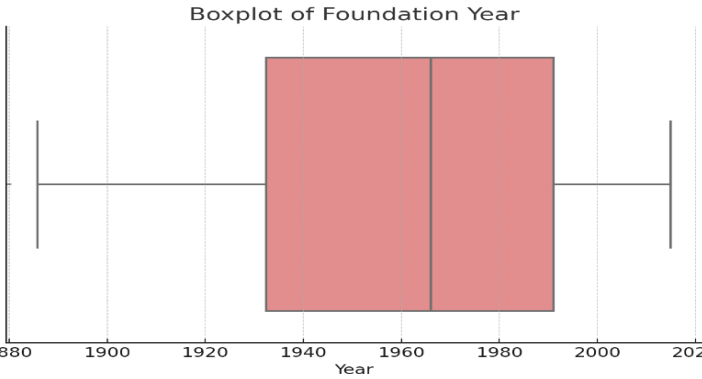
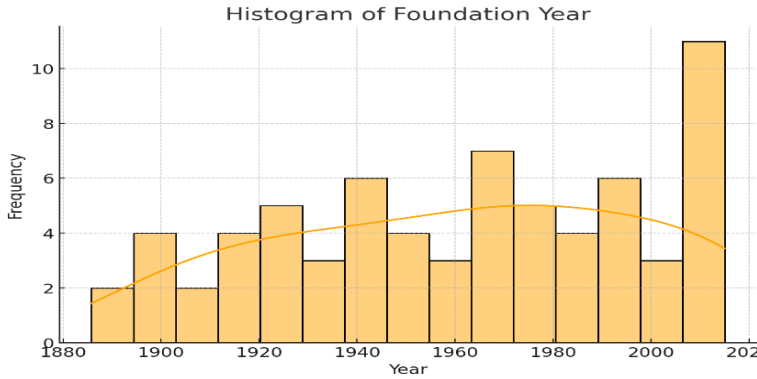
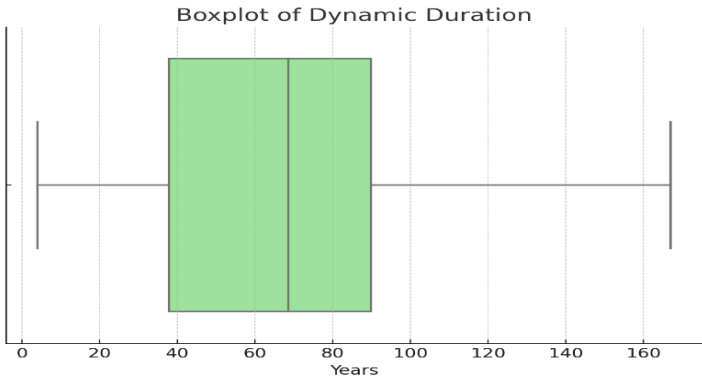
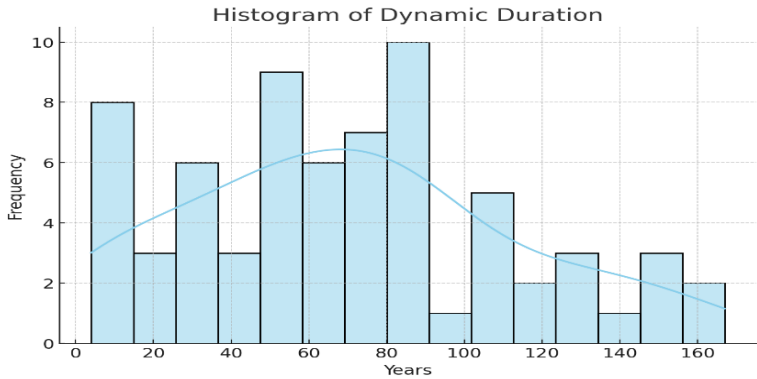


Companies Status & dynamic Duration Analysis

Company_ID		Dynamic_Duration		Foundation_Year	
Mean	35	Mean	69.8115942	Mean	1950.8841
Standard Error	2.415229458	Standard Error	5.191732039	Standard Error	5.1028023
Median	35	Median	60	Median	1962
Mode	#N/A	Mode	61	Mode	1962
Standard Deviation	20.06240265	Standard Deviation	43.12576525	Standard Deviation	42.38706
Sample Variance	402.5	Sample Variance	1859.831628	Sample Variance	1796.6628
Kurtosis	-1.2	Kurtosis	-0.968267056	Kurtosis	-0.9398076
Skewness	-1.34513E-17	Skewness	0.453924808	Skewness	-0.4867685
Range	68	Range	163	Range	157
Minimum	1	Minimum	4	Minimum	1858
Maximum	69	Maximum	167	Maximum	2015
Sum	2415	Sum	4817	Sum	134611
Count	69	Count	69	Count	69
Confidence Level(95.0%)	4.819515345	Confidence Level(95.0%)	10.35993999	Confidence Level(95.0%)	10.182484



Summary of the Data

Metric	Company_ID	Dynamic_Duration	Foundation_Year
Mean	35	~70 years	~1951
Median	35	60 years	1962
Mode	N/A	61 years	1962
Std. Deviation	20.06	43.13 years	42.39 years
Skewness	~0	Slight right (0.45)	Slight left (-0.49)
Range	68 (1–69)	163 years (4–167)	157 years (1858–2015)
Count	69 companies	69 values	69 values

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## ***🔍 Interpretation and Insights***

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- ◆ **Most companies were founded between the mid-19th century and 2015**, with a concentration around **1962** (median and mode).
- ◆ **The average company lifespan is ~70 years**, which is long, but the high standard deviation (43 years) shows **significant**
- ◆ **Lifespans are right-skewed**: most companies cluster around the median (60–70 years), but some last over 100 years, pulling the average up.
- ◆ **Foundation years are left-skewed**, suggesting more recent companies are more frequent in the data, but historical companies (from 1800s) exist too.

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## ***✓ Conclusion***

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**The data suggests a healthy mix of long-lasting and newer companies**, with a strong historical foundation period around 1962.

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## ***A paired sample t-test***

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**Was conducted to compare the Foundation Year and the Dynamic Duration** of companies. The updated **mean Foundation Year** was **1950.88**, while the **mean Dynamic Duration** was **69.81 years**. The **variance of the Foundation Year** was **1796.66**, and the **variance of the Dynamic Duration** was **1859.83**, indicating that the duration data remains slightly more spread out than the foundation years.

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## ***Pearson Correlation:***

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**A very strong negative correlation** exists between **Foundation Year** and **Dynamic Duration**, indicating that companies founded earlier generally have longer lifespans.

**Correlation coefficient**: approximately **-0.9677** (from earlier analysis).

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## ***Interpretation:***

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**As the Foundation Year increases** (i.e., companies are more recently established), their **Dynamic Duration** tends to **decrease**.

**This suggests that older companies** tend to survive longer, while **newer companies** haven't had time to accumulate long durations or may face more volatility.

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## ***Hypothesis Test Results:***

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**A paired sample t-test** was performed to compare **Foundation Year** and **Dynamic Duration**.

**Mean Foundation Year**: ~1950.88

**Mean Dynamic Duration**: ~69.81 years

**Variance**:

Foundation Year: 1796.66

Dynamic Duration: 1859.83

**T-statistic**: 199.77 (from earlier) — very high.

**P-value**:  $5.37 \times 10^{-112}$  — extremely low and **highly significant**.

**Critical t-value**:  $\pm 1.99$  at  $\alpha = 0.05$

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## ***Conclusion:***

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**Since the p-value is far below 0.05** and the t-statistic greatly exceeds the critical value, we reject the null hypothesis.

This confirms that there is a **statistically significant difference** between foundation years and operational durations of companies.

**Summary:**

Companies founded earlier (e.g., in the 19th or early 20th centuries) have typically **operated for longer durations** — up to 167 years.

The **average operational duration** across the dataset is **about 70 years**, with a wide range from **4 to 167 years**.

The **distribution of lifespans is right-skewed**, with most companies clustered around **60–70 years** but a few enduring much longer.

Foundation years are left-skewed, indicating more recent founding dates dominate, but historical outliers exist.

These results emphasize that **historical foundation plays a crucial role** in a company’s longevity, possibly due to accumulated resilience, market positioning, and legacy advantages.

**Newer companies**, while numerous, are still early in their lifecycle and may face challenges sustaining operations over decades.

Row Labels	Distinct Count of Industries	Count of Company_Name
Active	22	48
Defunct	10	12
Re_Opened	6	9
Grand Total	23	69

