuary India
Magazine Of The Institute Of Actuaries Of India

Tableau and Data Visualization

Getting to Know Tableau: Part -3 Assumption and Coding

Tableau is a data visualization tool capable of handling large amount of data efficiently. This hands-on training series developed by Ananya and Simran is targeted for first-timers. You get acquainted with the Tableau UI and a few hands-on exercises to build confidence.
If you haven't read our part-2, Click here

Assumption Setting ● Prepping the Tableau ● Coding in Tableau ● MCQ ● Editing Existing Code ● Codes ● Conclusion

Assumption Setting and Preparing for Tableau Coding

Step one took us deep into the data world, and now it's time for step two—assumption setting and coding in Tableau! Ready to dive in? Let's go!

In our data article, we spilled the beans on what each data field in the workbook represents. 🤔 Now, it's time to share a few smart assumptions we've made to keep the process smooth and super simple for you. Let's dive in!

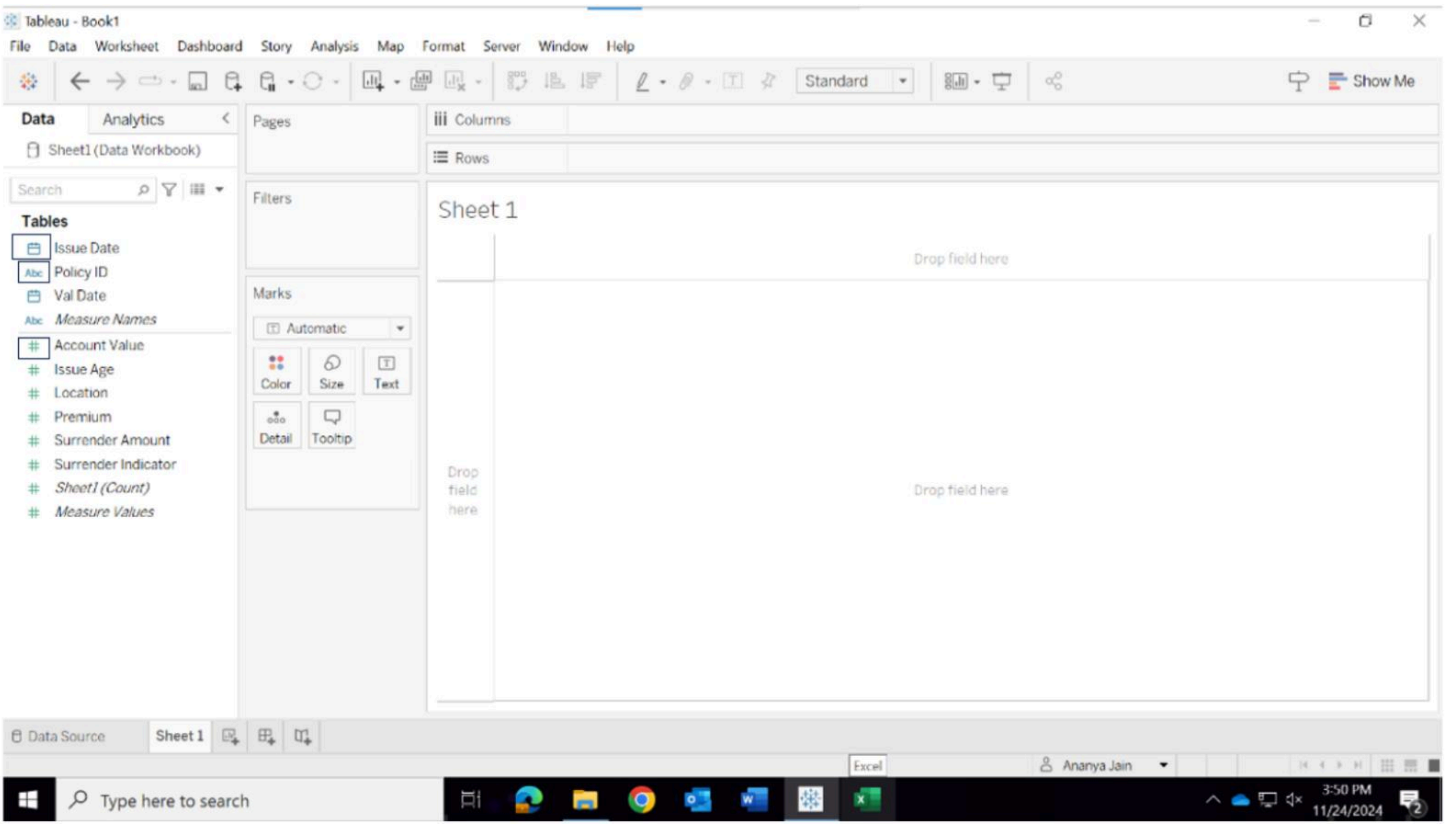
- We have only 20 policies data in total as at valuation date of 30th September 2024
- There are only 4 locations from which all these policies have been issued exactly a year back on 30 Sep 2023
- For the sake of simplicity let's assume that premium is equal at ₹100 for all the policies
- Company charges 20% surrender charge should a policy surrender before two years
- The annual interest rate earned is 6% per annum on the full premium amount paid, i.e., ₹100
- Ignore expenses
- All policyholders have their birthdays on 30th September each year

Looking at the data we loaded, it's clear that we've got the actual surrenders for the year locked in 🔒—but uh-oh, no sign of the expected surrenders! So, to keep things moving, we've made a nifty assumption: surrender rates will vary based on attained age. Problem solved!

Attained Age Group	Lapse Assumption (%)
0-29	15%
30-49	12%
50-69	8%
70-79	4%
80+	2%

Prepping the Tableau

We've tackled the assumption-setting part—check! ✅ But now comes the real fun: coding in Tableau! Let's bring those dashboards to life! Before we dive into the coding part, there is one more interesting information that we would like to share with you. After loading the data if you go to "Sheet 1" you will see something as –



Defining data types

If you look closely, you will see a black box against Issue Date, Policy ID and Account Value field. The calendar icon represents the date format, Abc refers to a string because Policy ID is an alpha numeric field in the data. The # you see against all the other fields are numerical values but it does not means that they are all quantitative in nature.

We hope that you are able to differentiate that Dimensions are blue (🔵) in color vs. Measures are green (🟢)!
The measure names and measure values include all the data fields from the source data. Tableau creates these fields automatically so that views can be made based on multiple measures.

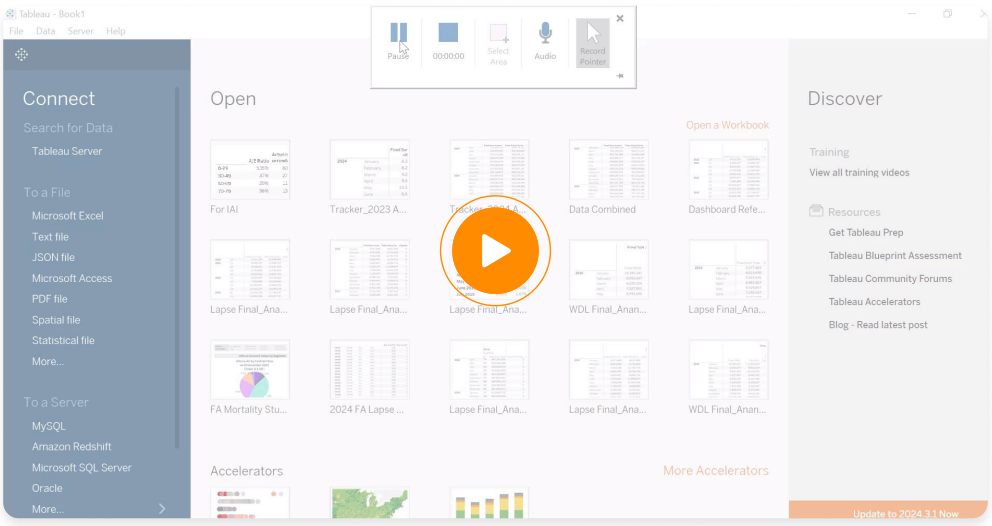
Coding in Tableau

Now, onto the coding part!

We can think of creating codes for the following based on the expected lapse assumption –

- Attained Age Calculation (because in data we have issue age)
- Attained Age Groups (because we will calculate attained age for each policy not the grouping)
- Expected Surrender Rates
- Actual Surrender Rates (we know the actual surrender amount from data not the rate)
- Actual / Expected Ratio (apple to apple comparison between actual and expected, no?)

We've got something exciting for you—a screen recording showing how to code in Tableau! 🎥 Don't worry, we'll walk you through an example. As for the rest of the codes, we're listing them here for your convenience. But hey, challenge yourself and try creating them on your own—it's the best way to learn! 💪



MCQ

From the above recording you will notice something. Just to make things more interesting, we are adding MCQ.

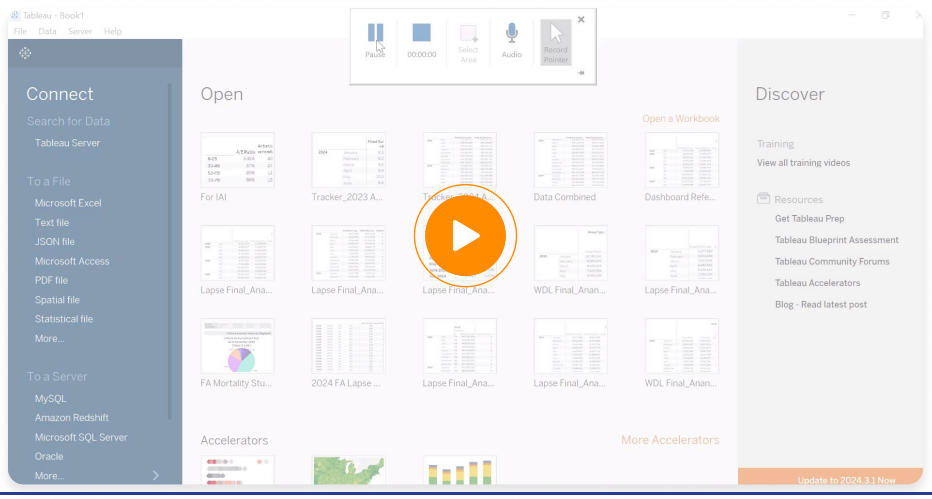
Tell us what is something wrong that is done?

- ○ Everything is correct
- ○ Forgot to add 1 to the attained age calculation
- ○ Should have used round up function
- ○ Both B and C

Correct answer: B

Editing Existing Code

Tableau is quite flexible: If you've written a code and want to tweak it—no problem, you can easily make changes. To show you how it's done, we're dropping another screen recording so you can see exactly how to edit an existing code in your workbook. Let's keep it smooth and simple!



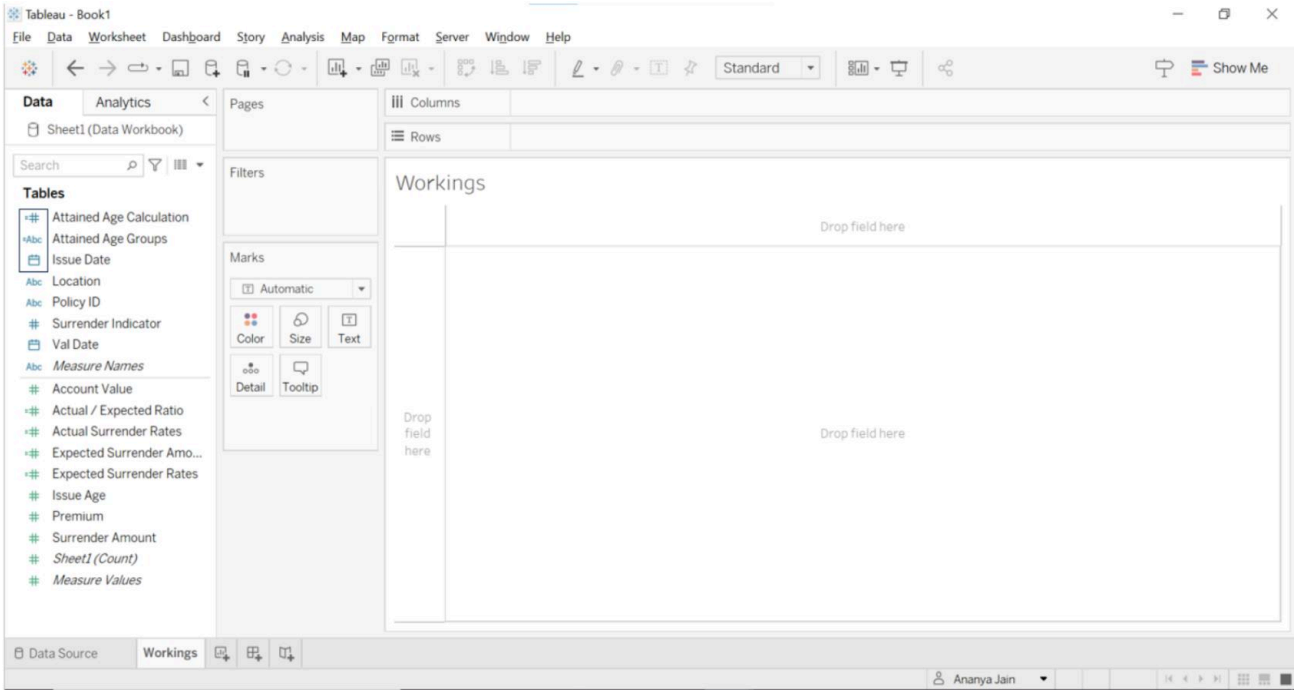
Codes

Attained Age Calculation
round([Issue Age]+(([Val Date]-[Issue Date]+1)/365),0)

Attained Age Groups
if [Attained Age Calculation]>= 0 and [Attained Age Calculation]<=29 then
"0-29"
ELSEIF
[Attained Age Calculation]>=30 and [Attained Age Calculation]<=49 then "30-49"
ELSEIF
[Attained Age Calculation]>= 50 and [Attained Age Calculation]<=69 THEN "50-69"
ELSEIF
[Attained Age Calculation]>= 70 and [Attained Age Calculation]<=79 then "70-79"
ELSEIF
[Attained Age Calculation]>=80 THEN "81+"
END
Expected Surrender Rates
IF [Attained Age Groups]="0-29" THEN 0.15
ELSEIF
[Attained Age Groups]="30-49" THEN 0.12
ELSEIF
[Attained Age Groups]="50-69" THEN 0.08
ELSEIF
[Attained Age Groups]="70-79" THEN 0.04
ELSEIF
[Attained Age Groups]="80+" THEN 0.02
END
Actual Surrender Rates
[Surrender Amount] / [Account Value]
Expected Surrender Amount
[Expected Surrender Rate]*[Account Value]
Actual / Expected Ratio
Sum([Surrender Amount]) / sum([Expected Surrender Amount])

Conclusion

At the end of all coding and assumption settings, your worksheet should look like –



Notice how the number of fields under the Data pane on left side have increased and there is a small dot along with # for the coded fields. This will help in distinguishing between coded and non-coded fields.
By now, we hope you've spotted the three fields we converted from measure to dimension. Why? Because Tableau, being its smart self, saw they were numeric and automatically treated them as measures. But hey, we needed them as dimensions!
The stars of this conversion show?
⭐ Location,
⭐ Surrender Indicator, and
⭐Attained Age Calculation.
Yup, those are the fields we transformed into dimensions to fit our needs. Keep an eye on such data format changes —they're important! 👀
With all the assumptions set and coding done in our Tableau workbook, it's time for the grand finale—building dashboards! But wait, there's more—stay sharp as we debug those pesky little errors, in our next Episode.

About the author(s)



Ananya Jain

Actuarial Team Lead
Accenture

Close to 7 years of actuarial experience ranging from pensions to life insurance. My work experience consists of valuation of employee benefits to assumptions unlocking and experience studies for group retirement business and testing of fixed annuities products. I like to read and watch mystery and thriller genres.



Simran Gupta

Actuarial Analyst
Accenture

Over three years of actuarial experience spanning model validation, interest rate recommendations, and a strong understanding of UL/VUL and traditional life insurance products in the U.S. market. Possess knowledge of LDTI implementation and currently support the Life CFA team at Accenture, contributing to strategic initiatives and delivering impactful solutions.

The Actuary India
Magazine Of The Institute Of Actuaries Of India

Tableau and Data Visualization

Getting to Know Tableau: Part -4 Visuals & Dashboards

Tableau is a data visualization tool capable of handling large amount of data efficiently. This hands-on training series developed by Ananya and Simran is targeted for first-timers. You get acquainted with the Tableau UI and a few hands-on exercises to build confidence.
If you haven't read our part-3, Click here

The Final Step! ● Screen Recording (3) ● Difference btwn a Worksheet, Dashboard, & Story ● Screen Recording (4) ● Let's Talk Errors! ● Conclusion

The Final Step!

After setting up everything in Tableau so far, we're down to the most exciting part—creating visuals and dashboards! Before we dive in, let's first explore the charts and visuals that Tableau supports. Spoiler: it's super fun!

We're not going to dive into every single option, but we have pasted a snippet below for a quick overview of charts and graphs Tableau offers. The key is to pick the right visualization based on your data dimensions and measures. Choose wisely, and let your data shine! 💥!



Screen Recording Alert! 📽️

We're throwing in another screen recording where we'll show you how to visualize data in three different ways. At this point, please feel free to play around with the Tableau UI to see how various options/tools impact the visualization.

Chart 1

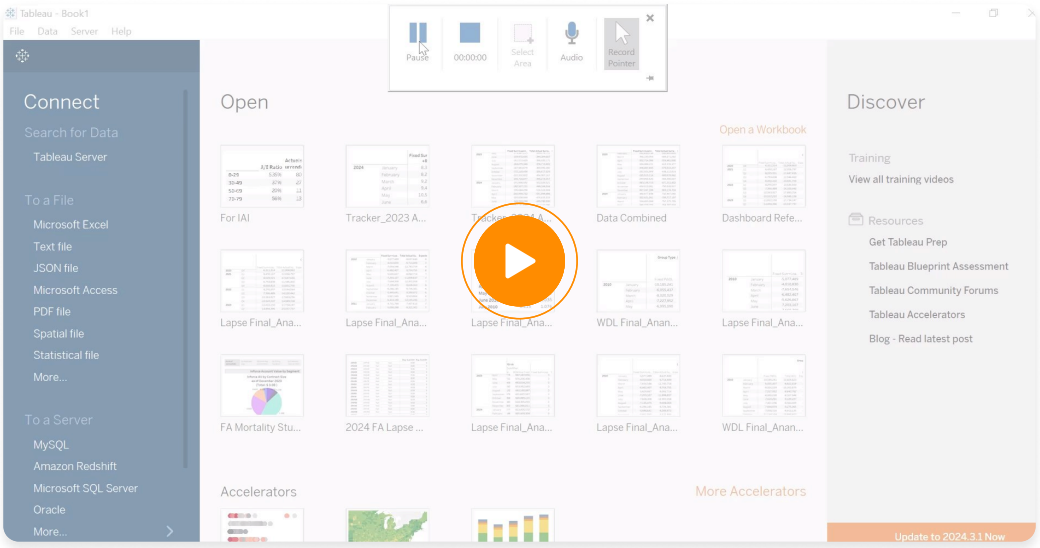


Chart 2

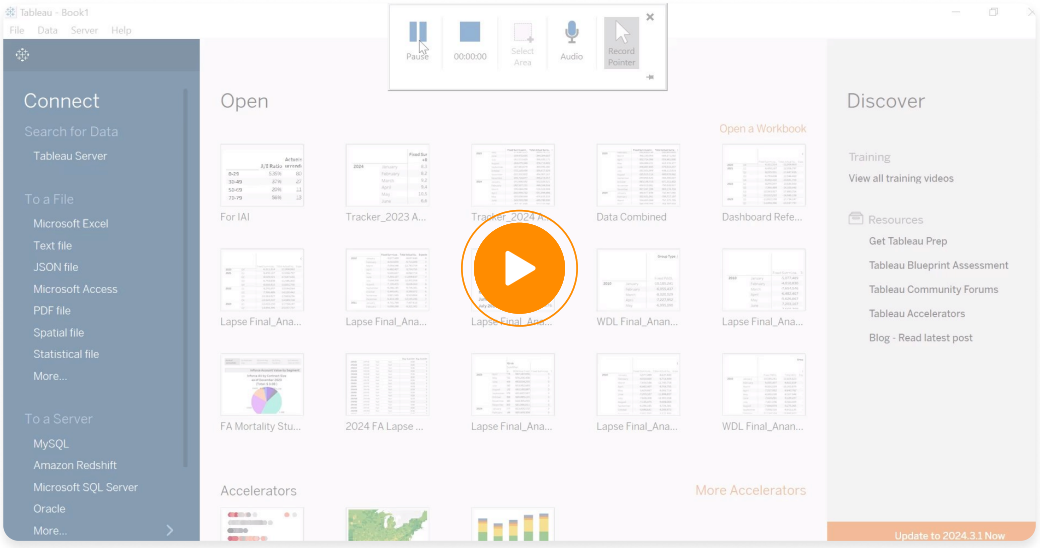
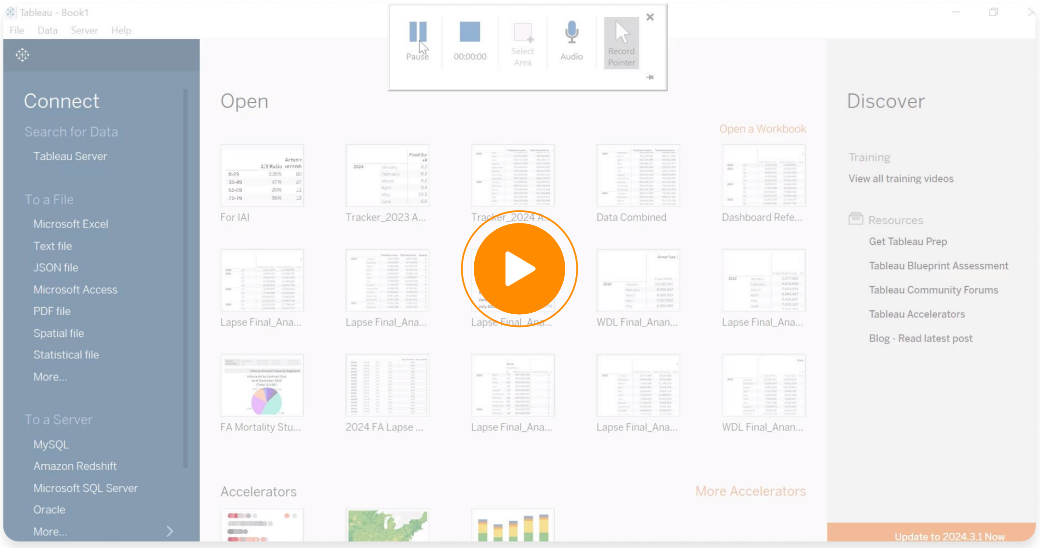


Chart 3



Difference between a Worksheet, Dashboard, and Story

Once your visuals are ready, it's dashboard time! But wait—you're probably wondering:

What's the difference between a Worksheet, Dashboard, and Story?

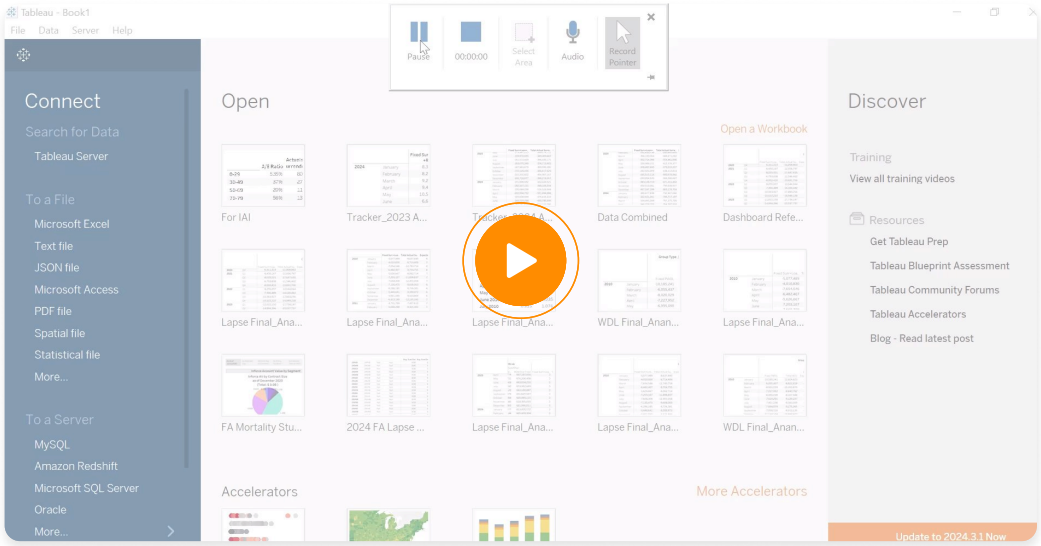
- **Worksheet:** The foundation where you create individual visuals like charts, graphs, or tables, each focusing on a specific data aspect.
- **Dashboard:** A collection of multiple worksheets combined to give a consolidated view of insights, all updated in real-time.
- **Story:** A sequence of dashboards and worksheets that narrate a complete data-driven story.

For this article, we'll focus on Worksheets and Dashboards

Another Screen Recording Alert! 🎥

To make it easier, we're attaching a recording to show how to create a dashboard from scratch. Watch, learn, and give it a try!

Chart 4



Let's Talk Errors! 🚨

Now, let's tackle a common error you might face in Tableau. Remember the **Actual / Expected Ratio** code we shared earlier? Try editing it to:
[Actual Surrender Rate] / [Expected Surrender Rate]

You'll likely see an error:
"Cannot combine aggregate and non-aggregate functions together."

Why do you think this happens? 🤔 Drop your thoughts in Comments below —we'd love to hear your take!

Conclusion

Let's keep creating, learning, and troubleshooting. Your Tableau journey is just getting started!

We're dropping a sneak peek for you—a PDF version of what your Tableau workbook will look like after all the steps are complete! 🎉
Think of it as your cheat sheet to visual awesomeness. ✨🚀

PDF
Download

About the author(s)



Ananya Jain

Actuarial Team Lead
Accenture

Close to 7 years of actuarial experience ranging from pensions to life insurance. My work experience consists of valuation of employee benefits to assumptions unlocking and experience studies for group retirement business and testing of fixed annuities products. I like to read and watch mystery and thriller genres.



Simran Gupta

Actuarial Analyst
Accenture

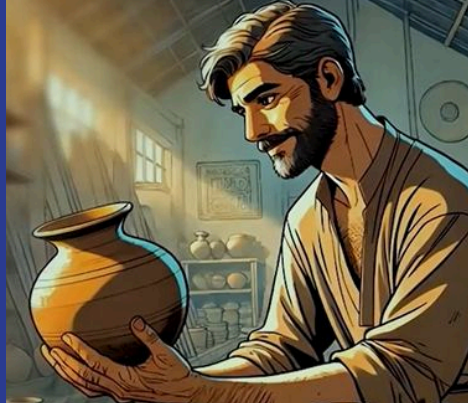
Over three years of actuarial experience spanning model validation, interest rate recommendations, and a strong understanding of UL/VUL and traditional life insurance products in the U.S. market. Possess knowledge of LDTI implementation and currently support the Life CFA team at Accenture, contributing to strategic initiatives and delivering impactful solutions.

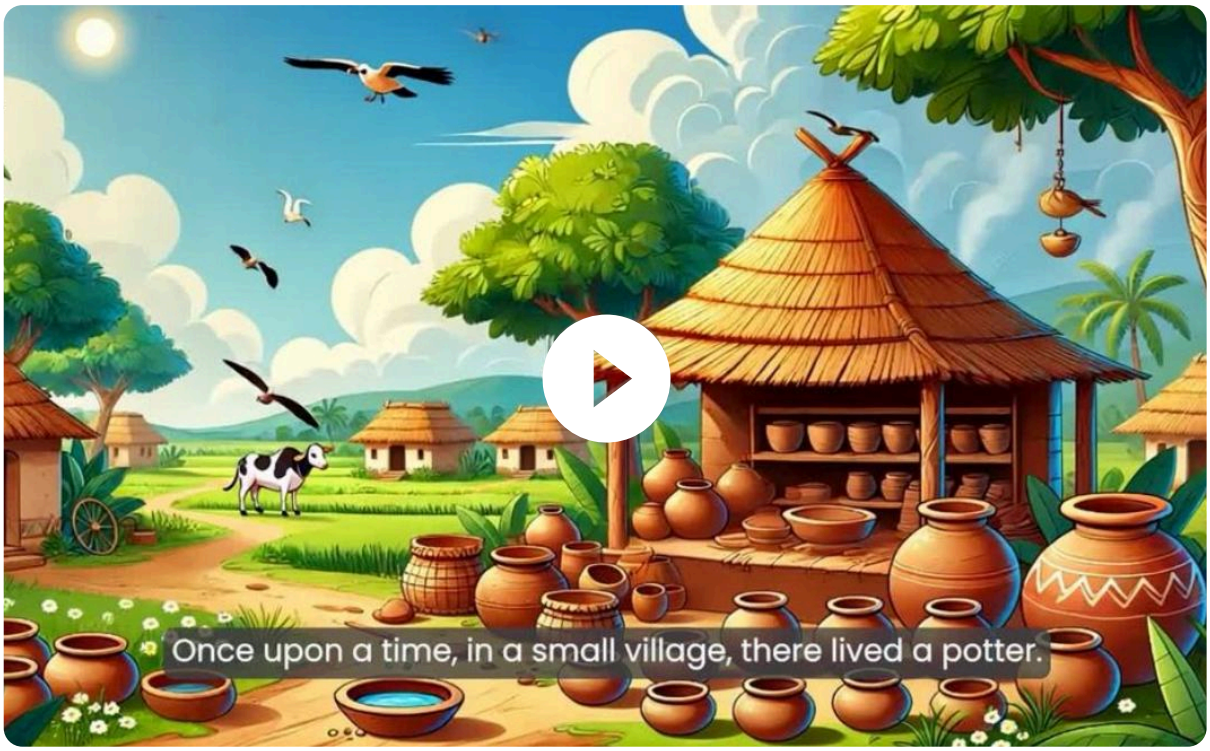
Culture

Culture

Crafting with Integrity and Precision | ईमानदारी और सटीकता से निर्माण

Crafting with Integrity and Precision by **Suruchi Bhargava** is a timeless tale that resonates deeply with actuaries, emphasizing the values of diligence, accuracy, and professional responsibility.





Narrated by

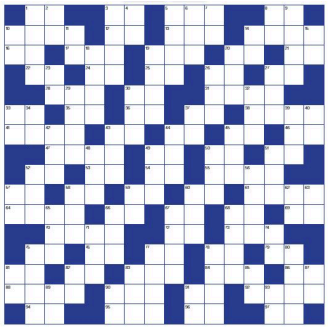


Suruchi Bhargava

Partner
K.A.Pandit

Suruchi is an experienced general insurance actuary and leads the non-life insurance consulting practice in her current role. She is an avid traveler who has explored 19+ countries and various states in India. She enjoys indulging in craft activities in her free time and was recognized as a Top 100 Women in Finance for 2020 by Equalifi.

Puzzle



Equation Crossword

Cross-Number Puzzle

Solve these crosswords by filling the correct number in each cell based on the clues provided. Take your time and as many attempts as you want (most importantly, don't give up). These are no more trickier than developing replicating portfolios! Enjoy this brain teaser by the Puzzle master: **Kathan Jain.**

Cross-Number Puzzle

ACROSS

1. 58 – 17
3. 5,847 + 3,609
7. MCCCXXVIII + CMLIII
11. 905 – 389
14. 45 – 16
15. 3 × 2,810
16. 2,814 + 803
17. 4,206 ÷ 6
18. 29 – 4
20. 1,250 – 497
22. 396 ÷ 9
23. 4,285 ÷ 5
24. 76 + 18
26. 199 + 358
28. 1,046 × 7
30. 8 × 12
32. 1,079 – 516
35. 57 + 6
37. LXIV
38. 58 + 29
40. 48 – 5
41. 123 + 70
43. 77 + 2
44. 632 ÷ 8
45. XXIX
46. 492 – 180
48. 1,055 × 5
50. DCCLXXXVI - XXX
52. 579 – 130
53. 1,237 × 6
55. 2,834 + 4,453
57. 128 – 56
58. 115 – 53
59. 12,865 ÷ 5
61. 6,921 + 502
63. 7,983 ÷ 9
65. 5 × 167
66. 4 × 1,370
69. DCCCXCV
71. 624 ÷ 8
72. 62 + 16
73. 151 – 73
75. 305 + 111
76. 3 × 6
77. 588 ÷ 7
78. 497 ÷ 7
79. LXV
80. 309 + 55
82. 2 × 22
83. 6 × 1,663
85. DCCXXXIX
88. 207 ÷ 9
90. 544 – 245
91. 46 + 25
93. 1,494 ÷ 9
95. 2 × 43
97. 7,248 ÷ 8
98. 2 × 3,742
100. 3,794 + 5,180
103. 268 ÷ 4
105. 405 + 462
106. 7 × 1,168
107. 4 × 852
108. LXXVIII

DOWN

1. 14 × 3
2. 182 + 10
3. 2 × 49
4. 47 – 3
5. 194 + 343
6. 2,492 + 3,563
7. 18 + 5
8. 341 – 77
9. 3,181 + 4,966
10. number of dozens in 204
11. 5,467 + 285
12. 535 ÷ 5
13. 488 ÷ 8
19. 93 – 34
21. 44 – 9
23. 4,524 + 3,725
25. 405 ÷ 9
27. 5,369 ÷ 7
29. 5,822 – 2,146
30. 23 × 41
31. 5,047 + 1,270
33. 1,538 × 4
34. 14 × 28
36. 2,329 + 1,649
38. 1,524 – 700
39. 2,397 ÷ 3
42. LXXVI - XXXIX
47. 7,401 ÷ 3
49. 757 – 180
51. 3 × 19
52. 1,057 × 4
54. 19 + 3
56. CCXXXV
57. 592 ÷ 8
59. 207 ÷ 9
60. 164 × 34
61. 2,784 + 4,282
62. 6,970 – 3,056
63. 7,902 ÷ 9
64. 34 × 26
65. 3 × 2,939
67. XLIV
68. 1,075 – 262
70. 4,672 ÷ 8
72. 709 × 11
74. 808 + 49
81. 36 + 6
83. 8,292 + 1,675
84. 5,690 + 3,051
86. XXXI
87. 421 × 23
89. 12 + 26
90. 139 + 67
92. 1,496 ÷ 8
94. DCXCIV
96. 865 – 198
97. 32 + 66
98. 73 + 5
99. 23 × 2
101. XIV + LVI
102. 192 ÷ 4
104. 2 × 39

About the author(s)



Kathan Jain

Lead Consultant
Ankolekar & Co.

Kathan is a Fellow member of the IAI and the IFoA with a specialization in Pensions & Other Benefits and holds a B.Sc. in Actuarial Science from YCMOU. He's obsessed with food and enjoys binge-watching & solving puzzles in his free time.

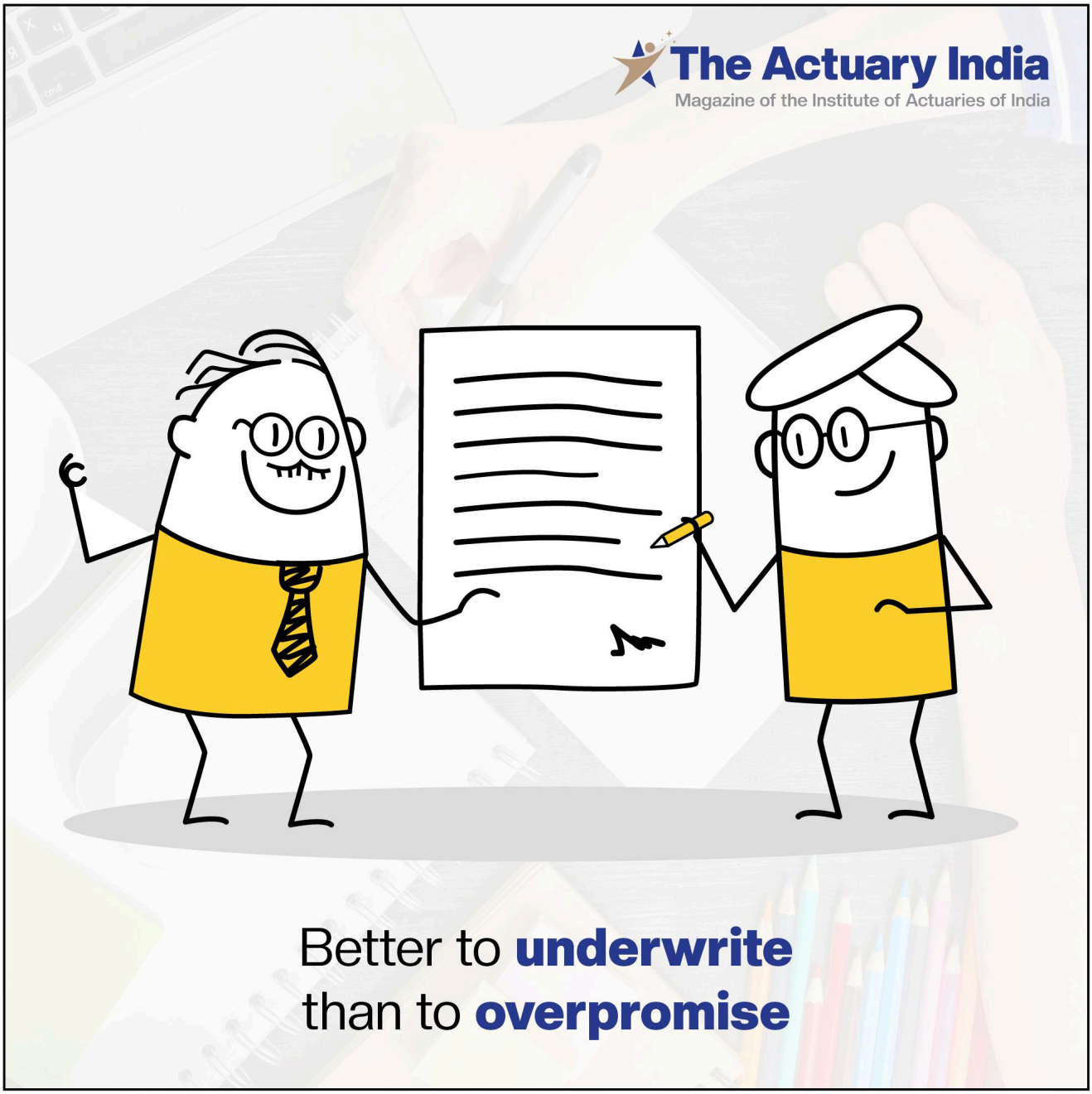
Humour

Humour

An actuary walks into Ā

A light-hearted take on the hopes, aspirations, trials, tribulations and perhaps even foibles of everyday actuaries in their everyday lives.



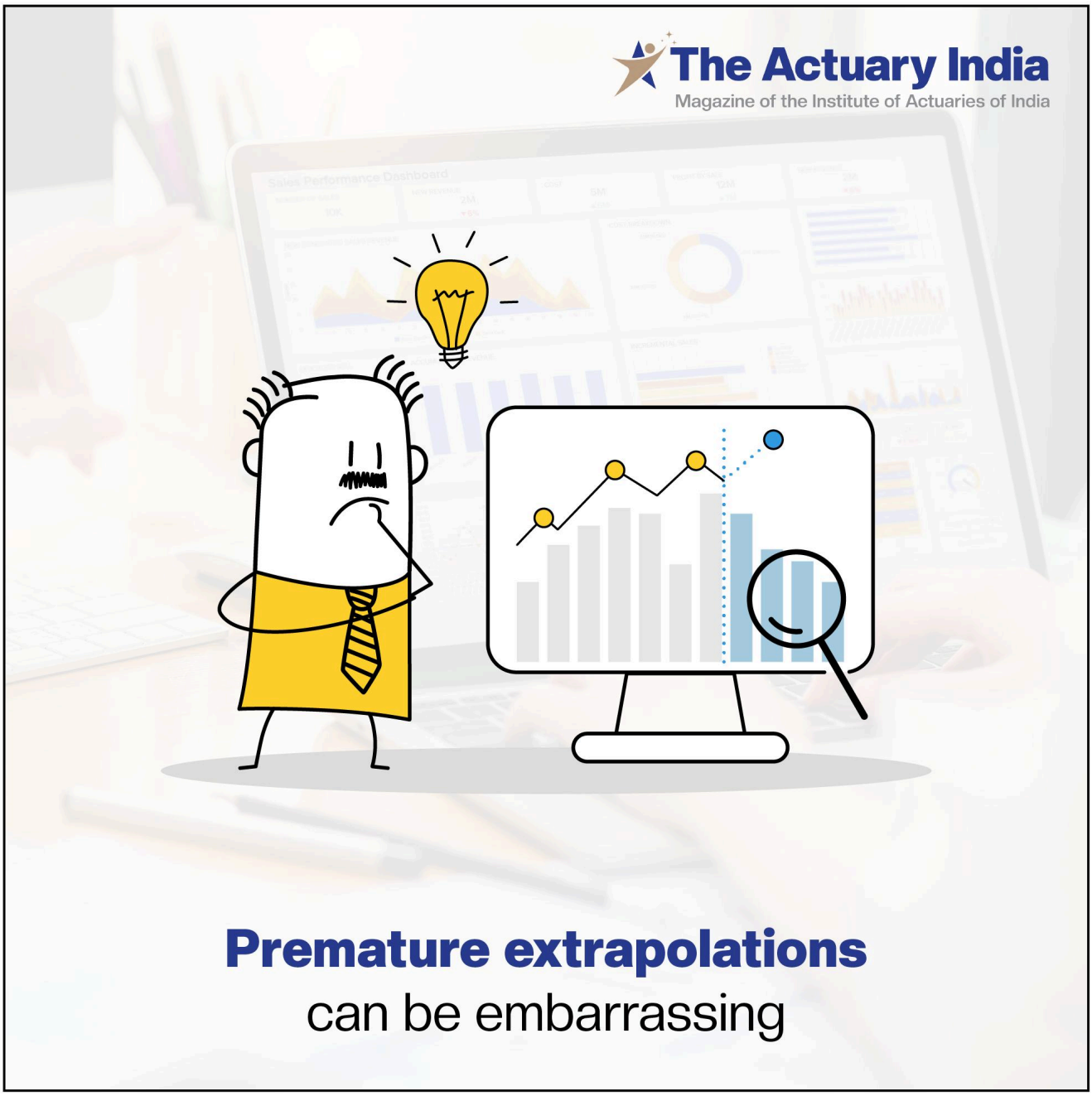


Humour

An actuary walks into Ā

A light-hearted take on the hopes, aspirations, trials, tribulations and perhaps even foibles of everyday actuaries in their everyday lives.





Announcements

THE ORIENTAL INSURANCE COMPANY LIMITED
(A Govt. of India Undertaking)
Corporate Office, Block - 4, Plate-A, NBCC Office Complex, Kidwai Nagar East,
New Delhi – 110023

CIN : U66010DL1947GOI007158 **Website : http://www.orientalinsurance.org.in**

APPOINTMENT OF PEER REVIEWER – ACTUARY

Applications are invited for peer review of all the statutory actuarial valuations carried out by the Appointed Actuary of our Company for the Financial Year 2024-25 in compliance of APS 33 of Institute of Actuaries of India. Interested persons may submit application on or before **21.03.2025.**

Please log on to our website https://orientalinsurance.org.in/tenders for details or click on the following link:
https://oicl-cms-media.s3.ap-south-1.amazonaws.com/Advertisement_OICL_c710f8e32e.pdf

General Manager
meerap@orientalinsurance.co.in

Our Team



Kunj Behari Maheshwari

Chief editor

Kunj Behari Maheshwari is a partner at Willis Towers Watson Actuarial Advisory LLP and the Head of Life Insurance consulting for India and Sri Lanka within WTW's Insurance Consulting and Technology division.

He is passionate about actuarial work, research and volunteers regularly towards initiatives at the IAI. He enjoys swimming and being outdoors.



Prakhar Mody

Editor

Prakhar is a qualified actuary with extensive experience in financial risk management and technology transformations having worked with banks, insurers, financial institutions and corporate clients across the globe.

He is also an avid gamer with an interest in fictional novels and trekking.



Anirudh Bansal

Editor

Anirudh is a qualified actuary and the Founder of "InsurTech Actuary" where he collaborates with start-ups to develop innovative insurance products.

He is an outdoor enthusiast who dedicates his leisure time to various adventure sports.



Rajeshwarie Iyer

Editor

Rajeshwarie Iyer is VP, Head Portfolio Costing Bangalore at SwissRe Global Business Solutions. Rajeshwarie has worked in General Insurance in reserving, pricing and regulatory reporting and is currently underwriting reinsurance.

She volunteers actively for the profession and is a classical dancer who enjoys swimming, blogging and reading.



Kathan Jain

Editor

Kathan is a qualified actuary as well as a CERA and is a partner at Ankolekar & Co. He's obsessed with food and enjoys binge-watching & solving puzzles in his free time.



Ekta Mehta

Editor

Ekta Mehta is a qualified actuary and works as a consultant at Willis Towers Watson in Singapore. She spends her free time solving large-sized jigsaw puzzles and volunteering in various actuarial capacities.



The Institute of Actuaries of India (IAI) is a statutory body established under The Actuaries Act 2006 (35 of 2006) for regulating the profession of Actuaries in India. The provisions of the said Act have come into force from the 10th day of November 2006, in terms of the notification dated 8th November 2006, issued by the Government of India in the Ministry of Finance, Department of Economic Affairs.

The Actuary India is the flagship magazine of the IAI that has been in publication for over two decades. We aim to provide our members and the larger actuarial community a platform to connect, exchange views and promote thought-leadership and research beneficial to the profession.

www.theactuaryindia.org

Developed and designed by:
ANTS Digital Pvt. Ltd.
www.antsdigital.in