Attrition Analysis

- Dheeraj Vempaty

Objective

- Analyze employee data to identify key factors impacting attrition and recommend actionable strategies to improve retention.

Data Cleaning and Preparation

- ✓Took a backup of the original table and removed duplicates and non-numeric Employee IDs.
- ✓Filtered rows with "**NA**" while analyzing the Survey ratings vs Attrition for cleaner output.
- ✓Joined general_data with survey tables to create a unified dataset.

Data Cleaning and Preparation

✓Derived Fields: Year of Birth (YoB) did not match Age or Experience. Updated YoB based on Age to ensure consistency.

```sql
23      select age,TotalWorkingYears,yob from general_data_bakup_may_24 where age=19;
```

	Age	TotalWorkingYears	YoB
1	19	1	1996
2	19	1	1996
3	19	1	1996
4	19	1	1996
5	19	1	1996
6	19	0	1996
7	19	1	1996

```sql
-- updating YoB based on Age
update general_data
set YoB=2025-Age;
-- Validating of YoB
select age,TotalWorkingYears,yob from general_data where age=33;
select min(age),max(age) from general_data;
```
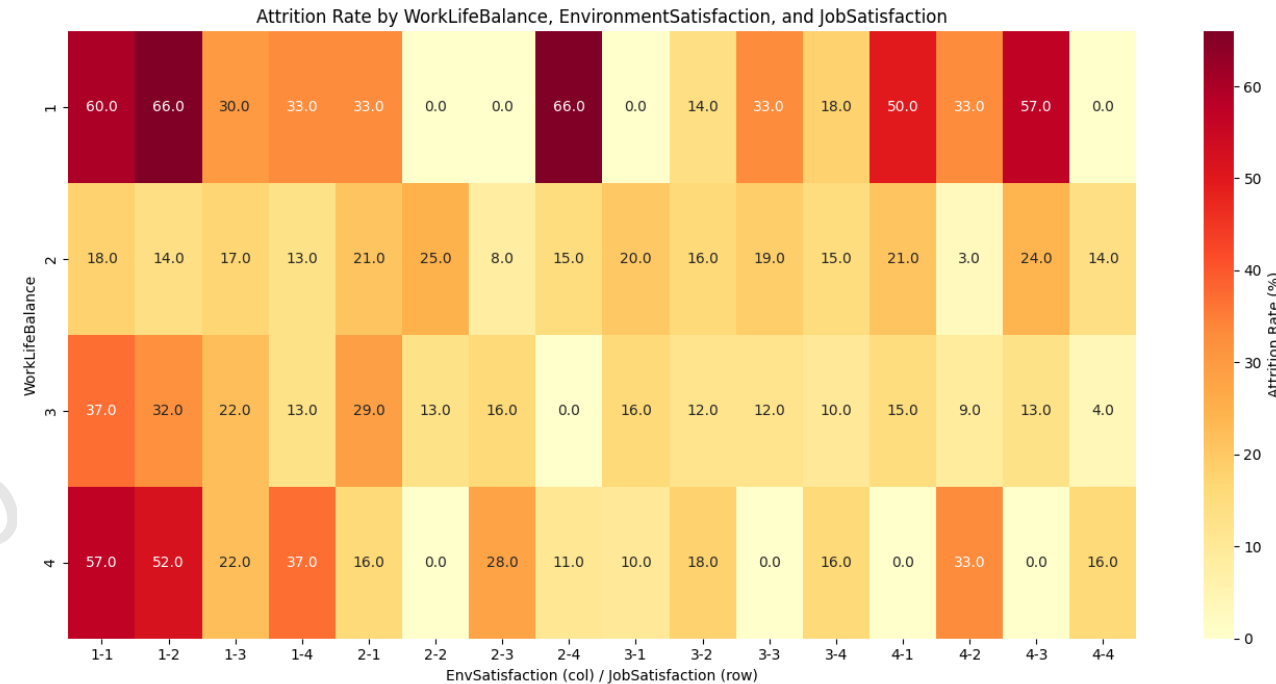
Observations

A. Survey Feedback :

- ✓ **WorkLifeBalance = 1** showed the highest attrition rate at **31.4%**.
- ✓ **EnvironmentSatisfaction = 1** and **JobSatisfaction = 1** also show elevated attrition (~25%+).

WorkLifeBalance	Total_Employees	Attrition_Percent
1	239	31.0
4	454	17.0

EnvironmentSatisfaction	JobSatisfaction	Total_Employees	Attrition_Count
1	1	158	60
1	2	141	48
2	1	162	42

Attrition Rate by WorkLifeBalance, EnvironmentSatisfaction, and JobSatisfaction

Observations

A. Survey Feedback :

✓ *Attrition spikes when multiple low survey ratings occur together.*

| EnvironmentSatisfaction	JobSatisfaction	WorkLifeBalance	total_HC	Attrition_percent
1	2	1	9	66
2	4	1	9	66
1	1	1	15	60
1	1	4	21	57

✓ *Employees with low satisfaction and poor work-life balance are at the highest risk of leaving.*

Observations

B. Demographic & Job Role:

✓ **Single** employees have a **57%** higher attrition rate compared to the overall average(**16%**), and over **2X** higher than married employees.

✓ **Generation Y (Millennials)** are more likely to leave than Generation X.

✓ **Frequent travelers** show higher attrition rate than those who travel rarely.

Generation	total_HC	Attrition_percent
Generation Z (1997 and …	24	50
Generation Y / Millennia…	1929	22
Baby Boomers (1946 –1964)	429	12
Generation X (1965 –1980)	2028	10

Attrition Rate by Civil Status

Attrition Rate Distribution by Travel Frequency
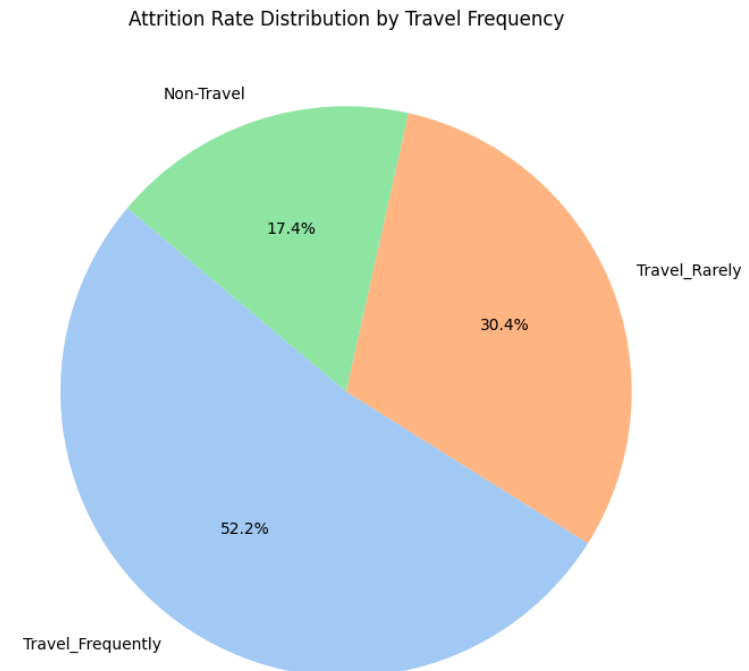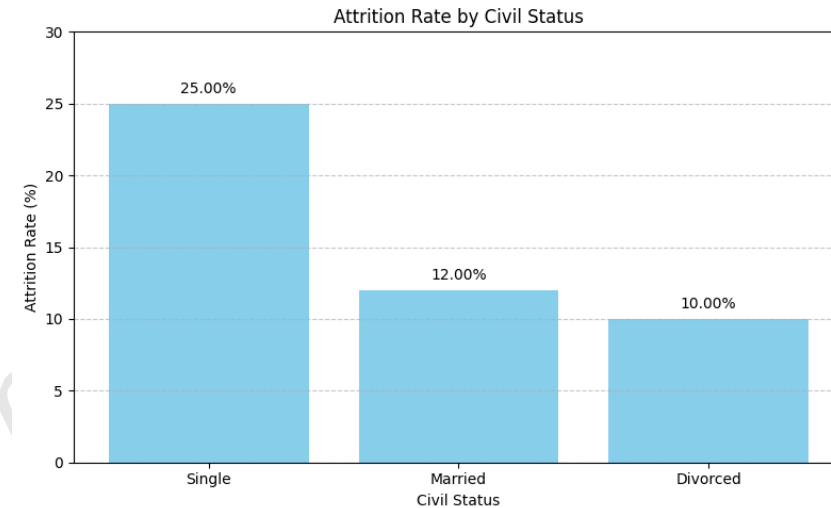
Observations

B. Demographic & Job Role:

✓**Human Resources** department shows particularly high attrition in **technician/sales** roles.

| Organization	JobPosition	total_HC	Attrition_percent
Human Resources	Laboratory Technician	39	46
Human Resources	Sales Executive	54	44
Human Resources	Healthcare Representative	9	33
Human Resources	Manager	9	33
Research & Development	Research Director	156	26
Sales	Healthcare Representative	123	26

✓**R&D roles**, like **Research Director**, show significant attrition.

Observations

C. Ethnicity & Gender:

✓Minor differences exist across ethnicity and gender groups, they **do not significantly drive attrition** compared to work experience, role dynamics, and employee satisfaction.

Attrition Rate by Ethnicity and Gender
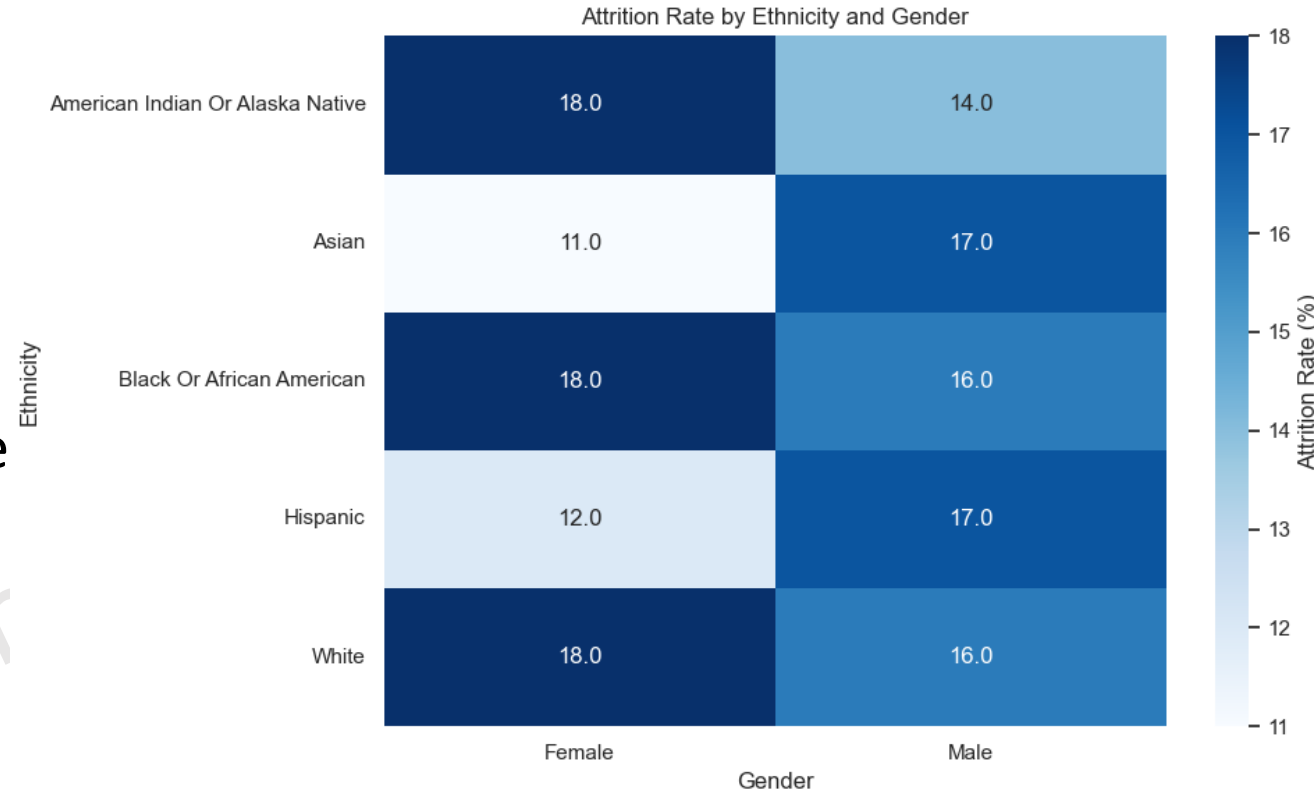
Observations

D. Years of Experience:

✓ Employees with **<2 years** under their manager face attrition rates up to **50%.**

WorkingYearsGroup	ManagerYearsGroup	CompanyYearsGroup	Total_Employees	Attrition_Count	Attrition_Percent
11-20 Years	<2 Years	3-6 Years	18	9	50.0
<5 Years	<2 Years	<3 Years	353	164	46.46
5-10 Years	<2 Years	<3 Years	180	45	25.0
5-10 Years	2-5 Years	<3 Years	120	27	22.5

WorkingYearsGroup	ManagerYearsGroup	CompanyYearsGroup	Total_Employees	Attrition_Count	Attrition_Percent
5-10 Years	2-5 Years	7-15 Years	99	6	6.06
11-20 Years	>5 Years	15+ Years	107	6	5.61
20+ Years	2-5 Years	3-6 Years	96	4	4.17
20+ Years	>5 Years	7-15 Years	92	3	3.26

✓ Employees with **longer tenure** at the company and **stable manager** show much lower attrition.

Observations

D. Years of Experience:

✓Shorter tenure with the company and manager, especially when combined with recent promotions significantly increases Attrition risk.

| WorkingYearsGroup	TrainingGroup	CompanyYearsGroup	LastPromotionGroup	ManagerYearsGroup	Total_Employees	Attrition_Count	Attrition_Percent
5-10 Years	3-5 Trainings	7-15 Years	1-3 Years	<2 Years	12	9	75.0
<5 Years	3-5 Trainings	<3 Years	1-3 Years	<2 Years	36	24	66.67
5-10 Years	0 Trainings	3-6 Years	0 Years	2-5 Years	15	9	60.0
<5 Years	1-2 Trainings	<3 Years	1-3 Years	<2 Years	18	9	50.0

E. Salary/Stocks/Hike:

✓Salary is not a strong retention lever—non-monetary factors dominate.

✓High salary or large raises do not guarantee retention.

Observations

F. **Commute to Office:**

✓ Majority of employees live within 5 km of the office, and attrition rates for those with short (<5 km) or mid-range (5–20 km) commutes are **comparable**, ranging between **16%–18%.**

✓ This suggests that Proximity to office has minimal influence on attrition (~16–18% regardless of distance).

DistanceGroup	Total_Employees	Attrition_Count	Attrition_Percent
11-20 km	720	132	18.33
5-10 km	1377	228	16.56
<5 km	1701	273	16.05
>20 km	612	78	12.75

Distance From Home: Total Employees, Attrition Count vs Attrition Percent
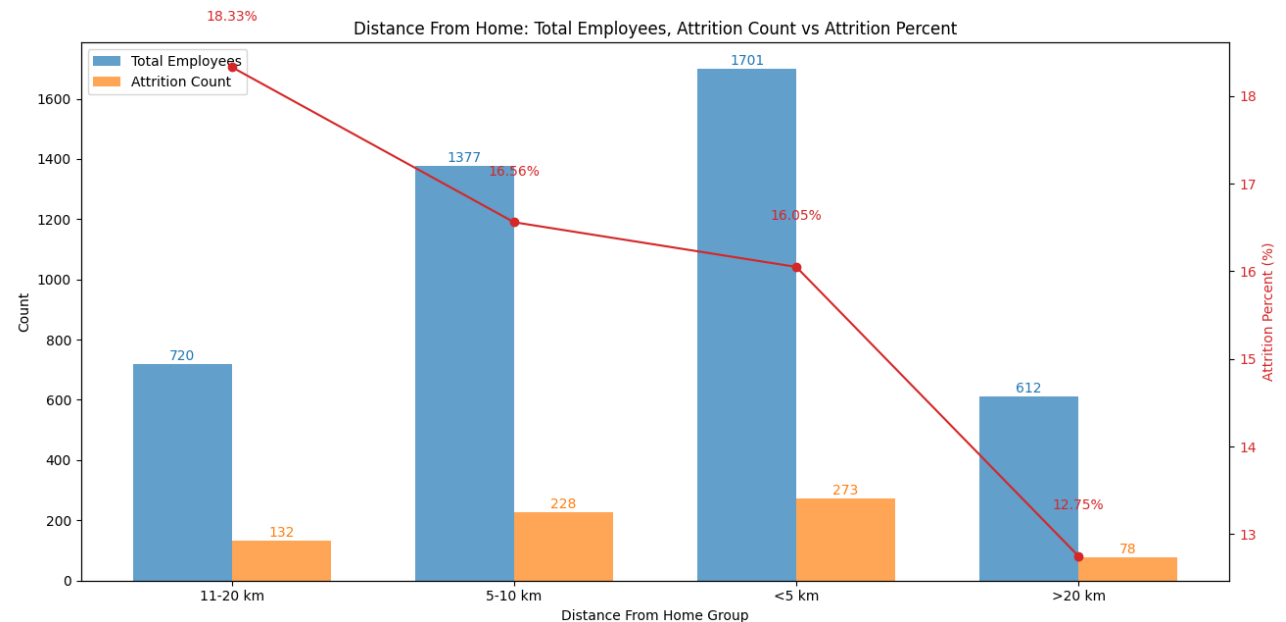
Observations

G. Time Spent in Office:

✓Employees **working >8 hours** per day have a much higher attrition rate (**~29%**).

✓Those working a **balanced 6–8 hours** per day show the lowest attrition (**~10%**).

Attrition Rate by Average Daily Working Hours
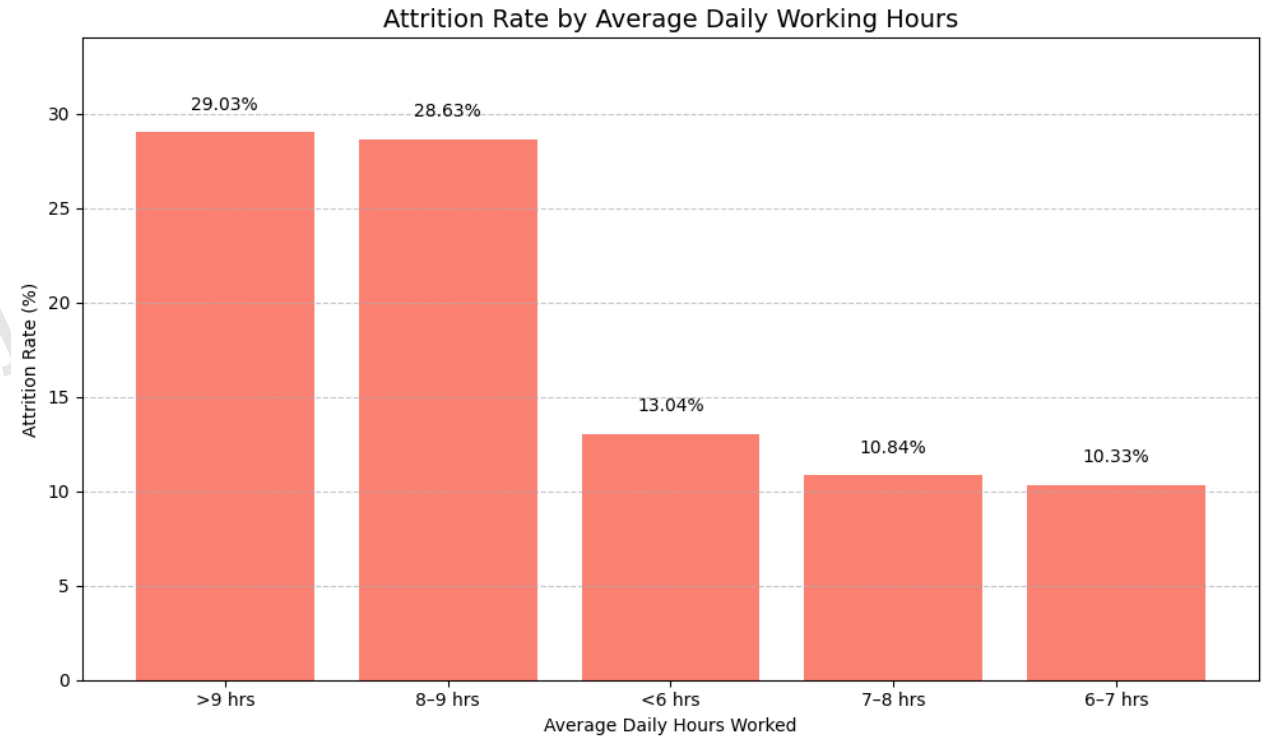
Insights Summary

✓ Poor Work-Life Balance (**31.4%** attrition)

✓ Low Environment/Job Satisfaction (**25–26%**)

✓ Short Tenure with Manager & Recent Promotions (<2 years → up to 50%)

✓ Frequent travelers show more attrition than rare or non-travelers

✓ High Working Hours (>8 hrs/day → **29%**)

Salary, Ethnicity, Gender and Office Commute Distance are not strong drivers of attrition.

Recommendations

✓**Work-Life Balance**: Roll out flexible schedules or hybrid models.

✓**Targeted Engagement**: Focus retention programs on Millennials and single employees.

- Support Early-Stage Manager Relationships (<2 years) to reduce **50%+** attrition risk.

- Monitor & Manage **High-Risk Roles** – Some roles have **20%+** attrition despite good compensation.

Data Enhancements for Better Attrition Insights

Few **high-value dimensions** to add on current dataset for *strengthen insights, KPIs,* and *decision-making*:

➢Attrition Type - Voluntary vs. Involuntary

➢Exit Reason - Better offer, relocation, manager issues, burnout etc.,.

➢Team Size / Span of Control

➢Retention Risk