

Sara Frazer - Lifespan Experiment Research

```
In [1]: import numpy as np
import pandas as pd
import seaborn as sb
```

```
In [2]: dataset = pd.read_excel("lifespan_data.xlsx")
```

```
In [3]: dataset.head()
```

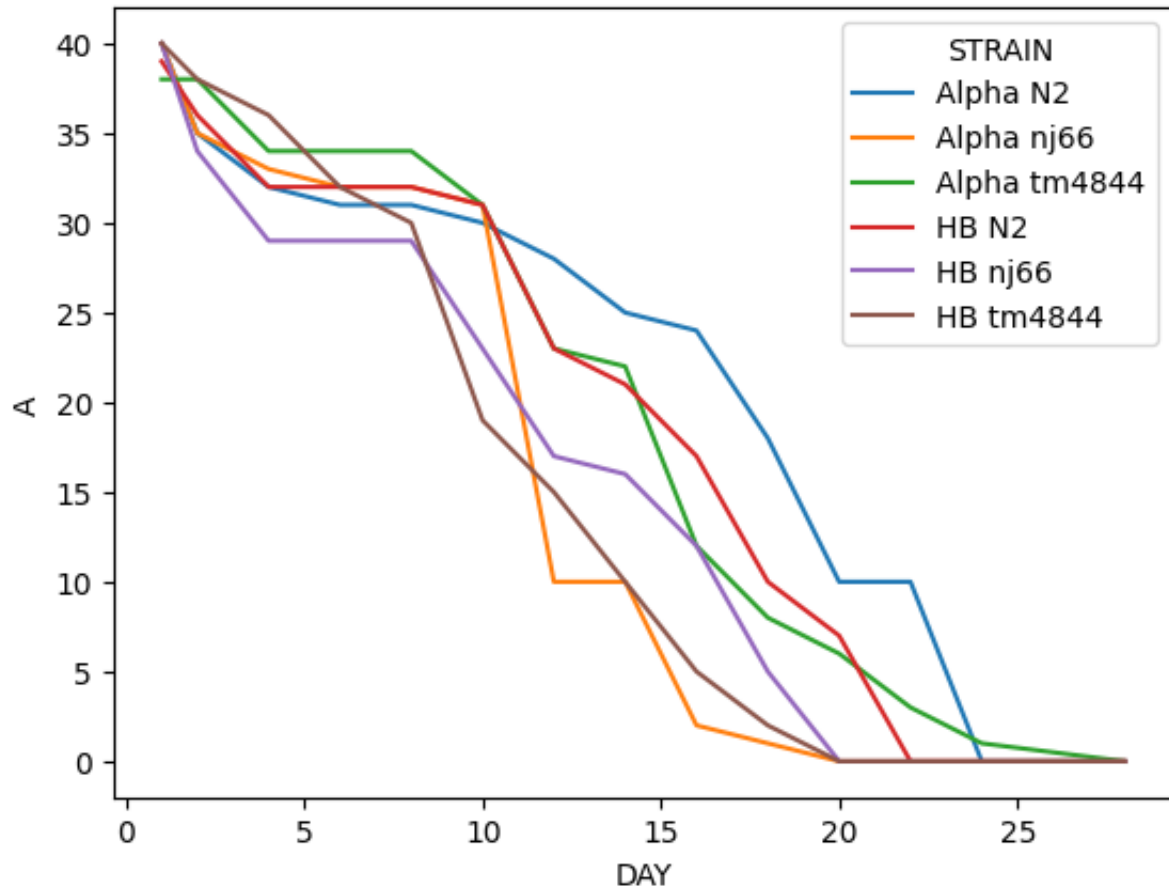
```
Out[3]:
```

	DAY	STRAIN	A	D	M
0	1	Alpha N2	40	0	0
1	1	Alpha nj66	40	0	0
2	1	Alpha tm4844	38	0	2
3	1	HB N2	39	0	1
4	1	HB nj66	40	0	0

Lineplot to show time series data between days and alive

```
In [4]: sb.lineplot(x='DAY', y='A', data=dataset, hue="STRAIN")
```

```
Out[4]: <Axes: xlabel='DAY', ylabel='A'>
```



```
In [5]: #new data frame to find when 'A' (Alive) is equal to zero
df_lastday=dataset[dataset['A']==0]
display(df_lastday)
```

	DAY	STRAIN	A	D	M
61	20	Alpha nj66	0	1	0
64	20	HB nj66	0	5	0
65	20	HB tm4844	0	2	0
67	22	Alpha nj66	0	0	0
69	22	HB N2	0	7	0
70	22	HB nj66	0	0	0
71	22	HB tm4844	0	0	0
72	24	Alpha N2	0	10	0
73	24	Alpha nj66	0	0	0
75	24	HB N2	0	0	0
76	24	HB nj66	0	0	0
77	24	HB tm4844	0	0	0
78	28	Alpha N2	0	0	0
79	28	Alpha nj66	0	0	0
80	28	Alpha tm4844	0	0	0
81	28	HB N2	0	0	0
82	28	HB nj66	0	0	0
83	28	HB tm4844	0	0	0

```
In [6]: #new data frames to calculate min and mean

#new data frame to group by strain and day to then find the minimum day to k
grouped_min = df_lastday.groupby('STRAIN')['DAY'].min().reset_index()

#created a new column with the data frame grouped_min
grouped_min["strain_type"] = ["Alpha", "Alpha", "Alpha", "HB", "HB", "HB"]

#created a new data frame called group_mean with the grouped.min data to gro
grouped_mean = grouped_min.groupby("strain_type")['DAY'].mean().reset_index()
```

```
In [7]: display(grouped_min)
display(grouped_mean)
```

	STRAIN	DAY	strain_type
0	Alpha N2	24	Alpha
1	Alpha nj66	20	Alpha
2	Alpha tm4844	28	Alpha
3	HB N2	22	HB
4	HB nj66	20	HB
5	HB tm4844	20	HB

	strain_type	DAY
0	Alpha	24.000000
1	HB	20.666667

Barplot to show the average lifespan for the Alpha strains and the HB strains

```
In [8]: sb.barplot(x='strain_type', y='DAY', data=grouped_mean, orient="v")
```

```
Out[8]: <Axes: xlabel='strain_type', ylabel='DAY'>
```

