

# Project 10 : Compensation Analytics (v 1

## Objective:

Analyze synthetic HR Compensation dataset to extract key insights: pay distribution, gender pay and bonus allocation.

## Business Context:

Compensation & Benefits (C&B) analytics helps HR leaders answer:

- Are we paying fairly across levels, genders, departments?
- How are bonuses distributed?
- Where are the gaps or outliers that need intervention?

This notebook covers:

- 1 . Load & explore dataset
- 2 . Core metrics (Avg/Median CTC)
- 3 . Bonus % analysis
- 4 . Gender pay gap
- 5 . Visuals (CTC by level, gender gap, bonus distribution)
- 6 . Export artifacts

✓ Synthetic dataset created at data/employee\_compensation\_sample.csv

Out[4]:

	EmployeeID	Gender	JobLevel	Department	CTC	Bonus
0	1	Male	3	Finance	1 5 4 7 0 2 1.0	2 8 2 0 5 3
1	2	Female	3	Tech	1 3 5 8 2 9 0.8	1 4 8 0 7 7
2	3	Female	2	Ops	6 6 6 5 7 4.2	1 1 6 1 0 4
3	4	Male	4	Sales	2 0 9 5 6 2 7.0	3 5 2 3 9 4
4	5	Male	3	Ops	1 6 1 2 3 6 3.0	2 3 1 6 3 8

Data Shape: (500, 6)

Out[5]:

	EmployeeID	Gender	JobLevel	Department	CTC	Bonus
0	1	Male	3	Finance	1 5 4 7 0 2 1.0	2 8 2 0 5 3
1	2	Female	3	Tech	1 3 5 8 2 9 0.8	1 4 8 0 7 7
2	3	Female	2	Ops	6 6 6 5 7 4.2	1 1 6 1 0 4
3	4	Male	4	Sales	2 0 9 5 6 2 7.0	3 5 2 3 9 4
4	5	Male	3	Ops	1 6 1 2 3 6 3.0	2 3 1 6 3 8
5	6	Male	1	Sales	2 7 1 5 5 6.0	3 3 7 1 9
6	7	Male	5	HR	3 0 4 0 3 0 5.0	5 9 8 7 3 5
7	8	Female	4	Sales	1 8 2 4 9 2 0.1	1 3 0 9 2 8
8	9	Female	5	Finance	2 7 5 0 9 1 8.4	4 3 6 7 7 2
9	1 0	Female	3	Tech	1 4 1 9 8 6 0.7	1 1 1 7 1 2

Out[6]:

	Gender	Department	Female	Male
0	Finance	1.1 2 8 9 5 5e+0 6	1.0 7 8 2 1 4e+0 6	- 4.7 0 6 0
1	HR	1.1 7 7 9 2 6e+0 6	1.3 9 6 4 9 9e+0 6	1 5.6 5 1 5
2	Ops	1.1 7 6 0 8 7e+0 6	1.1 1 9 0 9 6e+0 6	- 5.0 9 2 5
3	Sales	9.3 9 2 3 0 8e+0 5	1.3 8 5 5 0 0e+0 6	3 2.2 0 9 9
4	Tech	1.2 8 5 2 6 2e+0 6	1.4 2 1 2 6 1e+0 6	9.5 6 8 8

Average CTC: ₹ 12.18 Lakhs  
Median CTC: ₹ 8.88 Lakhs

Out[8]:

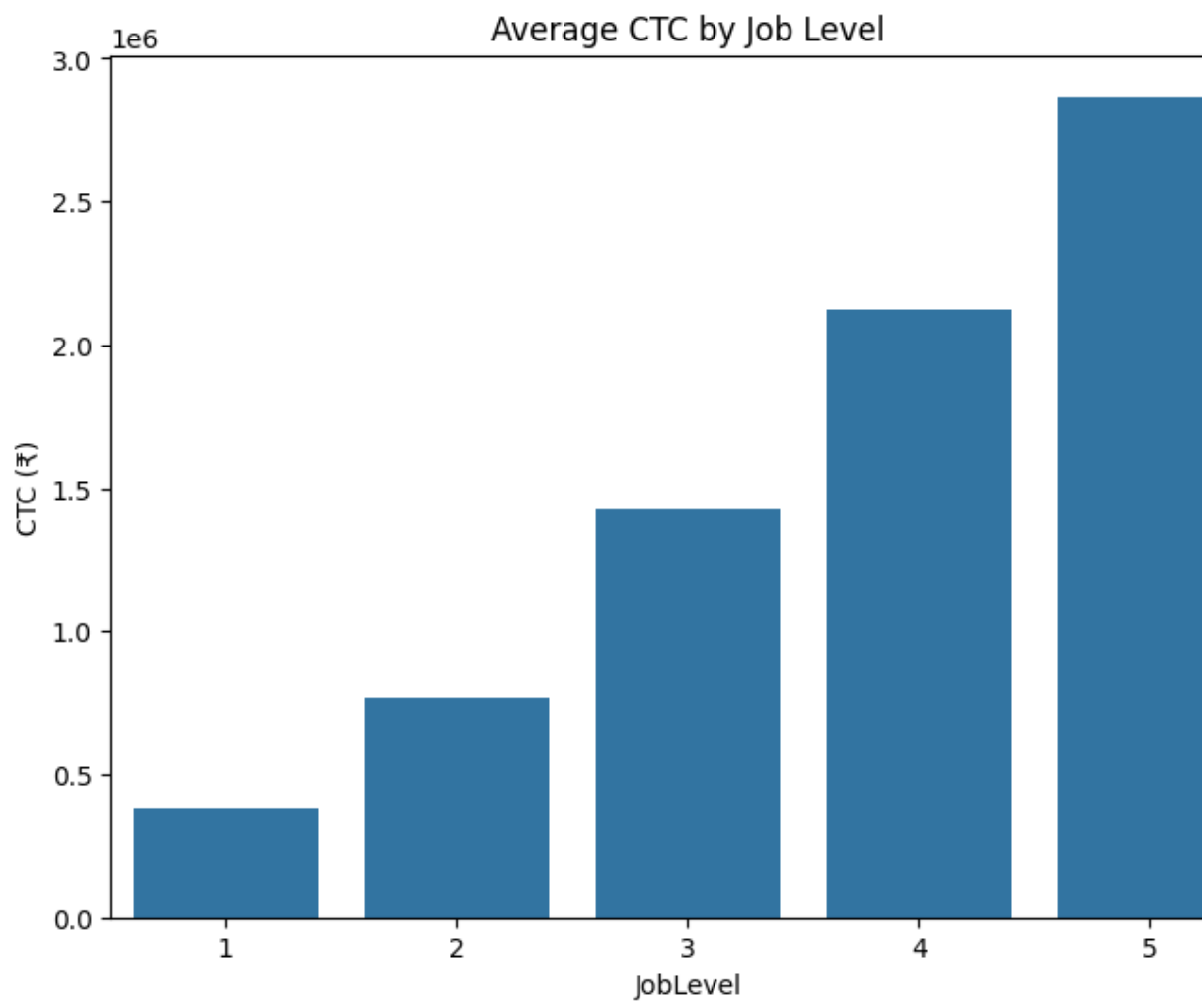
	Department	mean	median
0	Finance	1.1 0 2 3 0 3e+0 6	8 3 3 4 5 6.0 0
1	HR	1.3 1 5 3 1 5e+0 6	9 9 7 4 4 4.0 0
2	Ops	1.1 3 7 1 8 0e+0 6	8 3 0 9 5 7.5 0
3	Sales	1.1 7 6 3 1 1e+0 6	8 4 4 1 6 9.5 0
4	Tech	1.3 6 0 3 4 5e+0 6	1 3 6 0 2 3 3.4 5

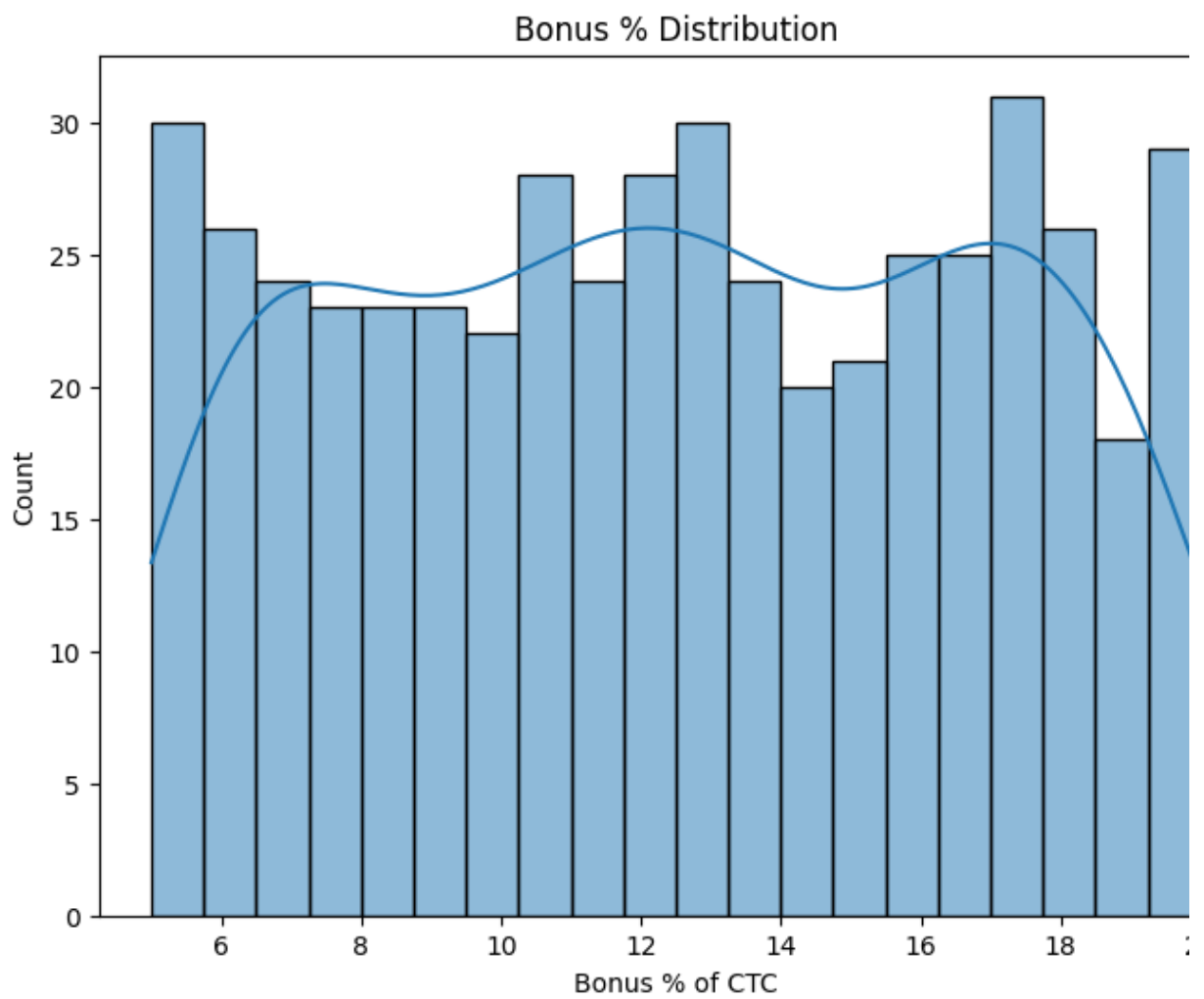
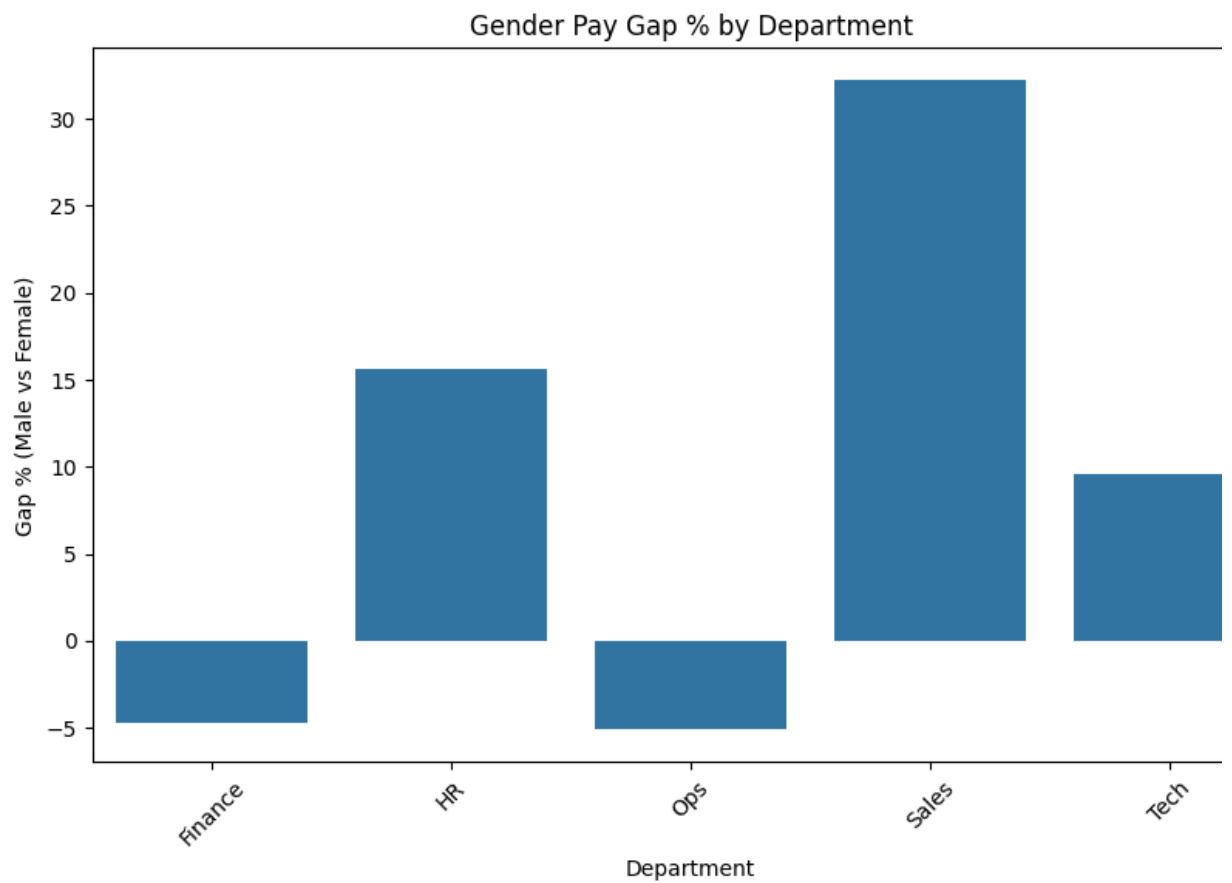
Out[9]:

	EmployeeID	CTC	Bonus	Bonus %
4 3 4	4 3 5	3 8 0 4 6 4.0	7 6 0 7 6	1 9.9 9 5 5 8 4
1 0 6	1 0 7	7 4 2 6 5 0.0	1 4 8 2 0 4	1 9.9 5 6 1 0 3
4 8 3	4 8 4	3 1 0 1 2 8.3	6 1 8 4 5	1 9.9 4 1 7 4 7
4 0 9	4 1 0	1 0 1 0 0 0 6.0	2 0 1 2 2 2	1 9.9 2 2 8 5 2
1 5 3	1 5 4	1 4 4 4 7 2 9.0	2 8 7 1 5 6	1 9.8 7 6 1 1 5

Out[10]:

Gender	Department	Female										Male													
0	Finance	1	1	2	8	9	5	5	e+0	6	1	0	7	8	2	1	4	e+0	6	-4	7	0	6	0	
1	HR	1	1	7	7	9	2	6	e+0	6	1	3	9	6	4	9	9	e+0	6	1	5	6	5	1	5
2	Ops	1	1	7	6	0	8	7	e+0	6	1	1	1	9	0	9	6	e+0	6	-5	0	9	2	5	
3	Sales	9	3	9	2	3	0	8	e+0	5	1	3	8	5	5	0	0	e+0	6	3	2	2	0	9	9
4	Tech	1	2	8	5	2	6	2	e+0	6	1	4	2	1	2	6	1	e+0	6	9	5	6	8	8	





- ✓ Artifacts generated:
- data/Comp\_Analytics\_Processed.csv
  - images/comp\_ctc\_by\_joblevel.png
  - images/comp\_gender\_gap.png
  - images/comp\_bonus\_dist.png

## ✓ Conclusions

- **Average CTC:** X Lakhs, **Median CTC:** Y Lakhs
- **By Level:** Pay rises steadily with seniority.
- **By Gender:** Gap of Z% in Dept A (highest disparity).
- **Bonuses:** Top 10 % employees capture ~\_\_% of total bonus pool.

📄 Notebook: [Compensation\\_Analytics\\_V 1 .ipynb](#)