**📌 Dataset Overview**

* **Rows**: 1,470 employees
* **Columns**: 39 features (demographic, job-related, satisfaction scores, etc.)
* **Purpose**: Understanding patterns behind **employee attrition** (Yes/No)

**1. 📊 Attrition Snapshot**

* **Total Attrition (Yes)**: 237 employees (**16.1%**)
* **Remaining (No)**: 1233 employees (**83.9%**)

Attrition is relatively low, but significant enough to warrant attention.

**2. Income and Attrition**

| **Status** | **Average Monthly Income** |
| --- | --- |
| **Attrition: Yes** | $4,787 |
| **Attrition: No** | $6,832 |

**Insight**: Employees who left earned **~30% less** on average.

**3. Attrition by Age Bracket**

| **Age Bracket** | **No** | **Yes** |
| --- | --- | --- |
| Entry Level | 59 | 38 |
| Young Professionals | 442 | 112 |
| Mid-Career Professional | 454 | 51 |
| Late-Career Professionals | 220 | 25 |
| Pre-Retirement | 58 | 11 |

**Insight**:

* Highest attrition among **young professionals**.
* **Entry-level** and **mid-career** also at risk.

**NB:**

* Employees who left were **younger**, **less experienced**, and **less tenured** in their role and company.
* **Lower income** is the most prominent financial indicator.

**4. Attrition by Department**

| **Department** | **No** | **Yes** |
| --- | --- | --- |
| Human Resources | 51 | 12 |
| Research & Development | 828 | 133 |
| Sales | 354 | 92 |

**Insight**: Sales department has the **highest attrition rate** relative to its size.

**5. ⏱️ Overtime and Attrition**

| **OverTime** | **No** | **Yes** |
| --- | --- | --- |
| No | 944 | 110 |
| Yes | 289 | 127 |

**Insight**:

* Employees who work **overtime** are **3x more likely** to leave.
* Overtime strongly correlates with attrition.

**Analysis: What Drives Attrition?**

**1. 🚨 Overtime is the *strongest single contributor***

* Employees who work overtime are **3× more likely** to leave.
* Among those who left, **127 out of 237** worked overtime (53.6%).

**2. 💰 Income Level**

| **Income Group** | **Attrition Count (Yes)** |
| --- | --- |
| **Low Earners** | **163** (highest) |
| Modest Earners | 40 |
| Mid Earners | 29 |
| Top Earners | 5 |
| High-Mid Earners | 0 |

**Conclusion**: Lower income is highly correlated with higher attrition.

**3. 🧑‍🔬 Job Role**

Top 3 job roles by attrition:

| **Job Role** | **Left Employees** |
| --- | --- |
| Laboratory Technician | 62 |
| Sales Executive | 57 |
| Research Scientist | 47 |

**Observation**: Attrition is **highest in technical and sales roles**.

**4. Marital Status**

| **Marital Status** | **% of That Group Who Left** |
| --- | --- |
| **Single** | 25.5% (120 of 470) |
| Married | 12.5% (84 of 673) |
| Divorced | 10.1% (33 of 327) |

**Conclusion**: Single employees are **2× more likely** to leave.

**🎯 Final Takeaway:**

The **major contributors to attrition** in your dataset are:

1. **Working Overtime**
2. **Low Monthly Income / Income Level**
3. **Being Single**
4. **Low Tenure (Short Years at Company, in Role, or with Manager)**
5. **Job Roles** like Lab Tech, Sales, and Research positions
6. **Younger Age & Fewer Years of Experience**

**🧾 Strategic Recommendations**

1. **Target Retention Programs**:
   * Focus on **young and entry-level professionals**.
   * Investigate why **sales staff** leave more often.
2. **Monitor Overtime**:
   * High correlation with attrition—introduce policies to reduce workload or increase compensation.
3. **Salary & Promotion Transparency**:
   * Low earners are leaving more; consider evaluating pay gaps across departments and roles.
4. **Mentorship & Manager Engagement**:
   * Strong ties between **years with manager** and retention. Strengthen internal career guidance and support systems.