📊 HR Data Cleaning Utilities (v 1 . 0)

This notebook demonstrates how to **simulate messy HR data** and then build a cleaning pipeline
make it analysis-ready.
Data cleaning is a critical step in People Analytics — poor quality data = misleading insights.

1️⃣ Create a Messy HR Dataset

We start from the processed dataset and intentionally add issues:

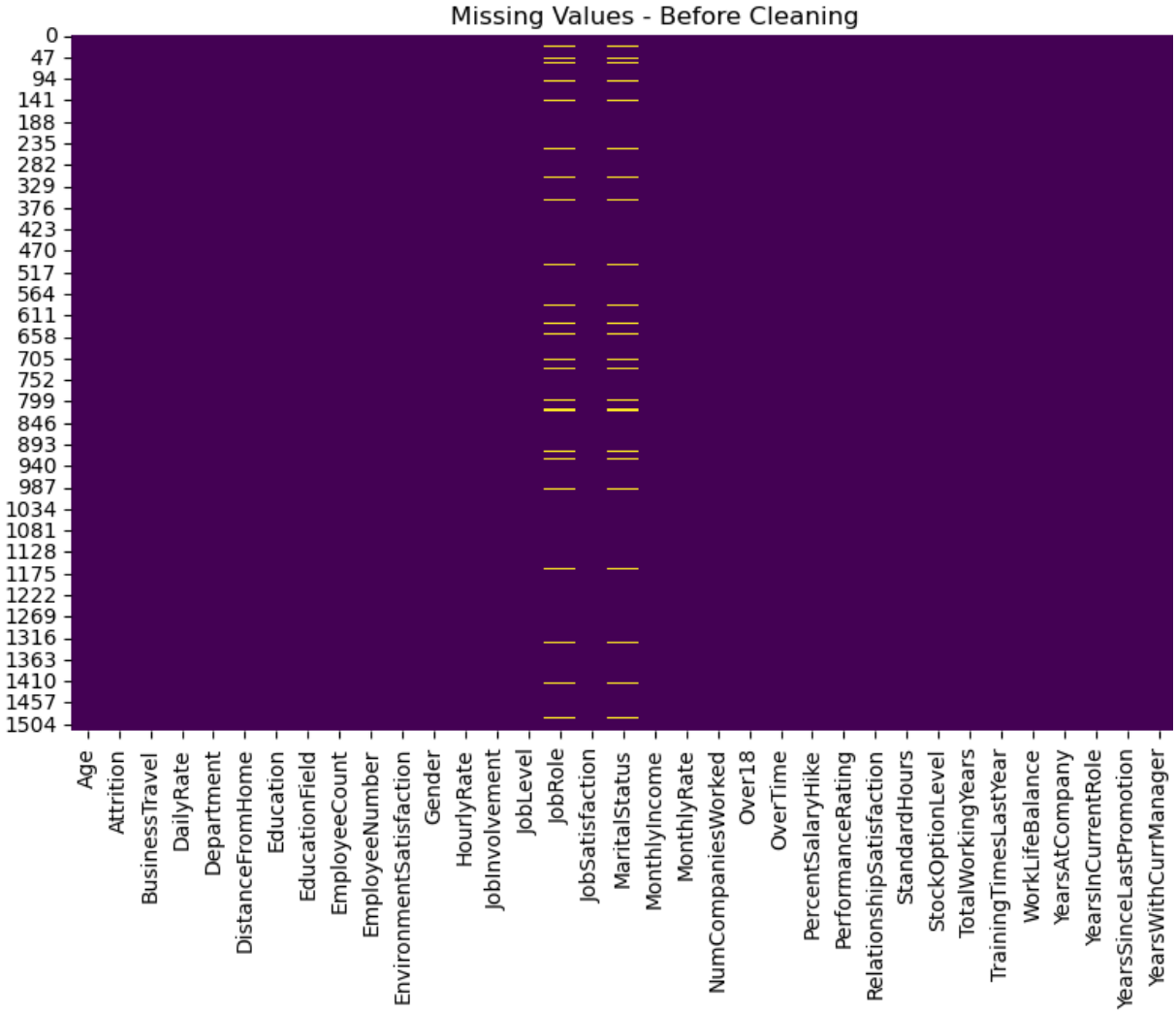
- Duplicates
- Missing values
- Inconsistent casing
- Invalid dates

```
Messy dataset created !
```

2️⃣ Explore the Messy Data

Before cleaning, let's check shape, null values, and visualize missing data.

```
Initial shape: (1520, 37)
Age                0
Attrition          0
BusinessTravel     0
DailyRate          0
Department         0
dtype: int64
```



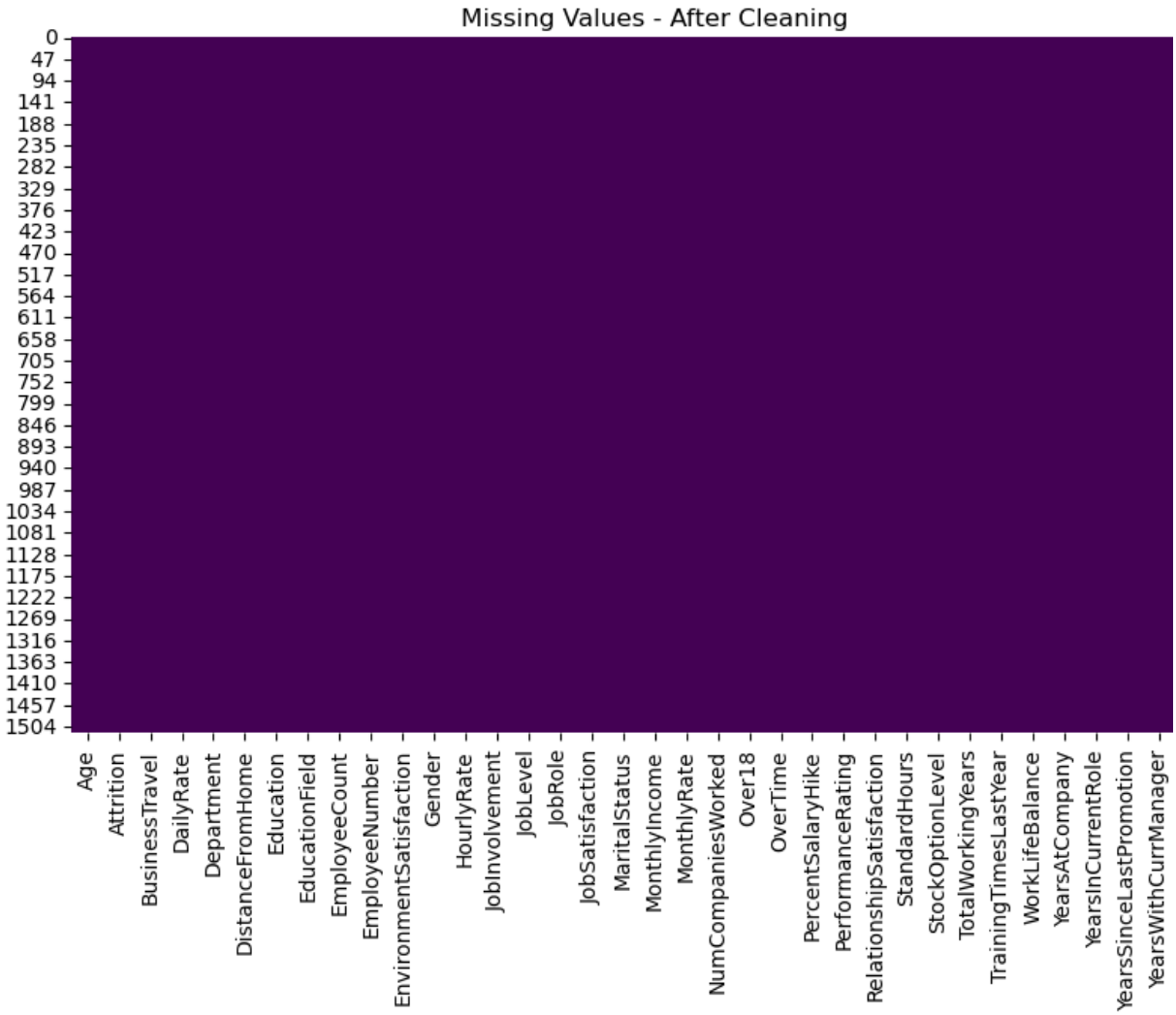
3️⃣ Apply Cleaning Steps

Now we:

1. Remove duplicates
2. Fill missing values
3. Normalize categorical values
4. Convert date columns into proper format

4️⃣ Verify the Cleaning

Check if missing values reduced and visualize again.




```
Final shape: (1519, 37)
```

5️⃣ Export the Cleaned Dataset

The cleaned dataset can now be used for further People Analytics projects.

```
Cleaning complete! Cleaned dataset saved as cleaned_hr_data.csv
```

Create a Before -After Collage

```
Collage saved at images/missing_values_collage.png
```

✅ Conclusions

- Automated pipeline successfully cleaned the dataset.
- Issues fixed: duplicates, missing values, inconsistent casing, invalid dates.
- Before-After Collage created