Time Series Plot of Average of Lifetime (years)

WORKSHEET 2
# Trend Analysis for Average of Lifetime (years)

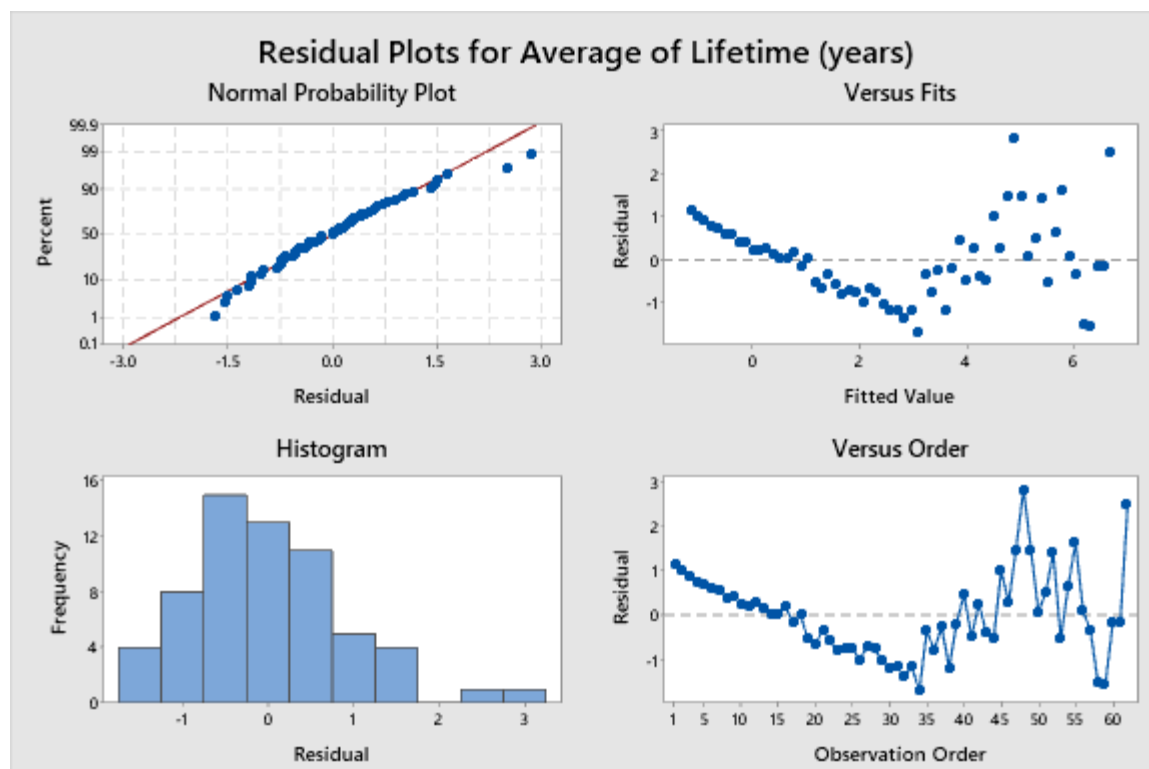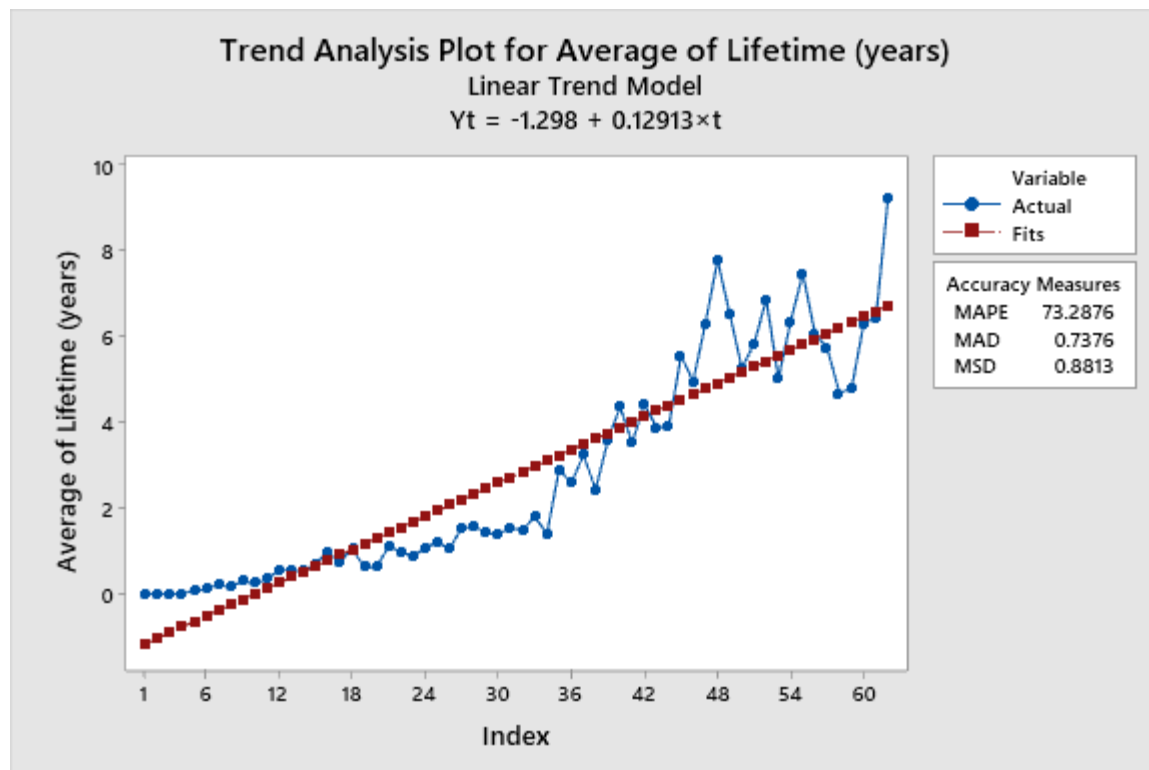* NOTE * Zero values of Yt exist; MAPE calculated only for non-zero Yt.

## Method

| | |
|---|---|
| Model type | Linear Trend Model |
| Data | Average of Lifetime (years) |
| Length | 62 |
| NMissing | 0 |

## Fitted Trend Equation

$Y_t = -1.298 + 0.12913 \times t$

## Accuracy Measures

| | |
|---|---|
| MAPE | 73.2876 |
| MAD | 0.7376 |
| MSD | 0.8813 |

## Trend Analysis Plot for Average of Lifetime (years)
### Linear Trend Model
$$Yt = -1.298 + 0.12913 \times t$$

**Variable**
- Actual
- Fits

**Accuracy Measures**

| | |
|---|---|
| MAPE | 73.2876 |
| MAD | 0.7376 |
| MSD | 0.8813 |

## Residual Plots for Average of Lifetime (years)

### Normal Probability Plot

### Versus Fits

### Histogram

### Versus Order

## Stem-and-leaf of Average of Lifetime (years)   N = 62

```
21    0  000001122235556667899
(13)  1  0000133445557
```

```
28   2  458
25   3  25588
20   4  34679
15   5  02578
10   6  0223458
3    7  47
1    8
1    9  2
```

*Leaf Unit = 0.1*

WORKSHEET 2

# Moving Average for Average of Lifetime (years)

* NOTE * Zero values of Yt exist; MAPE calculated only for non-zero Yt.

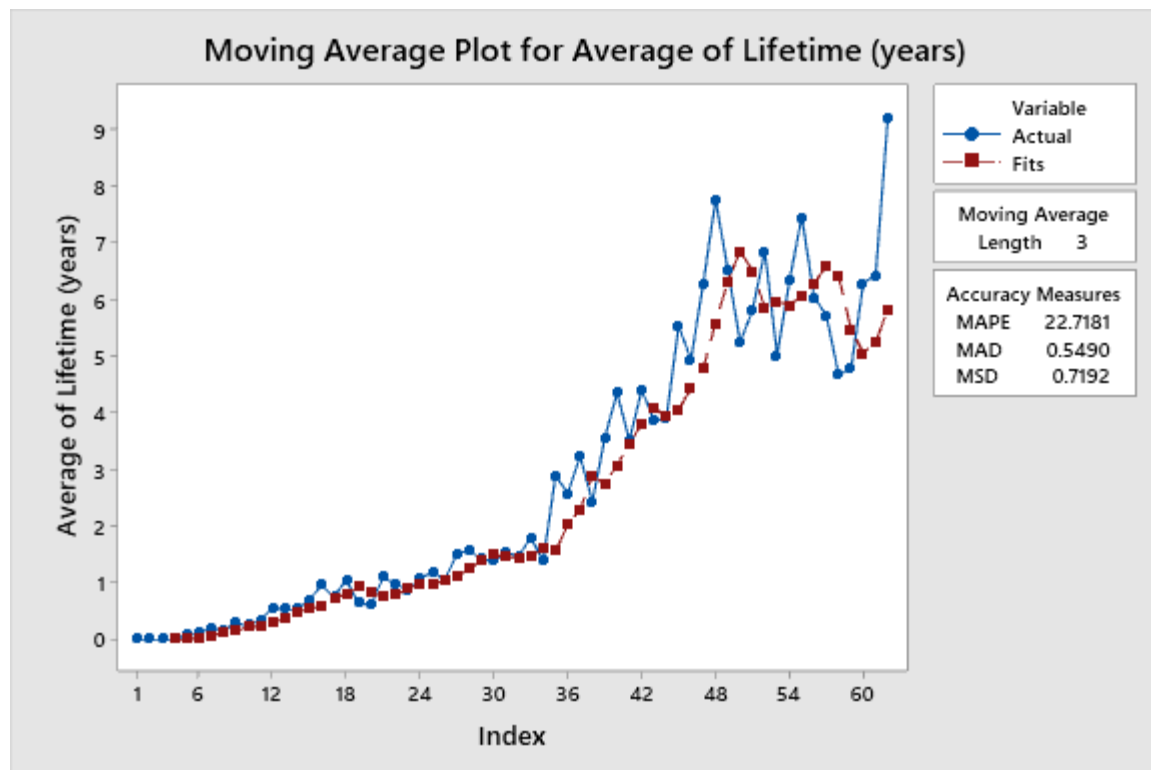## Method

| | |
|---|---|
| Data | Average of Lifetime (years) |
| Length | 62 |
| NMissing | 0 |

## Moving Average

Length    3

## Accuracy Measures

| | |
|---|---|
| MAPE | 22.7181 |
| MAD | 0.5490 |
| MSD | 0.7192 |

**Moving Average Plot for Average of Lifetime (years)**

Variable
— Actual
■ Fits

Moving Average
Length   3

Accuracy Measures
MAPE   22.7181
MAD     0.5490
MSD     0.7192



**Residual Plots for Average of Lifetime (years)**

Normal Probability Plot

Versus Fits

Histogram

Versus Order
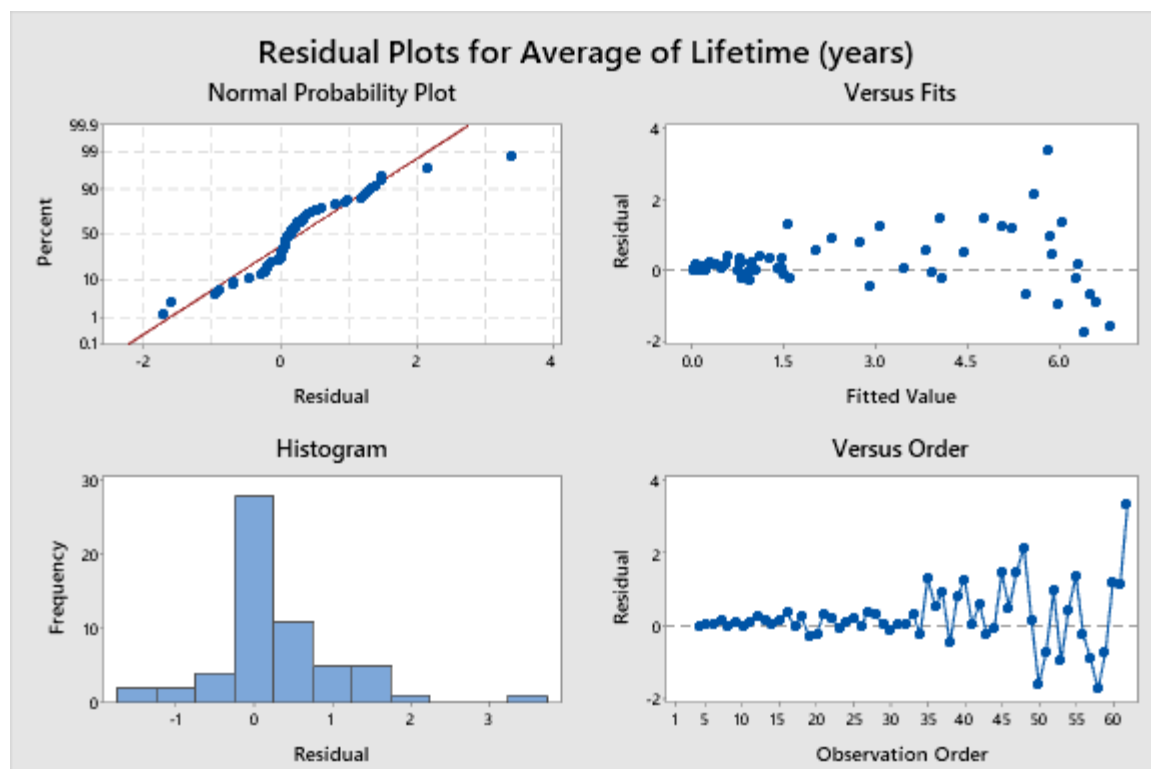
WORKSHEET 2

## Probability Plot of Average of Lifetime (years)
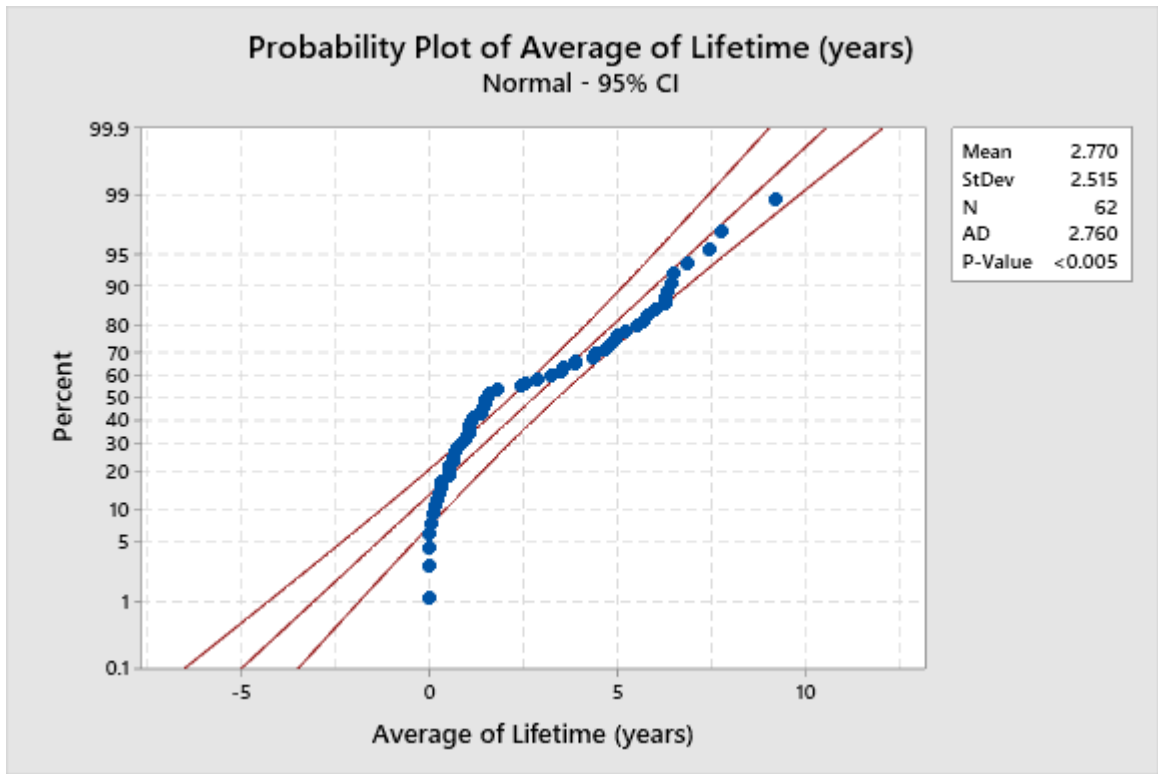


WORKSHEET 2

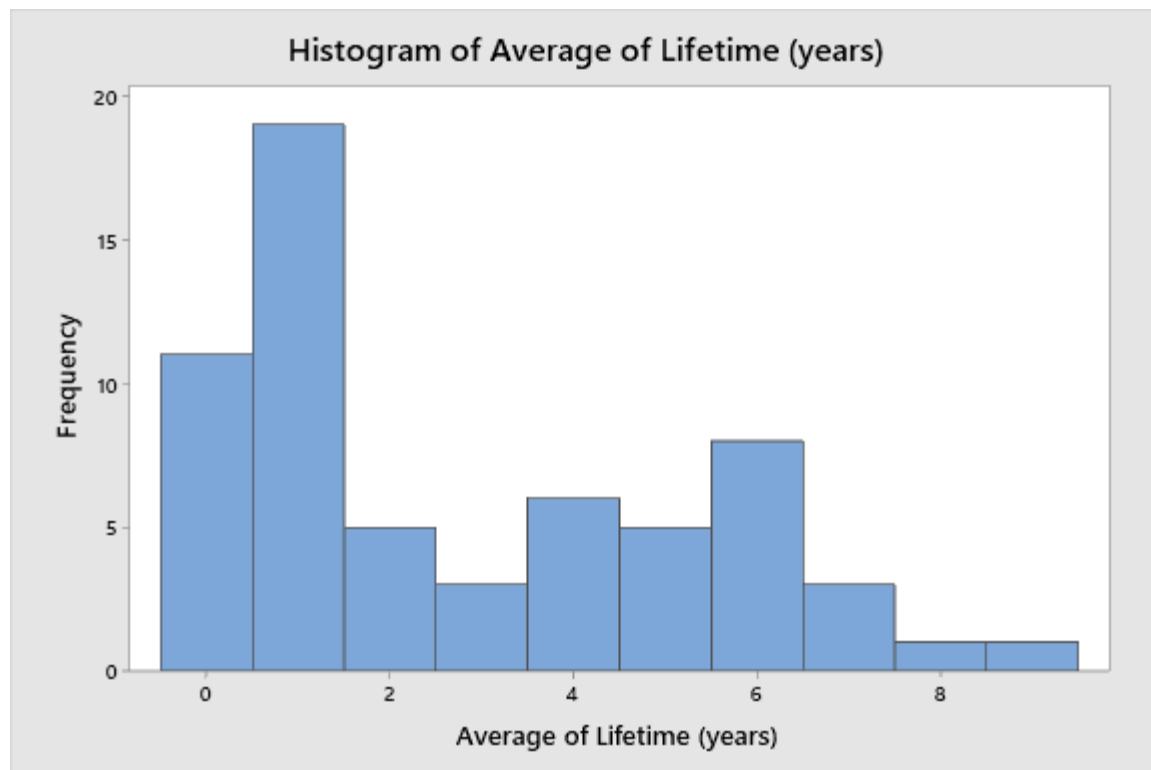## Histogram of Average of Lifetime (years)
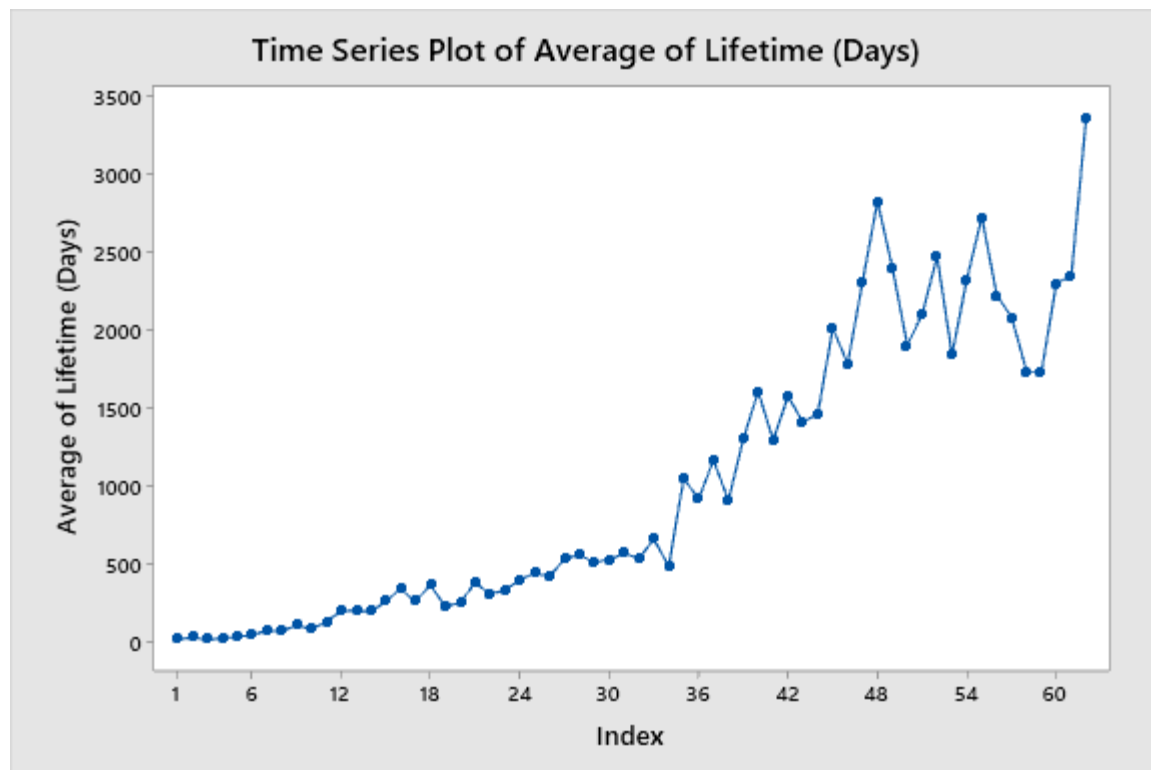
Histogram of Average of Lifetime (years)

WORKSHEET 2
# Time Series Plot of Average of Lifetime (Days)

Time Series Plot of Average of Lifetime (Days)

WORKSHEET 2

# Single Exponential Smoothing for Average of Lifetime (Days)

## Method

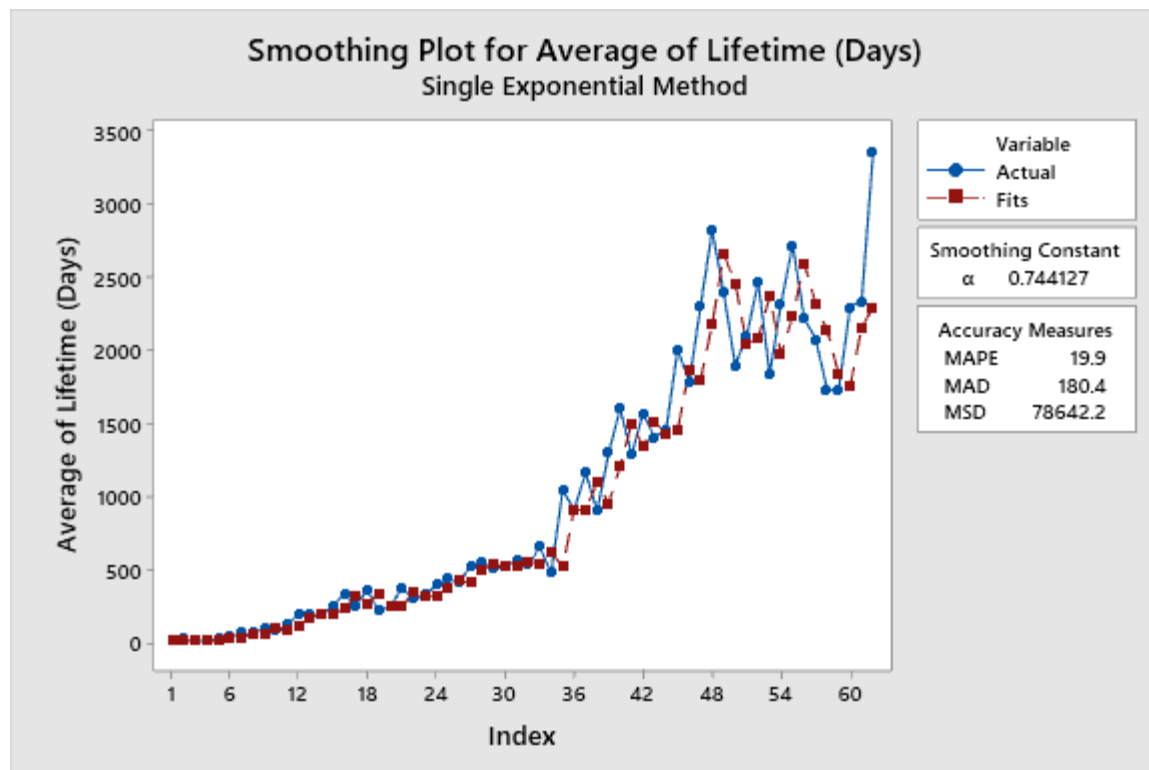Data      Average of Lifetime (Days)
Length    62

## Smoothing Constant

α     0.744127

## Accuracy Measures

MAPE         19.9
MAD         180.4
MSD      78642.2

Smoothing Plot for Average of Lifetime (Days)
Single Exponential Method

WORKSHEET 2
## Single Exponential Smoothing for Average of Lifetime (Days)
### Method

    Data      Average of Lifetime (Days)
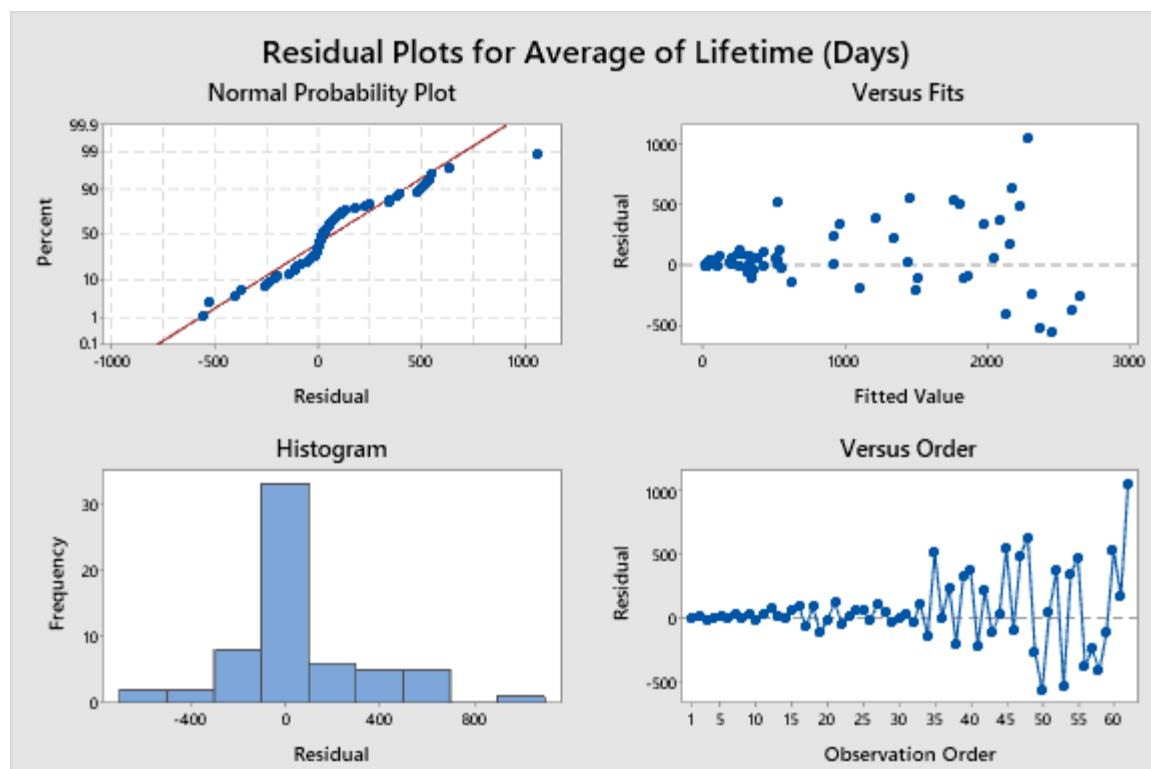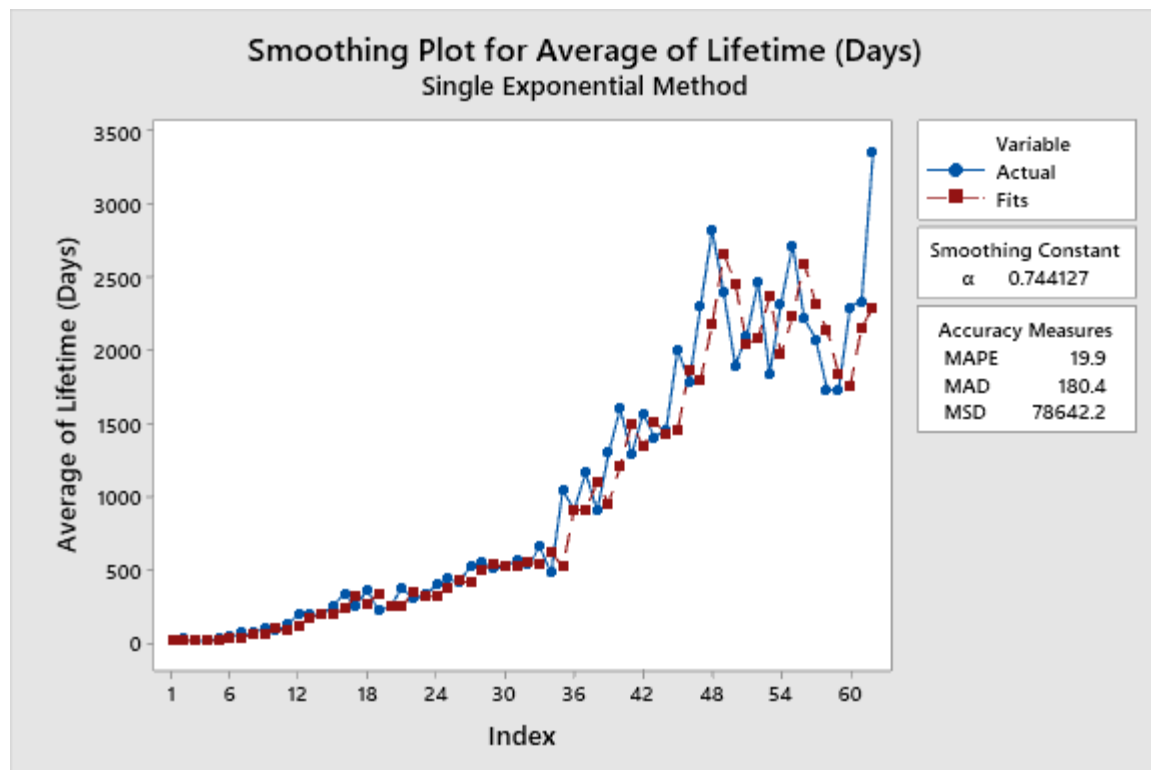    Length    62

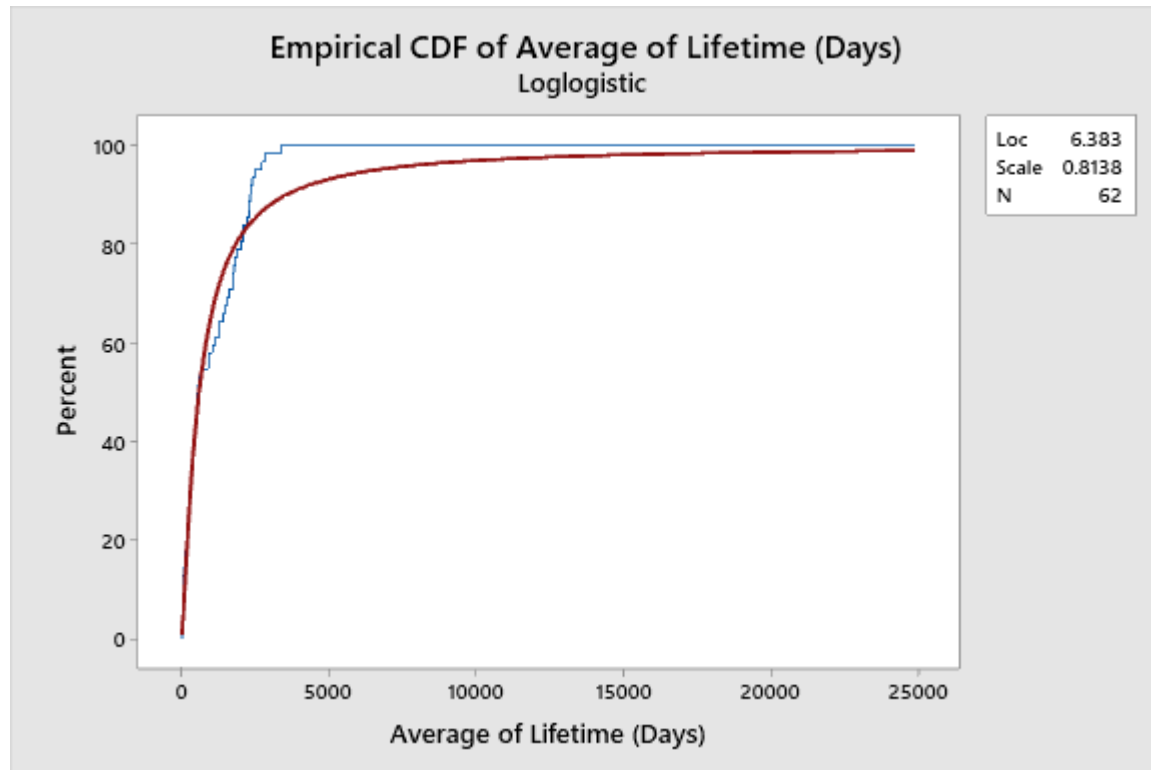### Smoothing Constant

    α    0.744127

### Accuracy Measures

    MAPE       19.9
    MAD        180.4
    MSD      78642.2

## Smoothing Plot for Average of Lifetime (Days)
### Single Exponential Method

| Variable | |
| --- | --- |
| ● | Actual |
| ■ | Fits |

**Smoothing Constant**
α    0.744127

**Accuracy Measures**
| MAPE | 19.9 |
| --- | --- |
| MAD | 180.4 |
| MSD | 78642.2 |

## Residual Plots for Average of Lifetime (Days)

Normal Probability Plot

Versus Fits

Histogram

Versus Order

WORKSHEET 2

# Empirical CDF of Average of Lifetime (Days)



Empirical CDF of Average of Lifetime (Days)
Loglogistic

| Loc | 6.383 |
| Scale | 0.8138 |
| N | 62 |

WORKSHEET 2

# Descriptive Statistics: Average of Lifetime (years)

## Statistics

| Variable | N | N* | Mean | SE Mean | StDev | Variance | CoefVar | Minimum | Q1 |
|---|---|---|---|---|---|---|---|---|---|
| Average of Lifetime (years) | 62 | 0 | 2.770 | 0.319 | 2.515 | 6.323 | 90.79 | 0.000 | 0.628 |

| Variable | Median | Q3 | Maximum | Range | IQR | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| Average of Lifetime (years) | 1.525 | 4.959 | 9.231 | 9.231 | 4.332 | 0.68 | -0.79 |
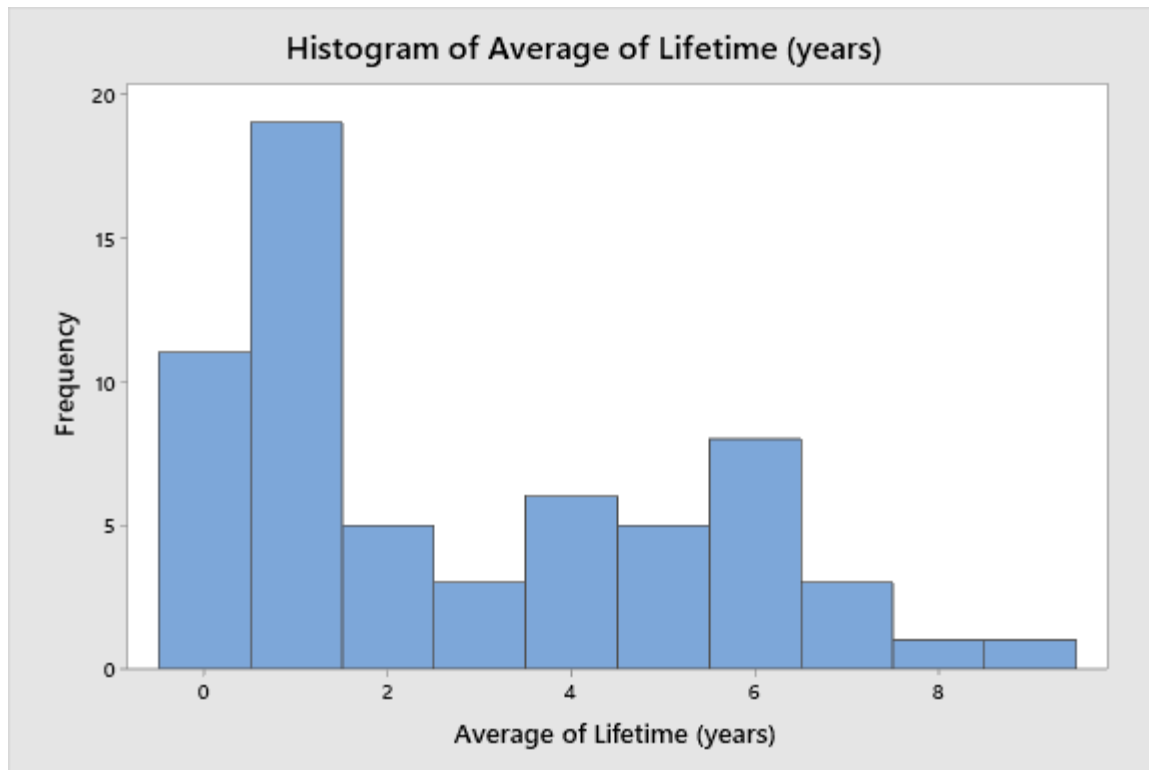
Histogram of Average of Lifetime (years)

WORKSHEET 2

# Single Exponential Smoothing for Average of Lifetime (years)

* NOTE * Zero values of Yt exist; MAPE calculated only for non-zero Yt.

## Method

Data    Average of Lifetime (years)
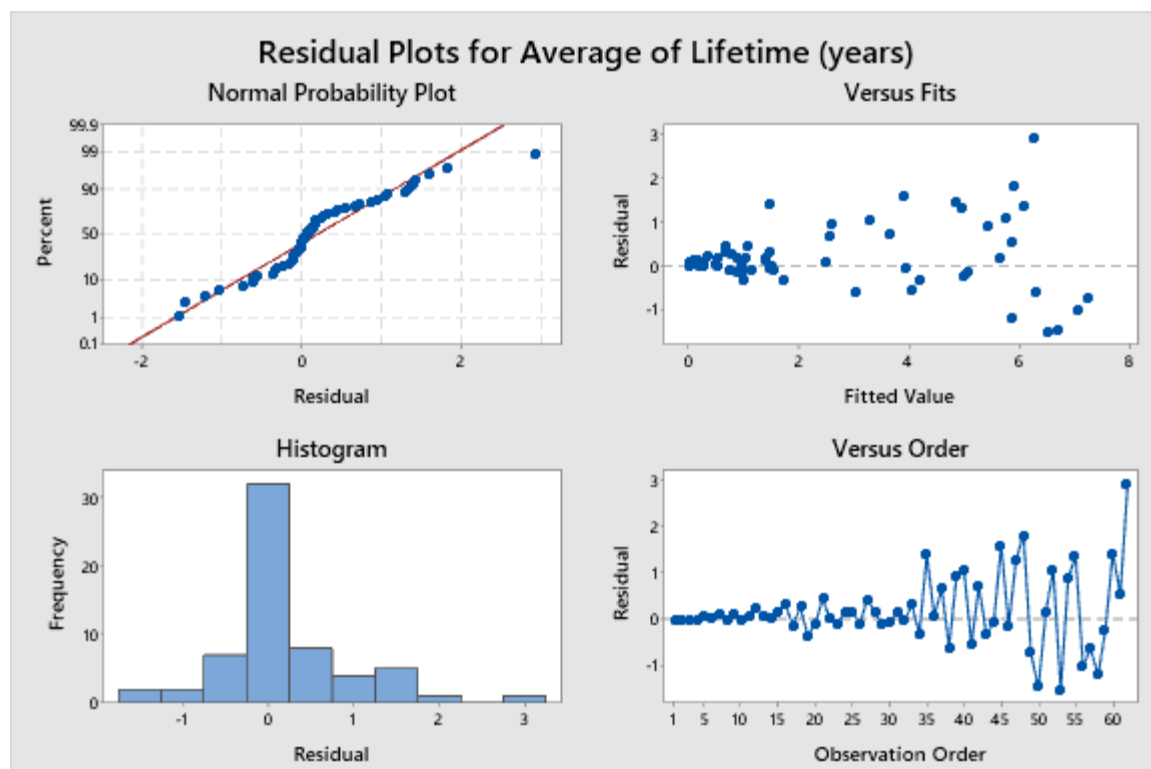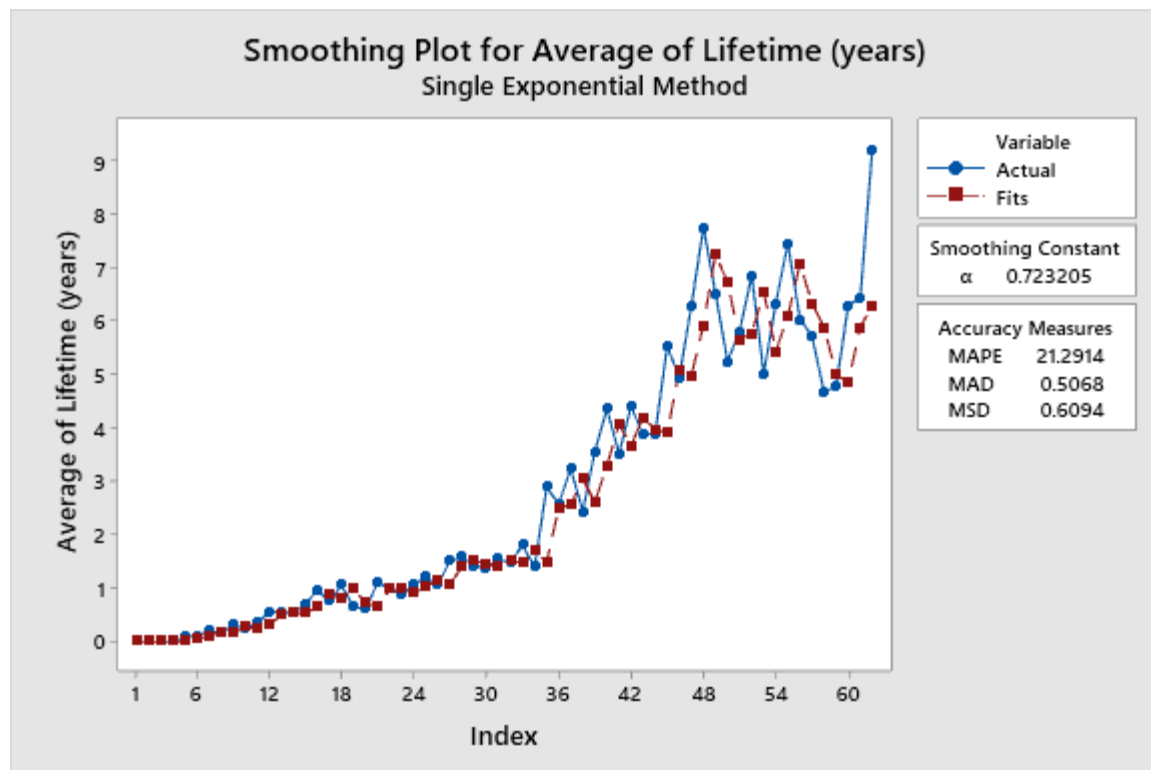Length  62

## Smoothing Constant

$\alpha$    0.723205

## Accuracy Measures

MAPE    21.2914
MAD      0.5068
MSD      0.6094

Smoothing Plot for Average of Lifetime (years)
Single Exponential Method

| Variable | |
|---|---|
| ● Actual | |
| ■ Fits | |

Smoothing Constant
α  0.723205

Accuracy Measures
MAPE  21.2914
MAD  0.5068
MSD  0.6094



Residual Plots for Average of Lifetime (years)

Normal Probability Plot

Versus Fits

Histogram

Versus Order

**Double Exponential Smoothing for Average of Lifetime (years)**

* NOTE * Zero values of Yt exist; MAPE calculated only for non-zero Yt.

## Method

Data       Average of Lifetime (years)
Length    62
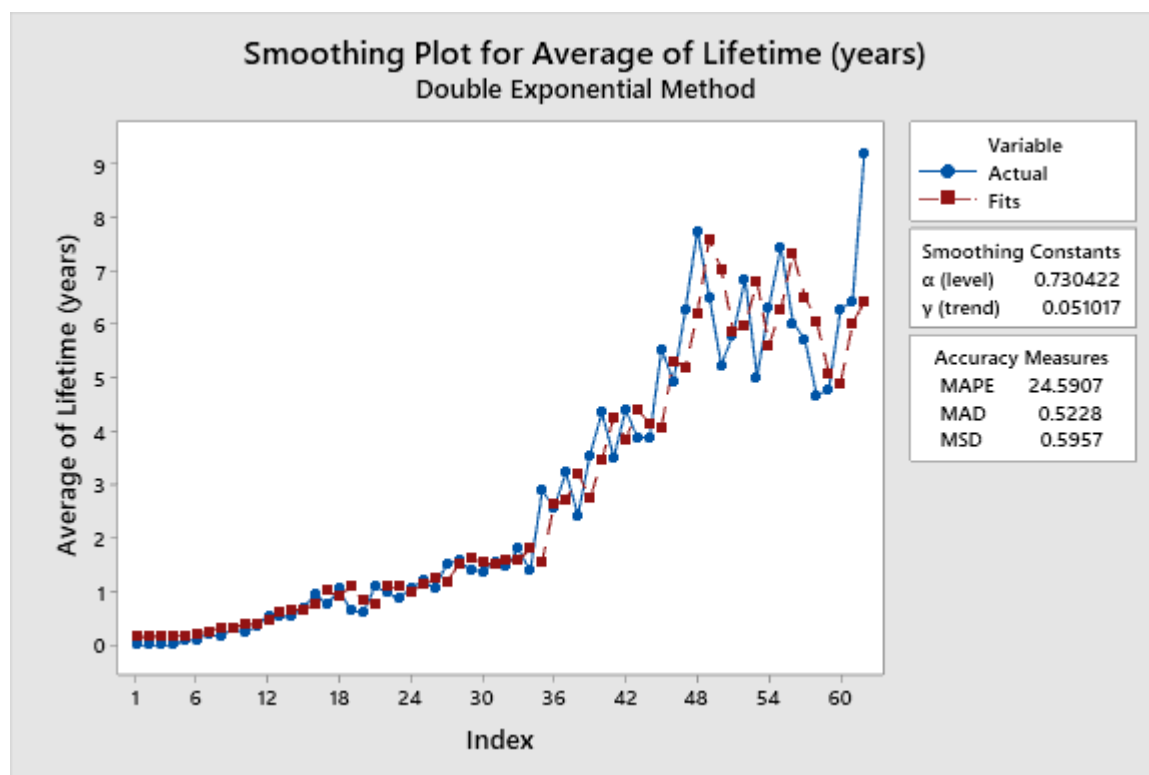
## Smoothing Constants

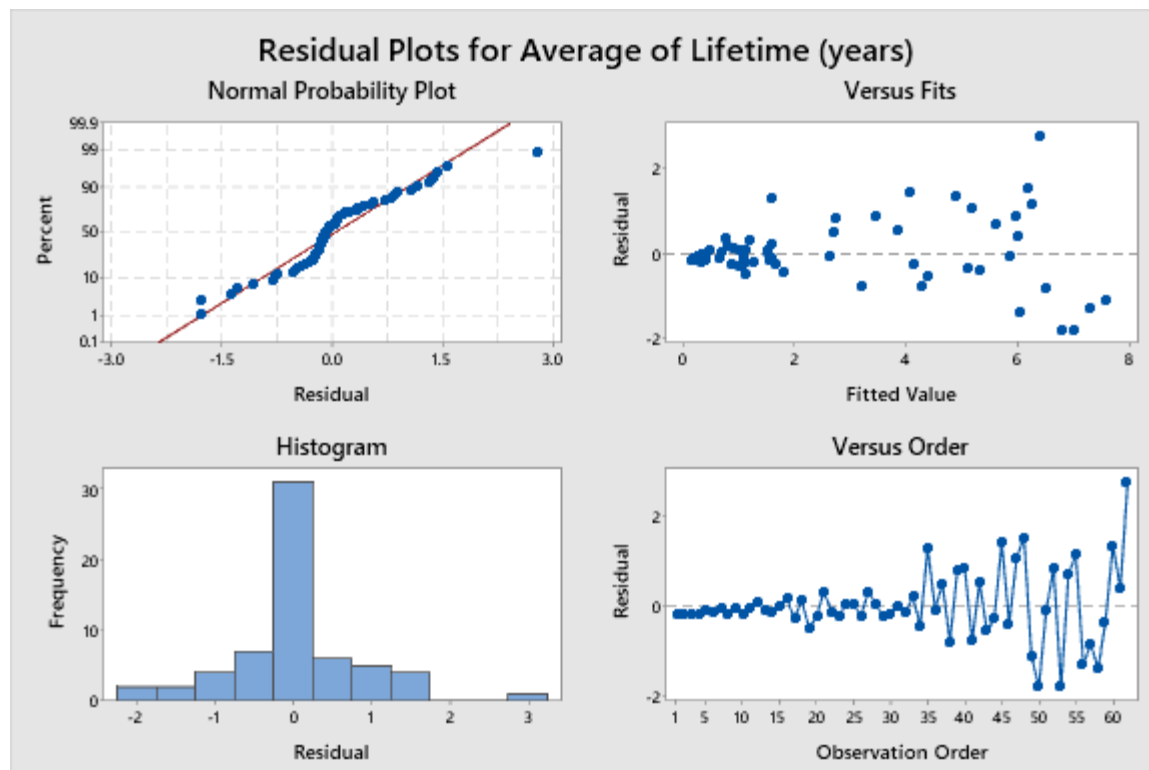α (level)      0.730422
γ (trend)     0.051017

## Accuracy Measures

MAPE    24.5907
MAD      0.5228
MSD      0.5957



Smoothing Plot for Average of Lifetime (years)
Double Exponential Method

Residual Plots for Average of Lifetime (years)

WORKSHEET 2

## Single Exponential Smoothing for Average of Lifetime (Days)

### Method

Data      Average of Lifetime (Days)
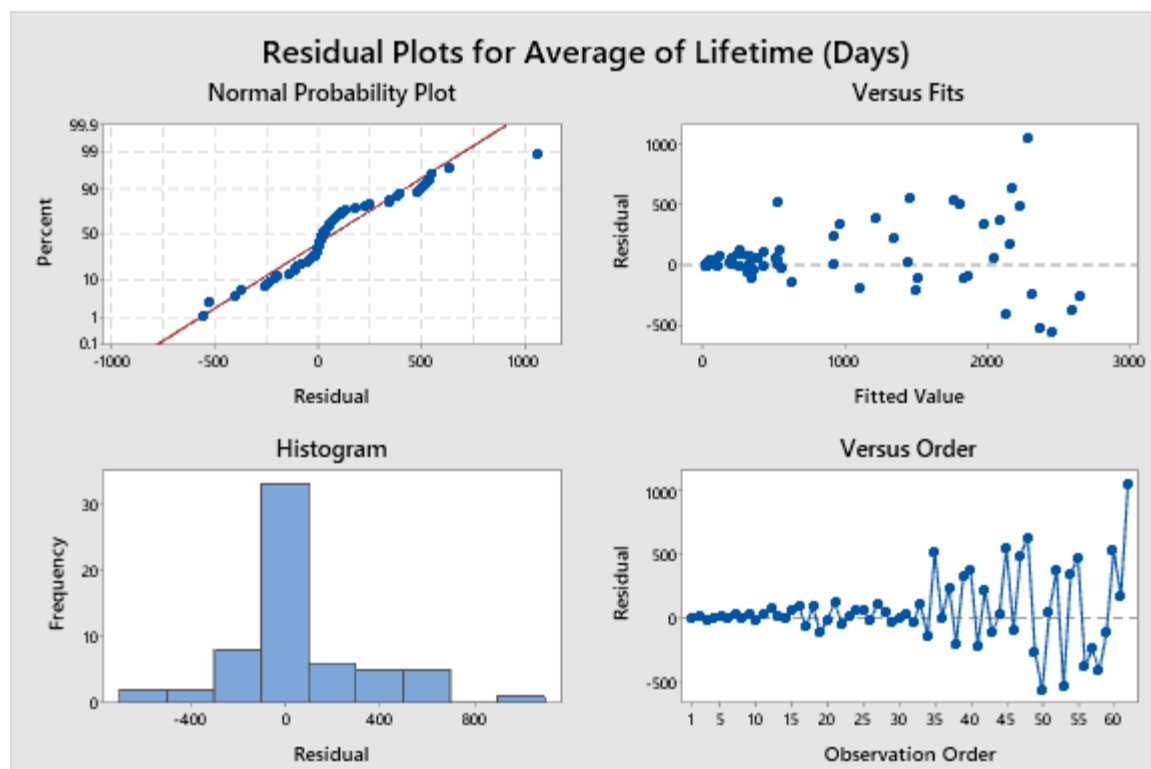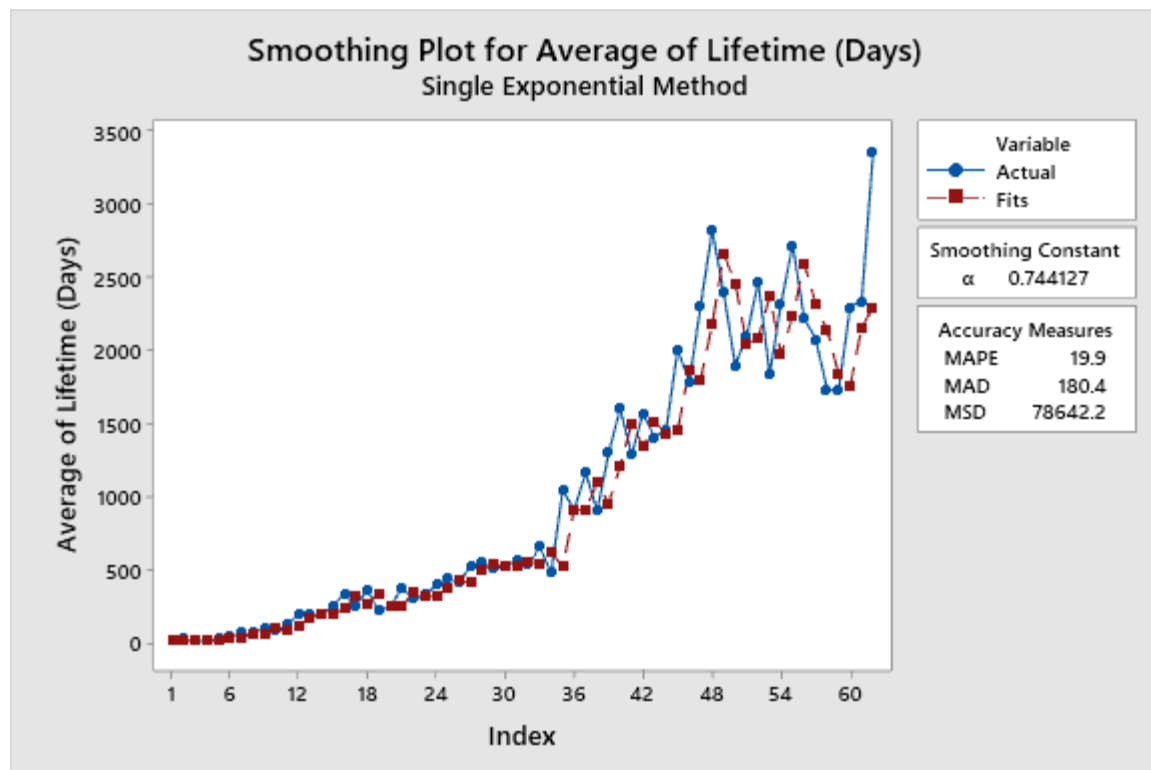Length    62

### Smoothing Constant

α    0.744127

### Accuracy Measures

MAPE       19.9
MAD       180.4
MSD     78642.2

## Smoothing Plot for Average of Lifetime (Days)
### Single Exponential Method

| Variable |
| --- |
| Actual |
| Fits |

| Smoothing Constant |
| --- |
| α    0.744127 |

| Accuracy Measures | |
| --- | --- |
| MAPE | 19.9 |
| MAD | 180.4 |
| MSD | 78642.2 |

## Residual Plots for Average of Lifetime (Days)

### Normal Probability Plot

### Versus Fits

### Histogram

### Versus Order

WORKSHEET 2

# Double Exponential Smoothing for Average of Lifetime (Days)

## Method
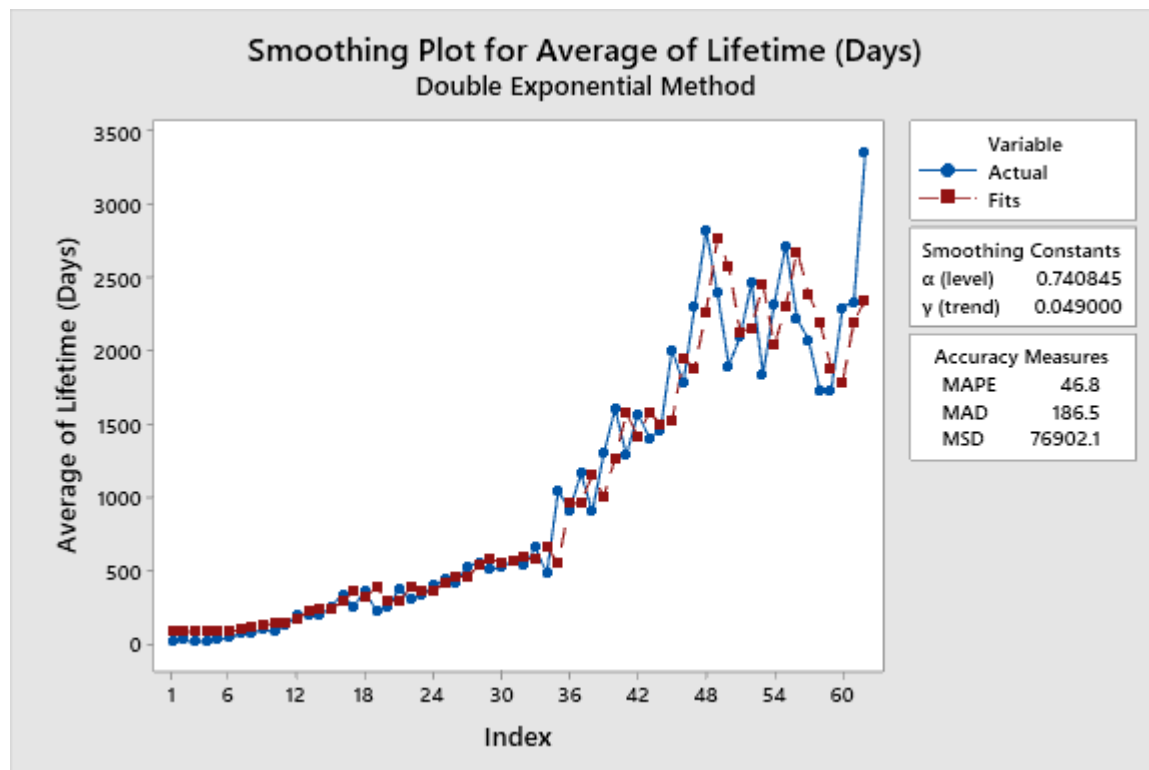
Data     Average of Lifetime (Days)
Length   62

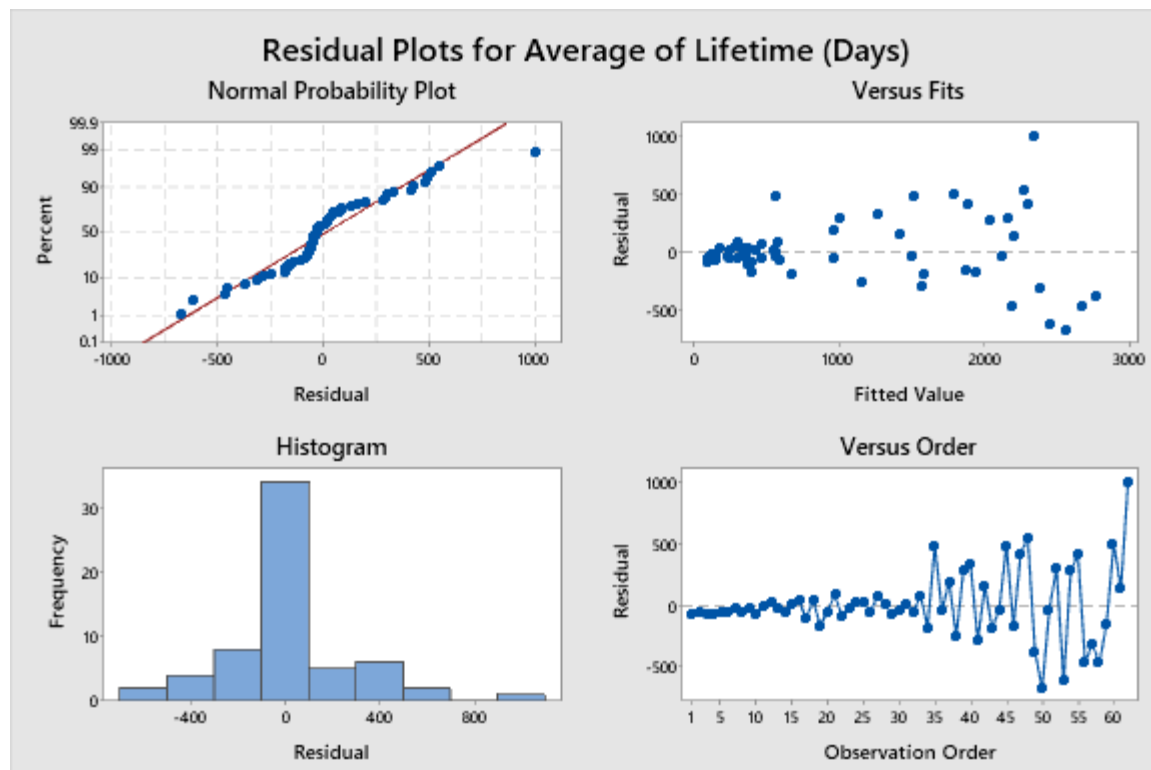## Smoothing Constants

α (level)    0.740845
γ (trend)    0.049000

## Accuracy Measures

MAPE        46.8
MAD         186.5
MSD      76902.1



Smoothing Plot for Average of Lifetime (Days)
Double Exponential Method

Residual Plots for Average of Lifetime (Days)

WORKSHEET 2

## Autocorrelation Function: Average of Lifetime (years)

### Autocorrelations

| Lag | ACF | T | LBQ |
|---|---|---|---|
| 1 | 0.884319 | 6.96 | 50.87 |
| 2 | 0.834457 | 4.10 | 96.92 |
| 3 | 0.794746 | 3.15 | 139.40 |
| 4 | 0.760412 | 2.62 | 178.96 |
| 5 | 0.747163 | 2.33 | 217.82 |
| 6 | 0.720858 | 2.07 | 254.64 |
| 7 | 0.695678 | 1.88 | 289.56 |
| 8 | 0.626226 | 1.60 | 318.37 |
| 9 | 0.563087 | 1.38 | 342.11 |
| 10 | 0.530196 | 1.26 | 363.56 |
| 11 | 0.459867 | 1.07 | 380.01 |
| 12 | 0.429360 | 0.98 | 394.64 |
| 13 | 0.393640 | 0.88 | 407.19 |
| 14 | 0.342713 | 0.76 | 416.90 |
| 15 | 0.275306 | 0.61 | 423.30 |
| 16 | 0.203683 | 0.45 | 426.88 |

**Autocorrelation Function for Average of Lifetime (years)**
(with 5% significance limits for the autocorrelations)
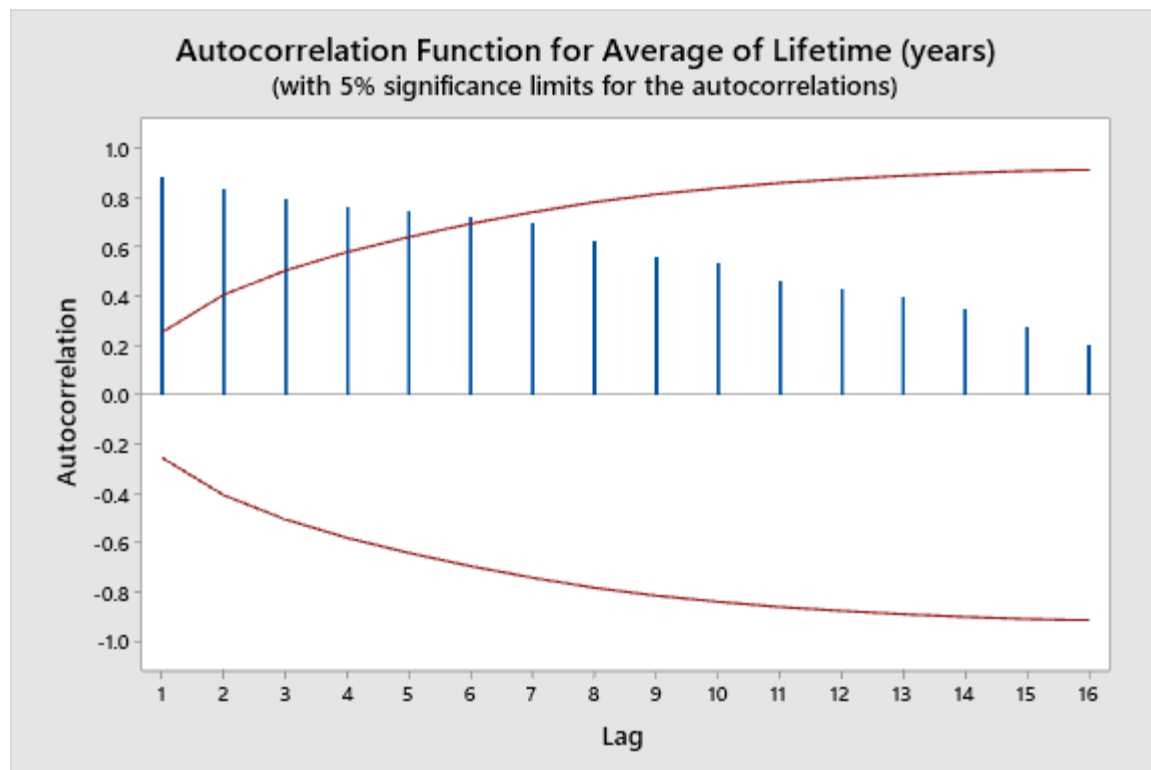
WORKSHEET 2

# Partial Autocorrelation Function: Average of Lifetime (years)

## Partial Autocorrelations

| Lag | PACF | T |
| --- | --- | --- |
| 1 | 0.884319 | 6.96 |
| 2 | 0.240560 | 1.89 |
| 3 | 0.105198 | 0.83 |
| 4 | 0.058950 | 0.46 |
| 5 | 0.124716 | 0.98 |
| 6 | 0.012750 | 0.10 |
| 7 | 0.007113 | 0.06 |
| 8 | -0.220599 | -1.74 |
| 9 | -0.137631 | -1.08 |
| 10 | 0.033732 | 0.27 |
| 11 | -0.185934 | -1.46 |
| 12 | 0.030564 | 0.24 |
| 13 | 0.020792 | 0.16 |
| 14 | -0.049176 | -0.39 |
| 15 | -0.121006 | -0.95 |
| 16 | -0.101678 | -0.80 |

Partial Autocorrelation Function for Average of Lifetime (years)
(with 5% significance limits for the partial autocorrelations)
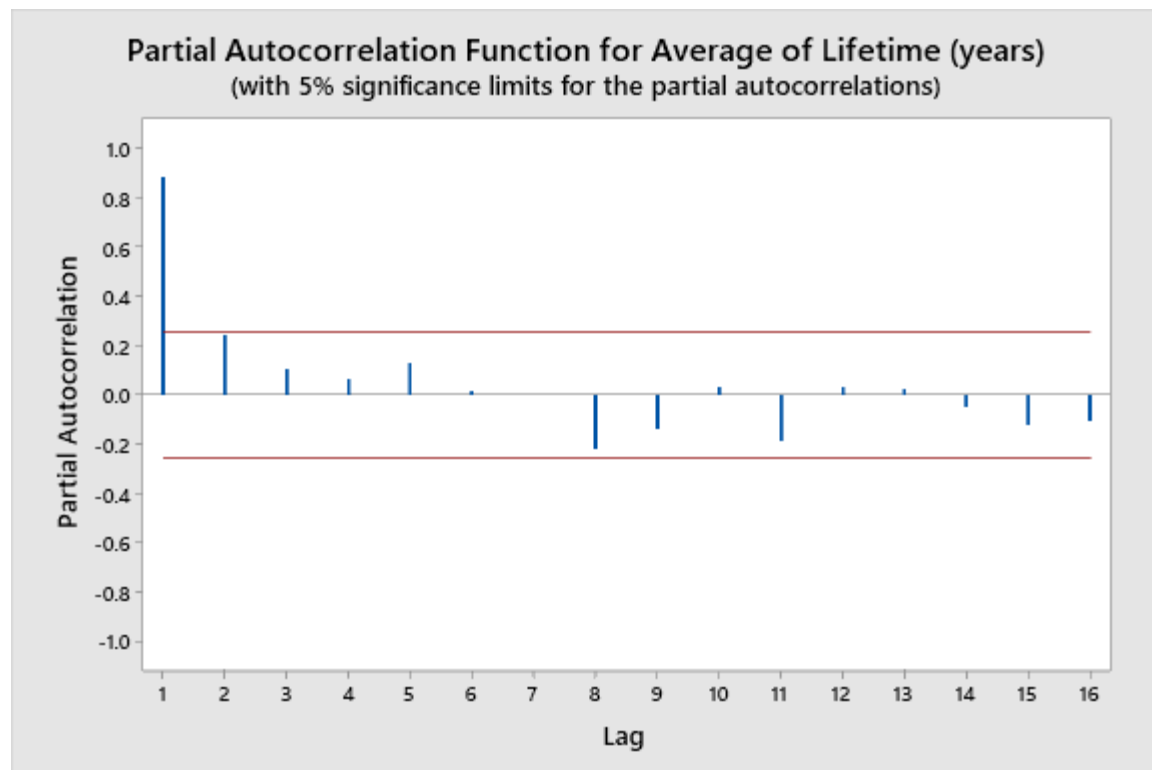
WORKSHEET 2

# Autocorrelation Function: Average of Lifetime (Days)

## Autocorrelations

| Lag | ACF | T | LBQ |
|---|---|---|---|
| 1 | 0.886497 | 6.98 | 51.12 |
| 2 | 0.837281 | 4.11 | 97.48 |
| 3 | 0.795558 | 3.14 | 140.05 |
| 4 | 0.764091 | 2.63 | 179.99 |
| 5 | 0.749309 | 2.33 | 219.08 |
| 6 | 0.722799 | 2.07 | 256.10 |
| 7 | 0.698707 | 1.88 | 291.32 |
| 8 | 0.630047 | 1.61 | 320.49 |
| 9 | 0.564864 | 1.38 | 344.37 |
| 10 | 0.530433 | 1.26 | 365.84 |
| 11 | 0.461186 | 1.07 | 382.39 |
| 12 | 0.430260 | 0.98 | 397.08 |
| 13 | 0.395212 | 0.89 | 409.73 |
| 14 | 0.343561 | 0.76 | 419.49 |
| 15 | 0.276067 | 0.61 | 425.92 |
| 16 | 0.204835 | 0.45 | 429.54 |

Autocorrelation Function for Average of Lifetime (Days)
(with 5% significance limits for the autocorrelations)
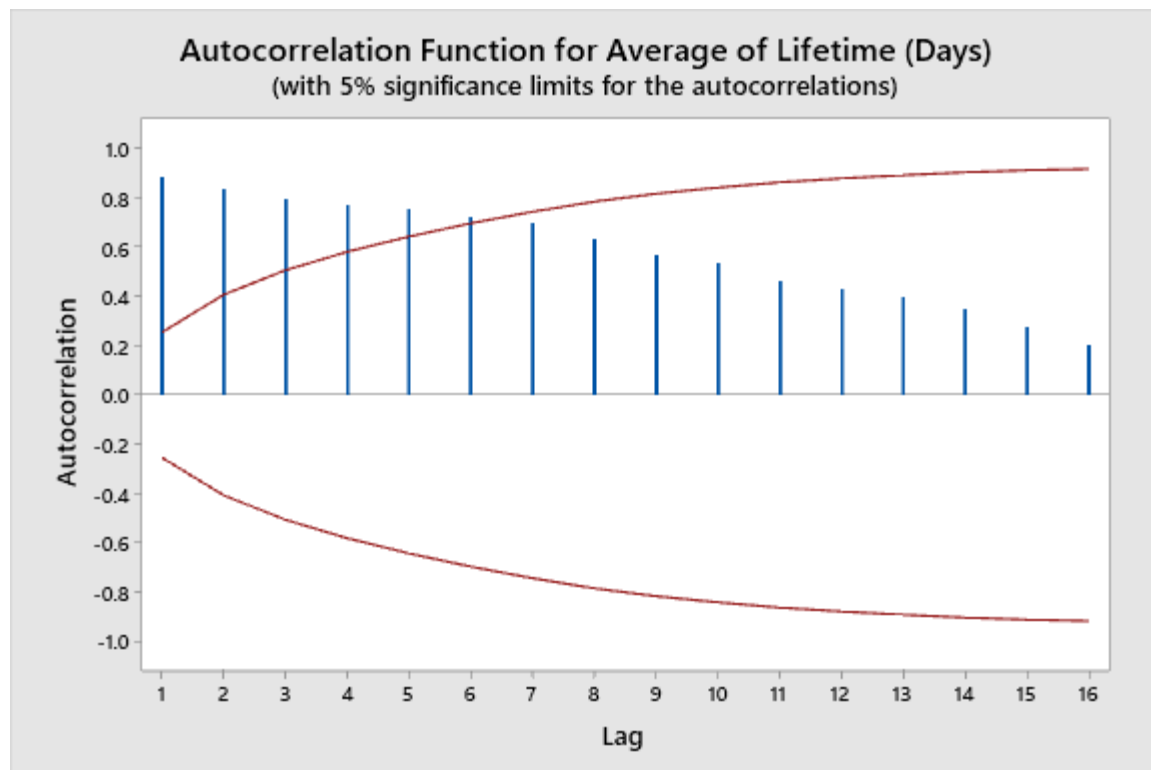
WORKSHEET 2
# Partial Autocorrelation Function: Average of Lifetime (Days)

## Partial Autocorrelations

| Lag | PACF | T |
|---|---|---|
| 1 | 0.886497 | 6.98 |
| 2 | 0.240063 | 1.89 |
| 3 | 0.092581 | 0.73 |
| 4 | 0.074819 | 0.59 |
| 5 | 0.115658 | 0.91 |
| 6 | 0.010596 | 0.08 |
| 7 | 0.012057 | 0.09 |
| 8 | -0.218622 | -1.72 |
| 9 | -0.153419 | -1.21 |
| 10 | 0.033458 | 0.26 |
| 11 | -0.184494 | -1.45 |
| 12 | 0.031198 | 0.25 |
| 13 | 0.031837 | 0.25 |
| 14 | -0.065823 | -0.52 |
| 15 | -0.112885 | -0.89 |
| 16 | -0.091911 | -0.72 |

Partial Autocorrelation Function for Average of Lifetime (Days)
(with 5% significance limits for the partial autocorrelations)
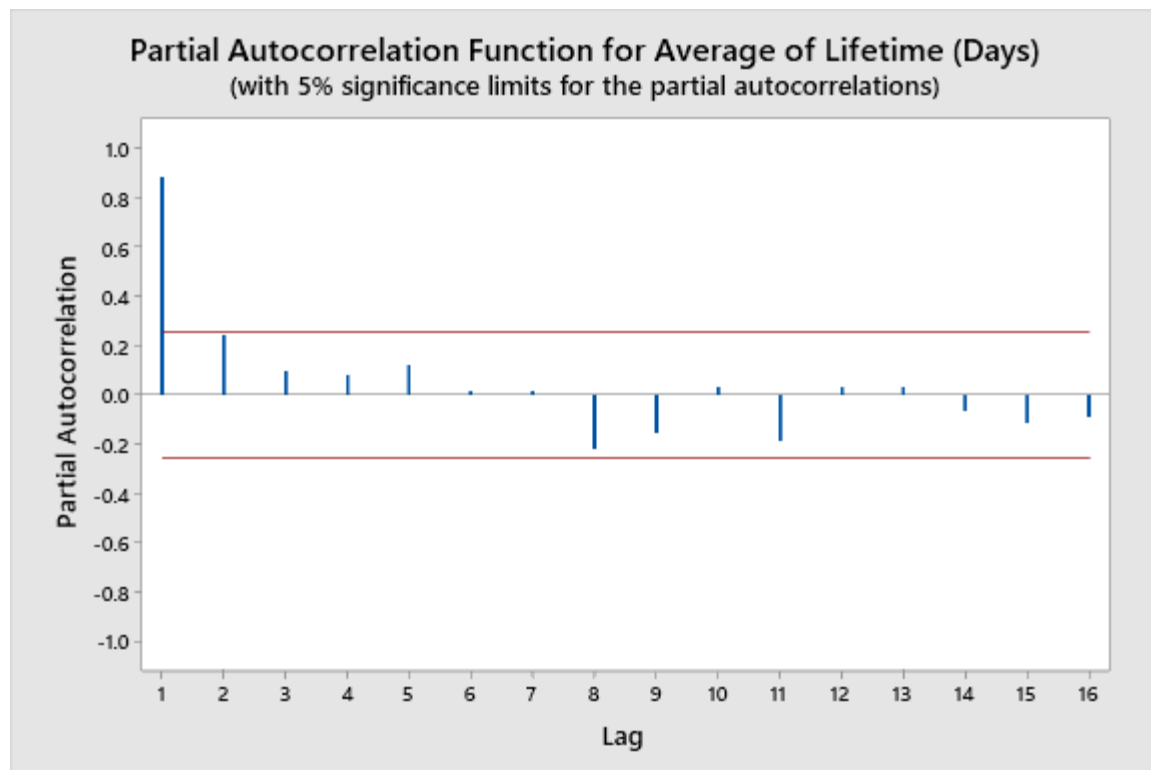
WORKSHEET 2

## Cross Correlation Function: Average of Lifetime (years), Average of Lifetime (Days)

CCF - correlates Average of Lifetime (years)(t) and Average of Lifetime (Days)(t+k)

### Cross Correlations

| Lag | CCF |
|-----|-----|
| -17 | 0.164018 |
| -16 | 0.202756 |
| -15 | 0.274264 |
| -14 | 0.341222 |
| -13 | 0.392881 |
| -12 | 0.428073 |
| -11 | 0.458891 |
| -10 | 0.528019 |
| -9 | 0.561768 |
| -8 | 0.626796 |
| -7 | 0.696194 |
| -6 | 0.720475 |
| -5 | 0.746995 |
| -4 | 0.761883 |
| -3 | 0.794179 |
| -2 | 0.835414 |
| -1 | 0.885298 |
| 0 | 0.999813 |

1  0.885507
2  0.836387
3  0.796128
4  0.762649
5  0.749441
6  0.723133
7  0.698206
8  0.629565
9  0.566137
10  0.532611
11  0.462166
12  0.431562
13  0.396006
14  0.345014
15  0.277071
16  0.205805
17  0.166104
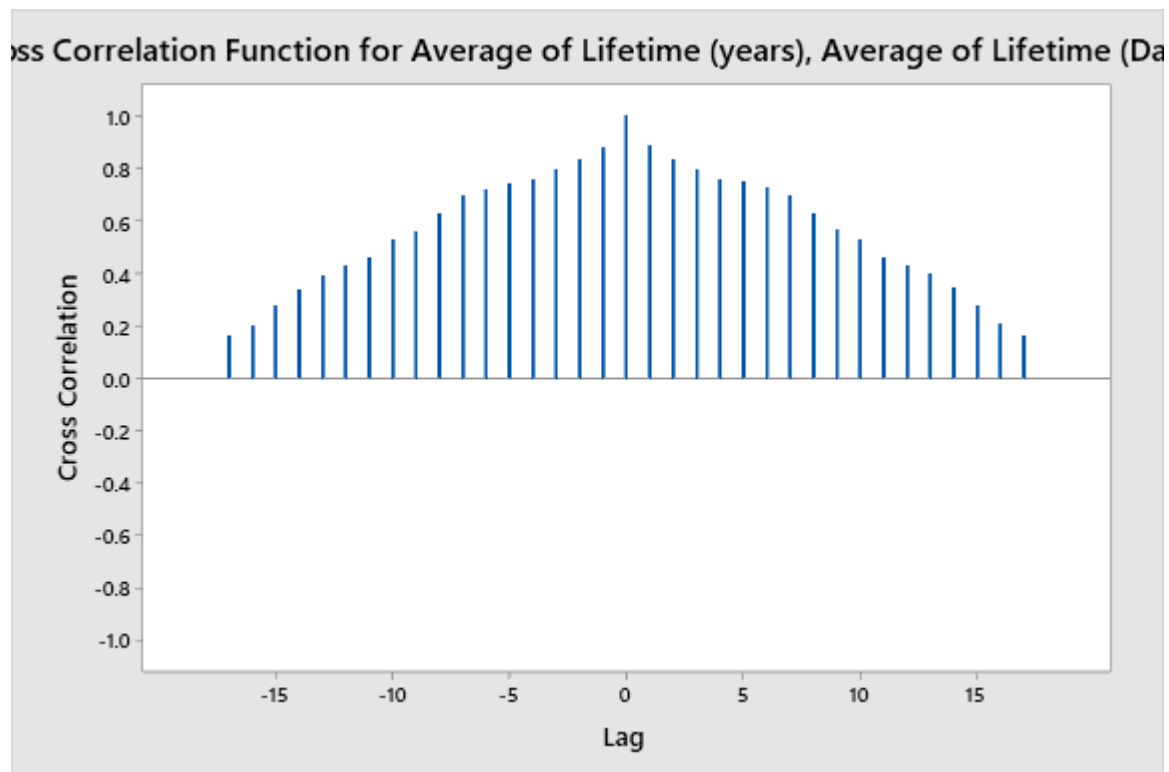


ss Correlation Function for Average of Lifetime (years), Average of Lifetime (Da

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# Trend Analysis for Average of Lifetime (years)

* NOTE * Zero values of Yt exist; MAPE calculated only for non-zero Yt.

## Method

Model type   Linear Trend Model
Data             Average of Lifetime (years)

Length       62
NMissing     0

## Fitted Trend Equation

$Yt = -1.298 + 0.12913 \times t$

## Accuracy Measures

MAPE    73.2876
MAD      0.7376
MSD      0.8813



Trend Analysis Plot for Average of Lifetime (years)
Linear Trend Model
$Yt = -1.298 + 0.12913 \times t$

Residual Plots for Average of Lifetime (years)

WORKSHEET 2

# Trend Analysis for Average of Lifetime (Days)

## Method

| | |
|---|---|
| Model type | Linear Trend Model |
| Data | Average of Lifetime (Days) |
| Length | 62 |
| NMissing | 0 |
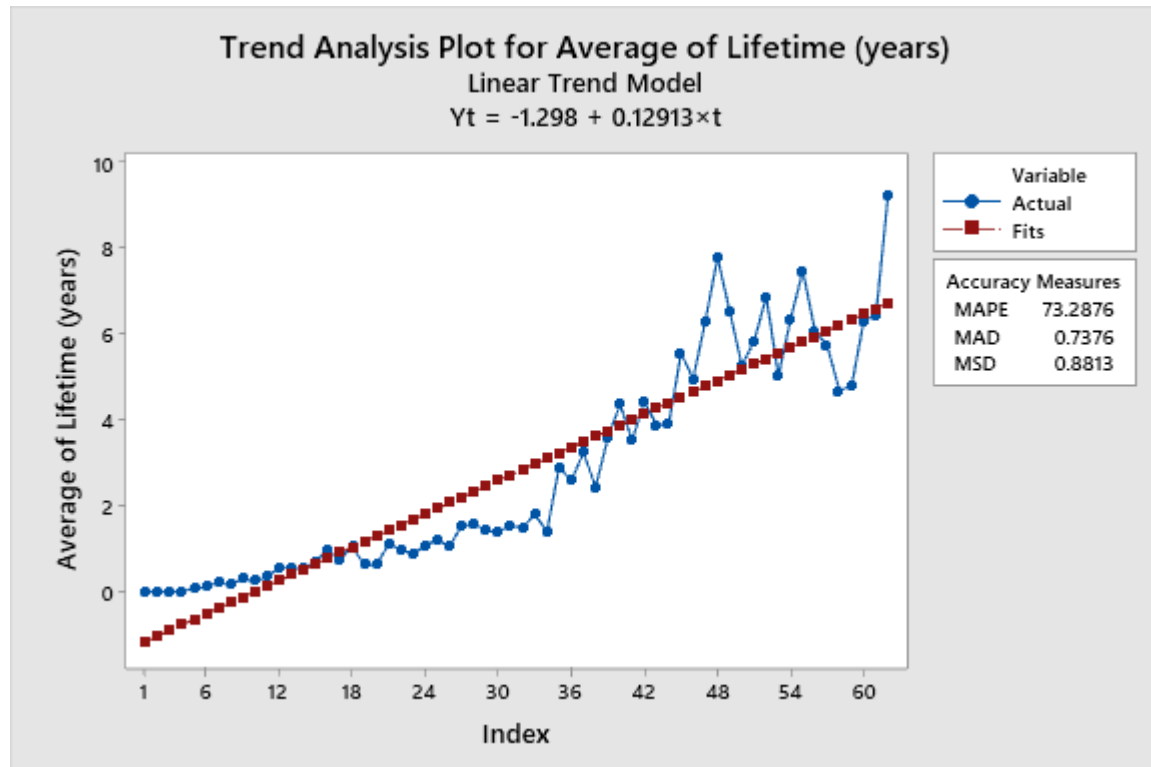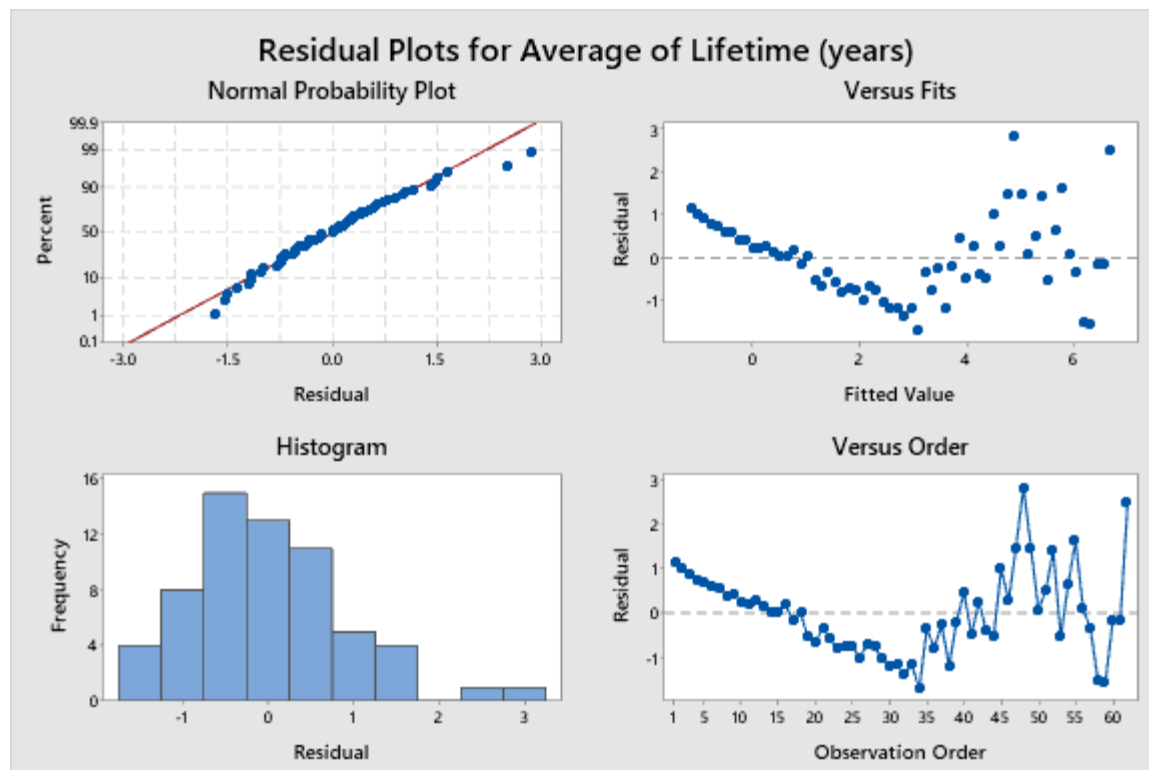
## Fitted Trend Equation

$Yt = -470.2 + 47.00×t$

## Accuracy Measures

| | |
|---|---|
| MAPE | 195 |
| MAD | 269 |
| MSD | 117303 |

## Trend Analysis Plot for Average of Lifetime (Days)
### Linear Trend Model
$$Yt = -470.2 + 47.00 \times t$$

Variable
- Actual
- Fits

Accuracy Measures
| | |
|---|---|
| MAPE | 195 |
| MAD | 269 |
| MSD | 117303 |

## Residual Plots for Average of Lifetime (Days)

### Normal Probability Plot

### Versus Fits

### Histogram

### Versus Order
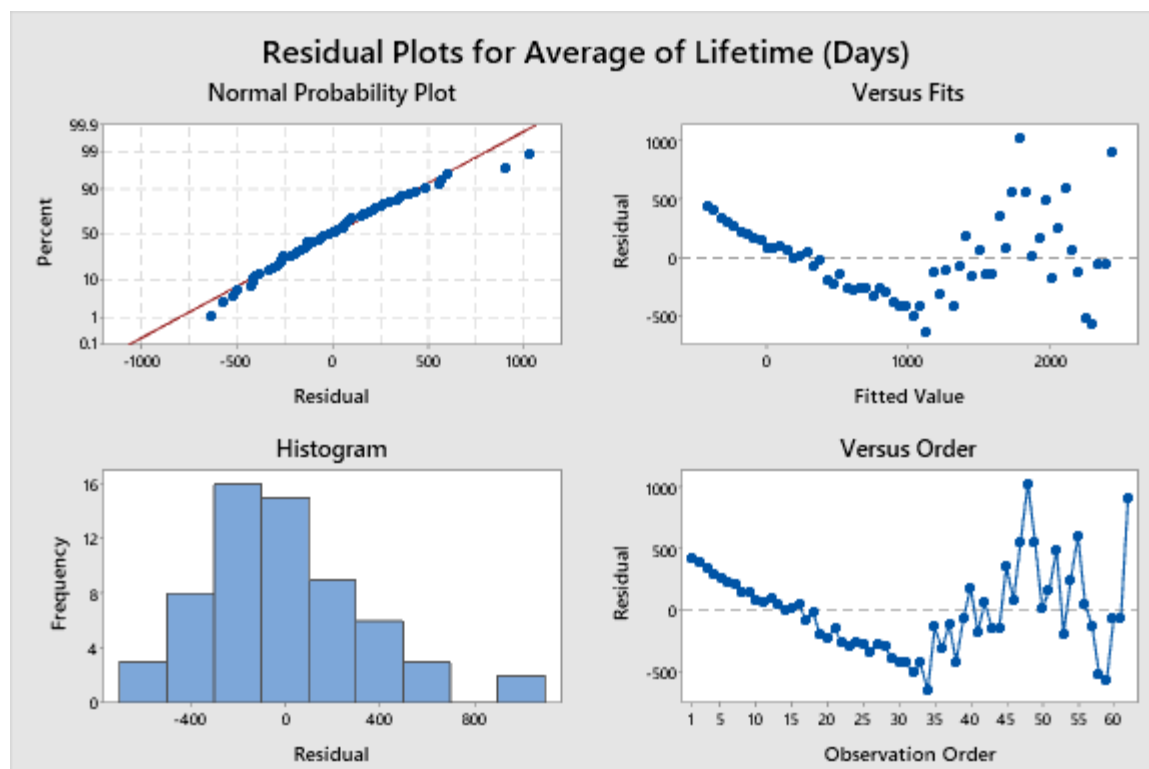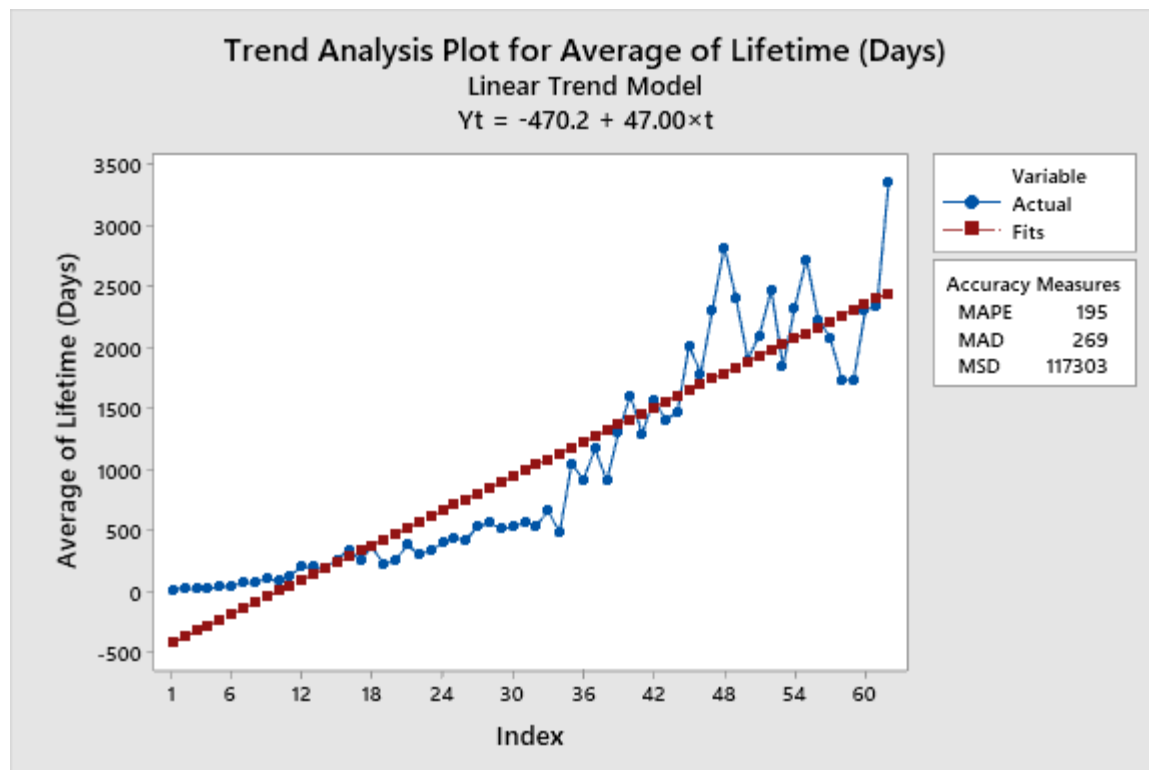
WORKSHEET 2

**Trend Analysis for Average of Lifetime (Days)**

## Method

| | |
|---|---|
| Model type | Growth Curve Model |
| Data | Average of Lifetime (Days) |
| Length | 62 |
| NMissing | 0 |

## Fitted Trend Equation

$Yt = 48.006 \times (1.07813^t)$

## Accuracy Measures

| | |
|---|---|
| MAPE | 45 |
| MAD | 378 |
| MSD | 486549 |
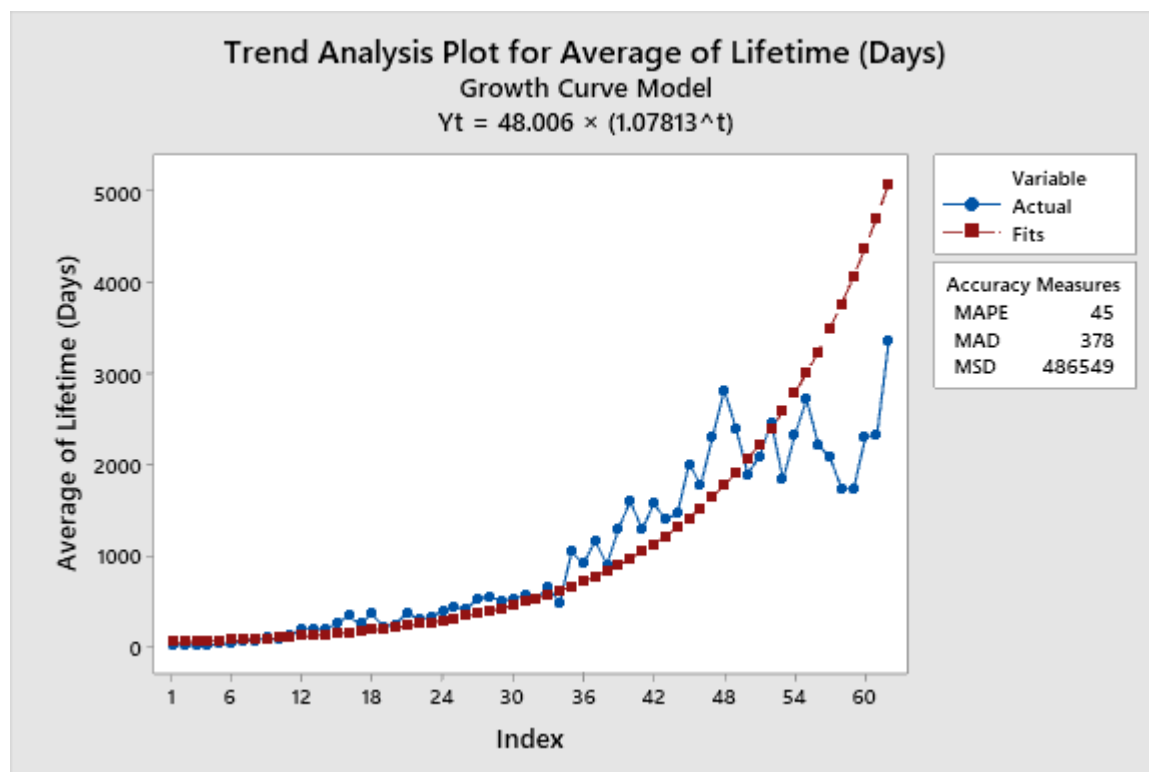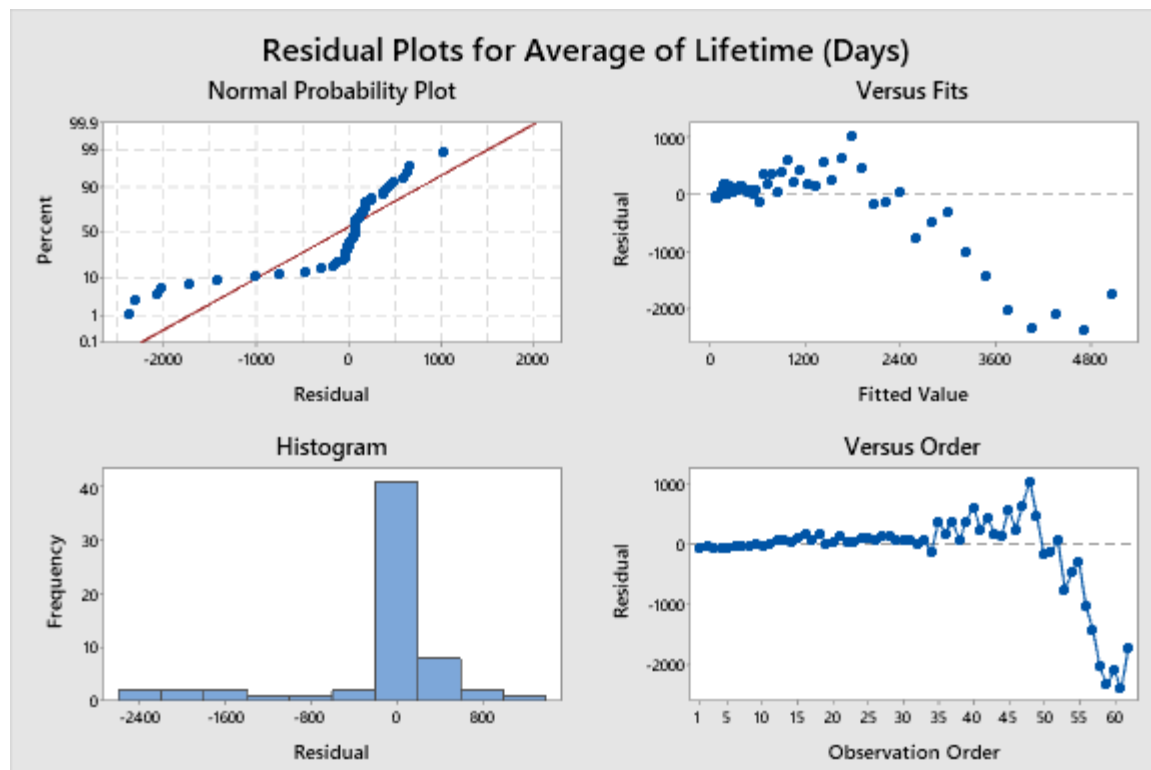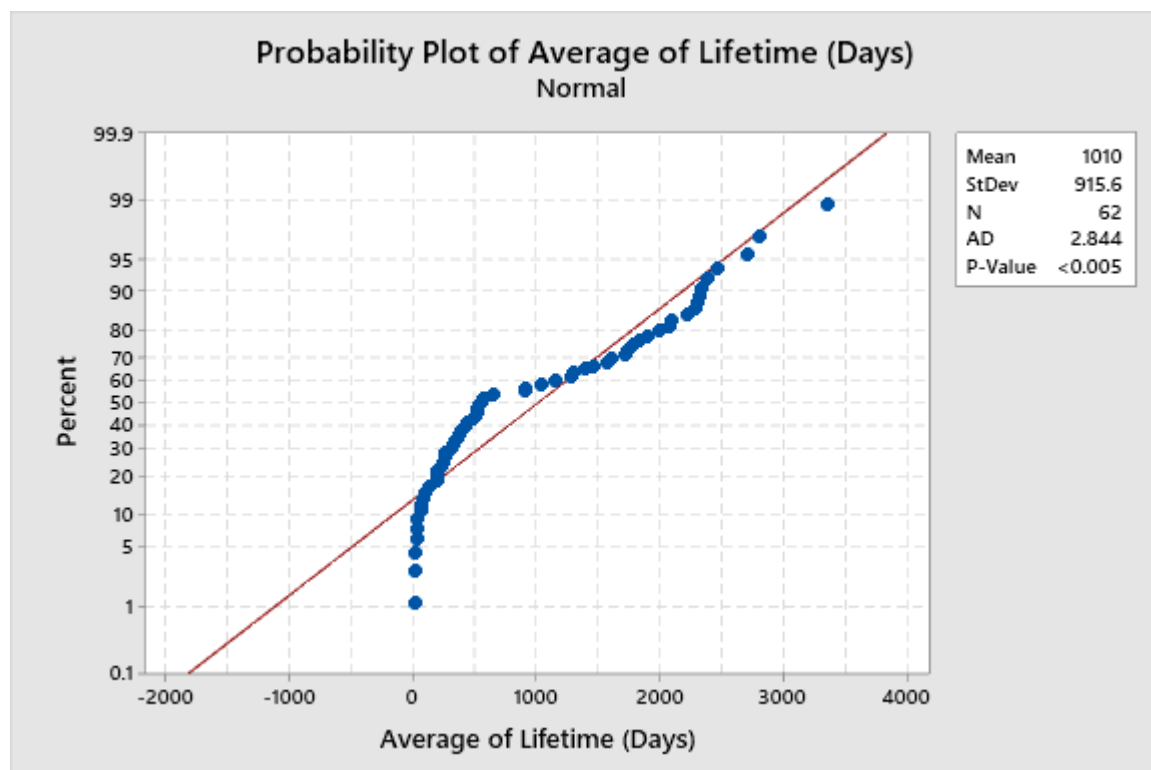


Trend Analysis Plot for Average of Lifetime (Days)
Growth Curve Model
$Yt = 48.006 \times (1.07813^t)$

Residual Plots for Average of Lifetime (Days)

WORKSHEET 2

# Probability Plot of Average of Lifetime (Days)



Probability Plot of Average of Lifetime (Days)
Normal

| | |
|---|---|
| Mean | 1010 |
| StDev | 915.6 |
| N | 62 |
| AD | 2.844 |
| P-Value | <0.005 |

WORKSHEET 2

# Probability Plot of Average of Lifetime (Days)



WORKSHEET 2

# Bubble Plot of Average of Lifetime (Days) vs Death Year
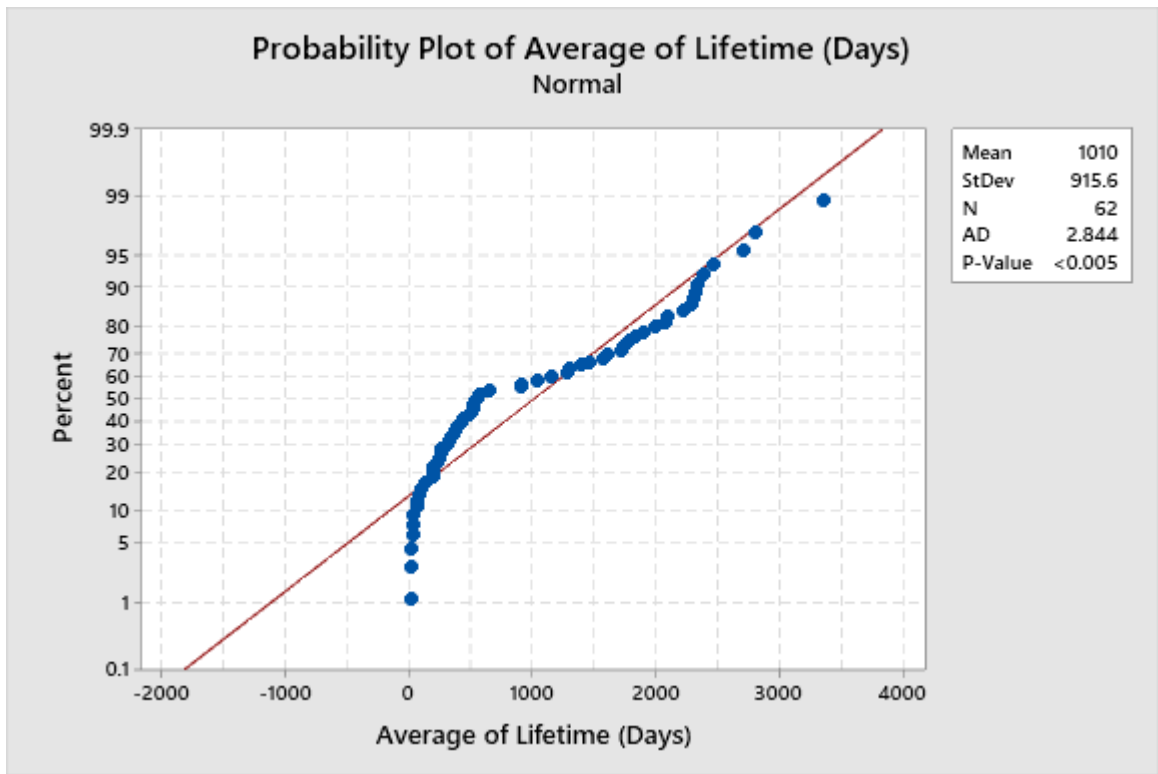
Bubble Plot of Average of Lifetime (Days) vs Death Year
Bubble size: Death Year
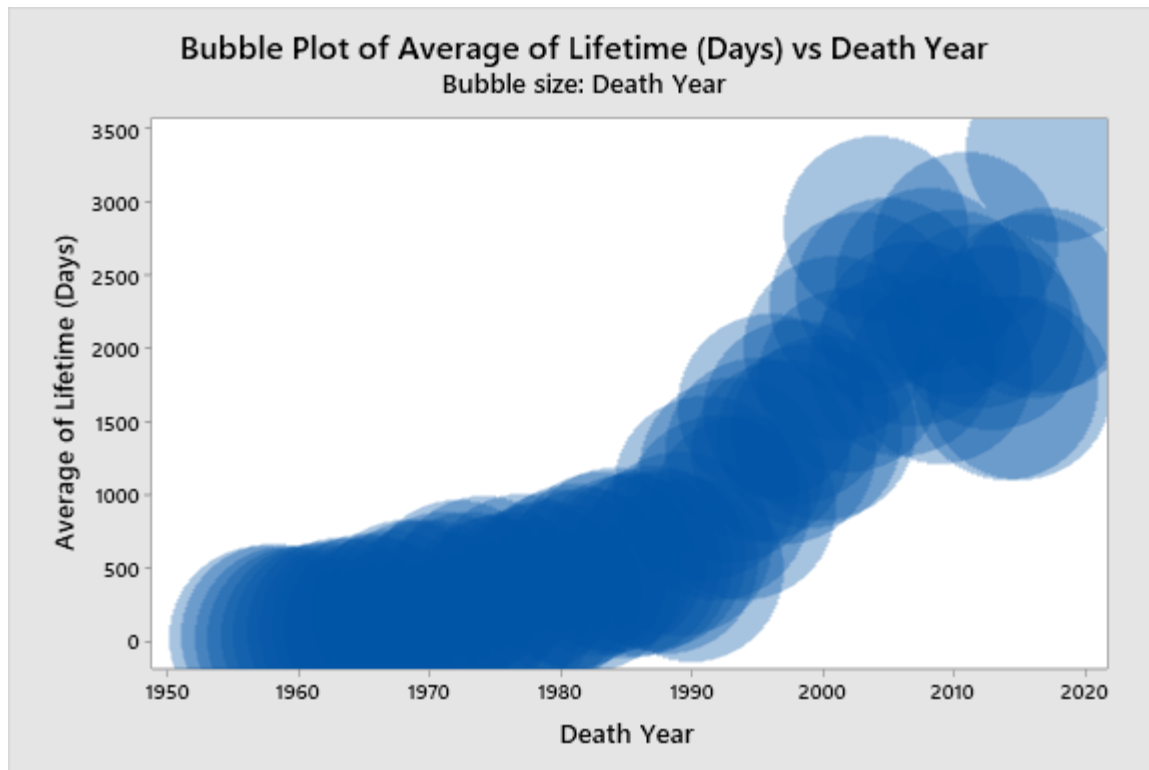
WORKSHEET 2
## Area Graph of Average of Lifetime (Days)



Area Graph of Average of Lifetime (Days)

# Summary Report for Average of Lifetime (Days)



## Summary Report for Average of Lifetime (Days)

**Anderson-Darling Normality Test**

| | |
|---|---|
| A-Squared | 2.84 |
| P-Value | <0.005 |
| Mean | 1010.5 |
| StDev | 915.6 |
| Variance | 838383.4 |
| Skewness | 0.684828 |
| Kurtosis | -0.798787 |
| N | 62 |
| Minimum | 14.5 |
| 1st Quartile | 243.9 |
| Median | 546.3 |
| 3rd Quartile | 1796.5 |
| Maximum | 3359.0 |

95% Confidence Interval for Mean

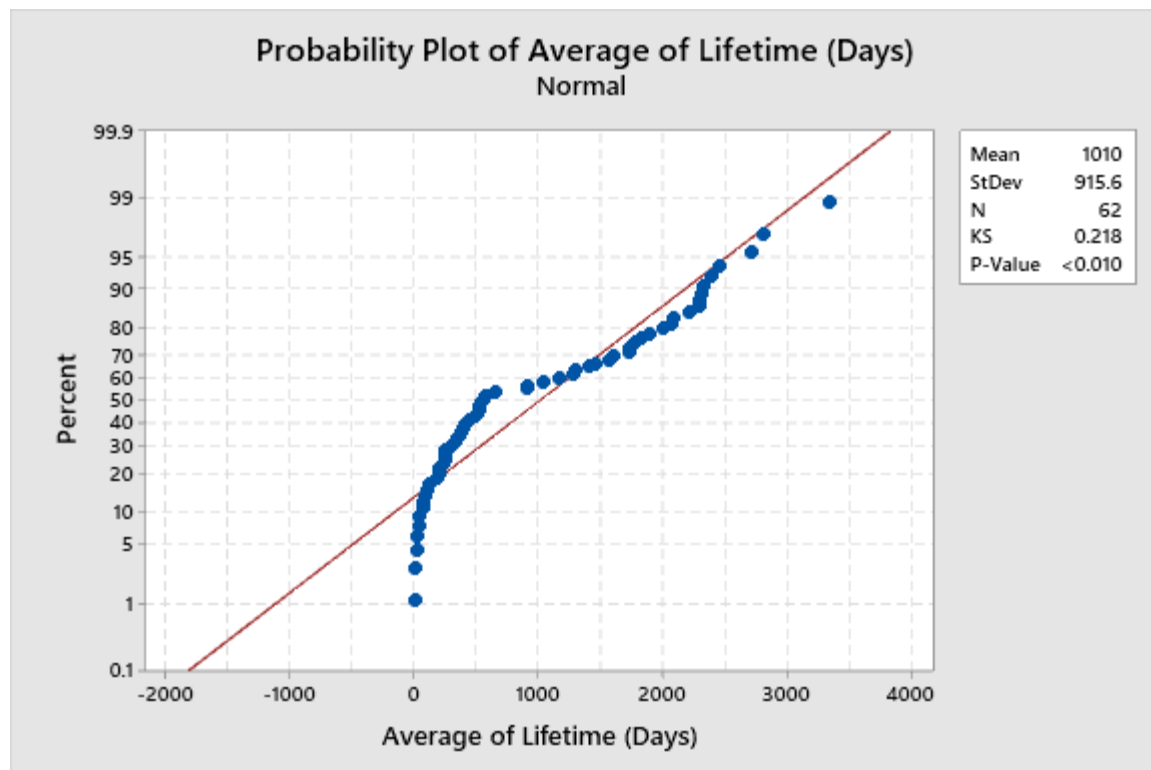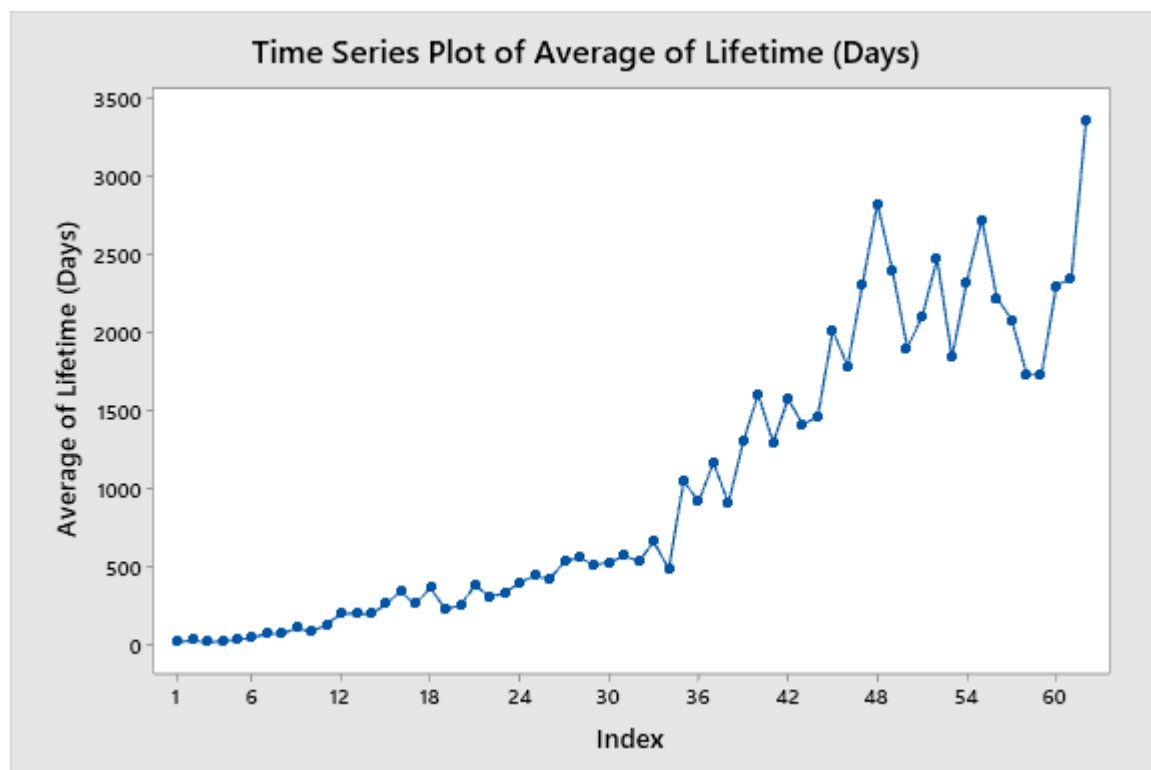| 777.9 | 1243.0 |
|---|---|

95% Confidence Interval for Median

| 395.2 | 1292.9 |
|---|---|

95% Confidence Interval for StDev

| 778.1 | 1112.7 |
|---|---|

# Time Series Plot of Average of Lifetime (years), Average of Lifetime (Days)
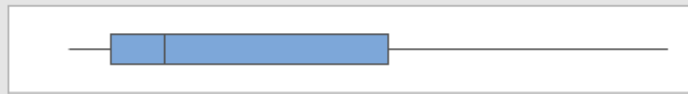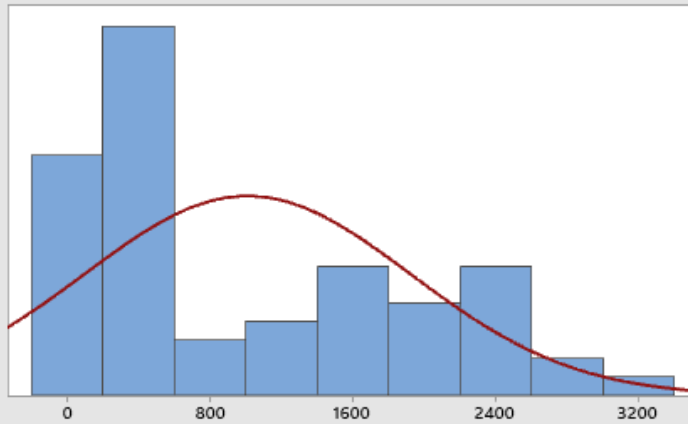
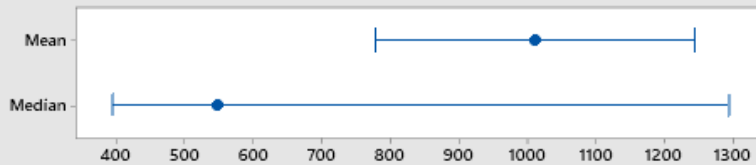Time Series Plot of Average of Lifetime (yea, Average of Lifetime (Day

WORKSHEET 2
## Summary Report for Average of Lifetime (Days)

## Summary Report for Average of Lifetime (Days)



| Anderson-Darling Normality Test | |
|---|---|
| A-Squared | 2.84 |
| P-Value | <0.005 |
| Mean | 1010.5 |
| StDev | 915.6 |
| Variance | 838383.4 |
| Skewness | 0.684828 |
| Kurtosis | -0.798787 |
| N | 62 |
| Minimum | 14.5 |
| 1st Quartile | 243.9 |
| Median | 546.3 |
| 3rd Quartile | 1796.5 |
| Maximum | 3359.0 |

95% Confidence Interval for Mean

| 777.9 | 1243.0 |
|---|---|

95% Confidence Interval for Median

| 395.2 | 1292.9 |
|---|---|

95% Confidence Interval for StDev

| 778.1 | 1112.7 |
|---|---|

WORKSHEET 2

## Probability Plot of Average of Lifetime (Days)

Probability Plot of Average of Lifetime (Days)
Normal

| Mean | 1010 |
| StDev | 915.6 |
| N | 62 |
| KS | 0.218 |
| P-Value | <0.010 |

WORKSHEET 2

# Time Series Plot of Average of Lifetime (Days)



Time Series Plot of Average of Lifetime (Days)

# Time Series Plot of Average of Lifetime (years)



Time Series Plot of Average of Lifetime (years)

# Summary Report for Average of Lifetime (Days)

# Summary Report for Average of Lifetime (Days)



| Anderson-Darling Normality Test | |
|---|---|
| A-Squared | 2.84 |
| P-Value | <0.005 |
| Mean | 1010.5 |
| StDev | 915.6 |
| Variance | 838383.4 |
| Skewness | 0.684828 |
| Kurtosis | -0.798787 |
| N | 62 |
| Minimum | 14.5 |
| 1st Quartile | 243.9 |
| Median | 546.3 |
| 3rd Quartile | 1796.5 |
| Maximum | 3359.0 |

95% Confidence Interval for Mean

| 777.9 | 1243.0 |
|---|---|

95% Confidence Interval for Median
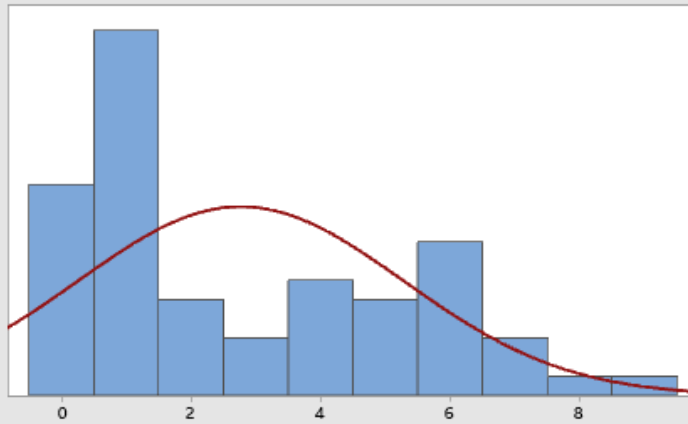
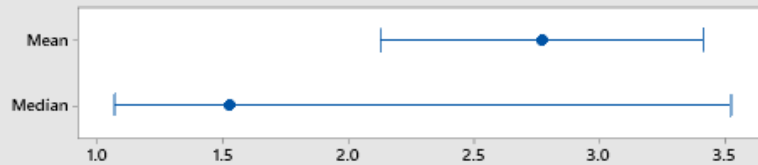| 395.2 | 1292.9 |
|---|---|

95% Confidence Interval for StDev

| 778.1 | 1112.7 |
|---|---|

WORKSHEET 2

**Summary Report for Average of Lifetime (years)**

# Summary Report for Average of Lifetime (years)



| Anderson-Darling Normality Test | |
|---|---|
| A-Squared | 2.76 |
| P-Value | <0.005 |
| Mean | 2.7699 |
| StDev | 2.5146 |
| Variance | 6.3235 |
| Skewness | 0.682222 |
| Kurtosis | -0.789089 |
| N | 62 |
| Minimum | 0.0000 |
| 1st Quartile | 0.6275 |
| Median | 1.5251 |
| 3rd Quartile | 4.9594 |
| Maximum | 9.2314 |

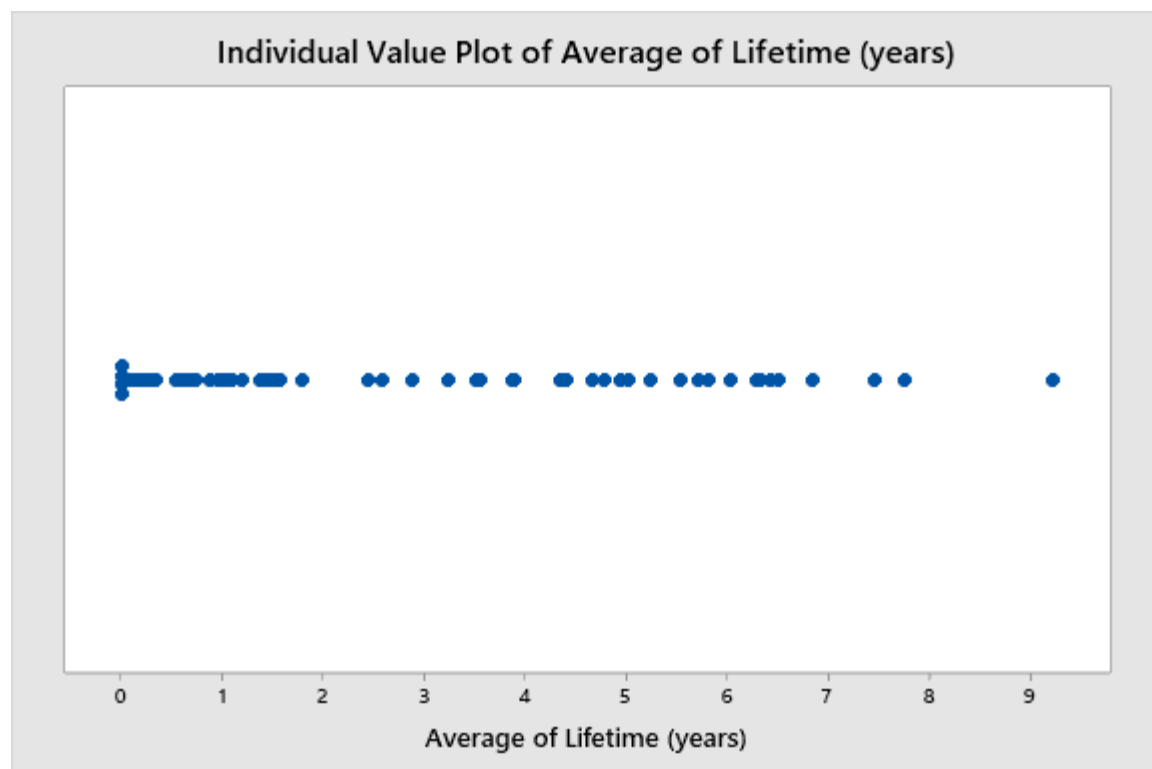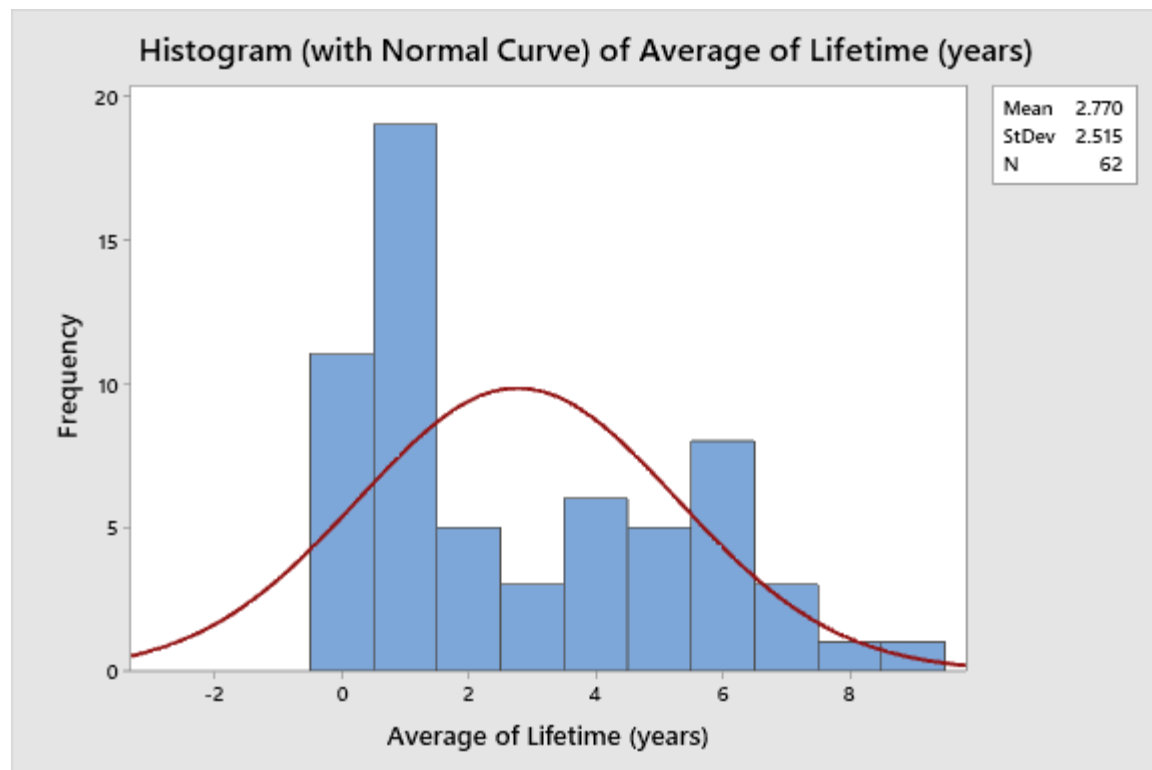95% Confidence Interval for Mean

| 2.1313 | 3.4085 |
|---|---|

95% Confidence Interval for Median

| 1.0697 | 3.5214 |
|---|---|

95% Confidence Interval for StDev

| 2.1369 | 3.0560 |
|---|---|

95% Confidence Intervals

Histogram (with Normal Curve) of Average of Lifetime (years)

| Mean | 2.770 |
| StDev | 2.515 |
| N | 62 |



Individual Value Plot of Average of Lifetime (years)

Boxplot of Average of Lifetime (years)
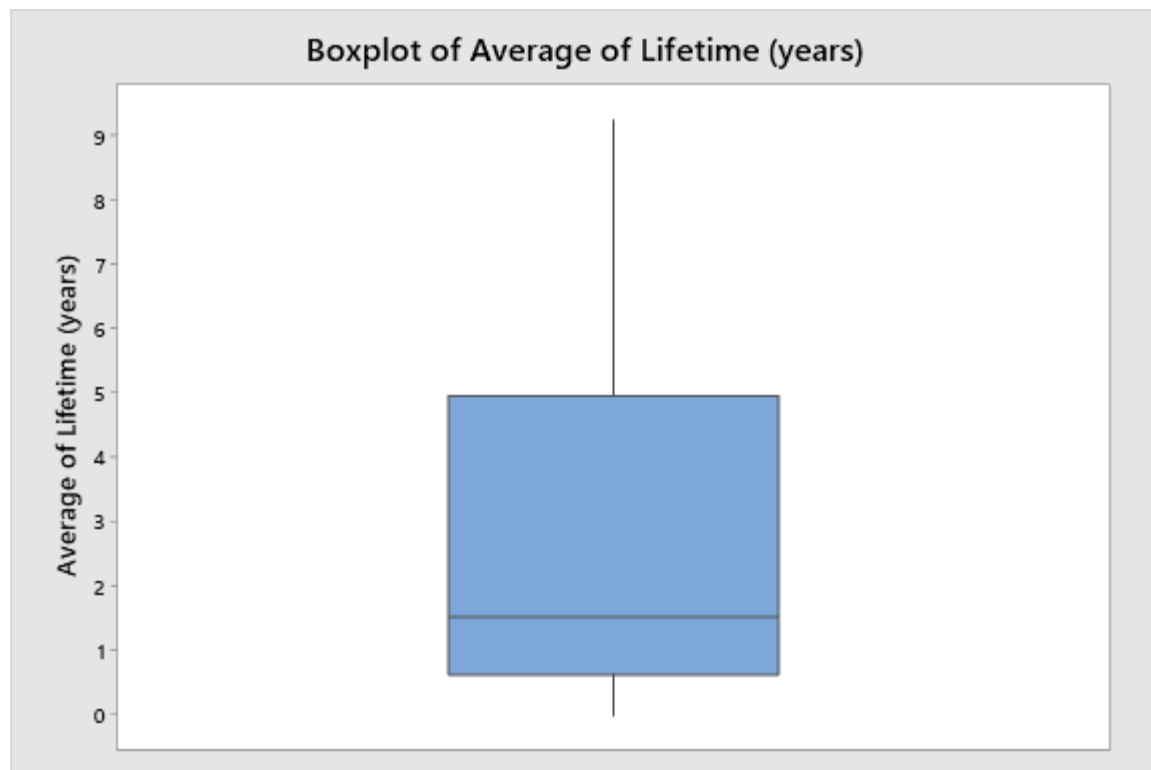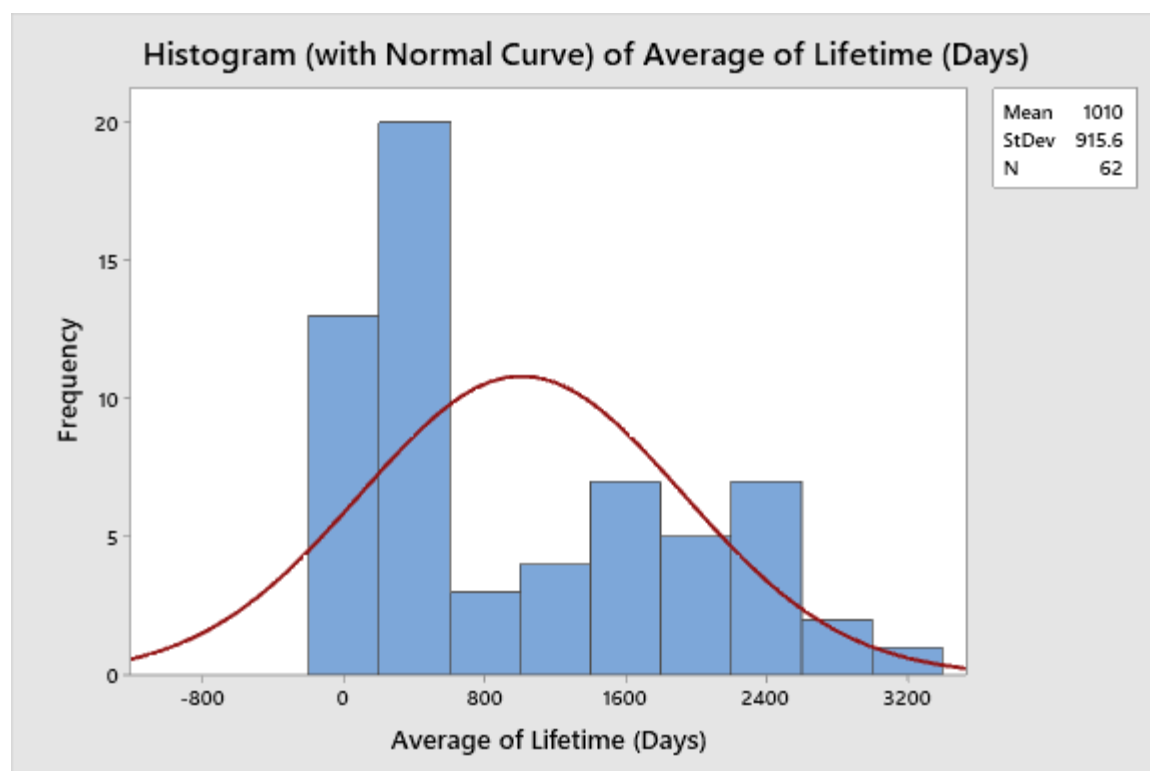
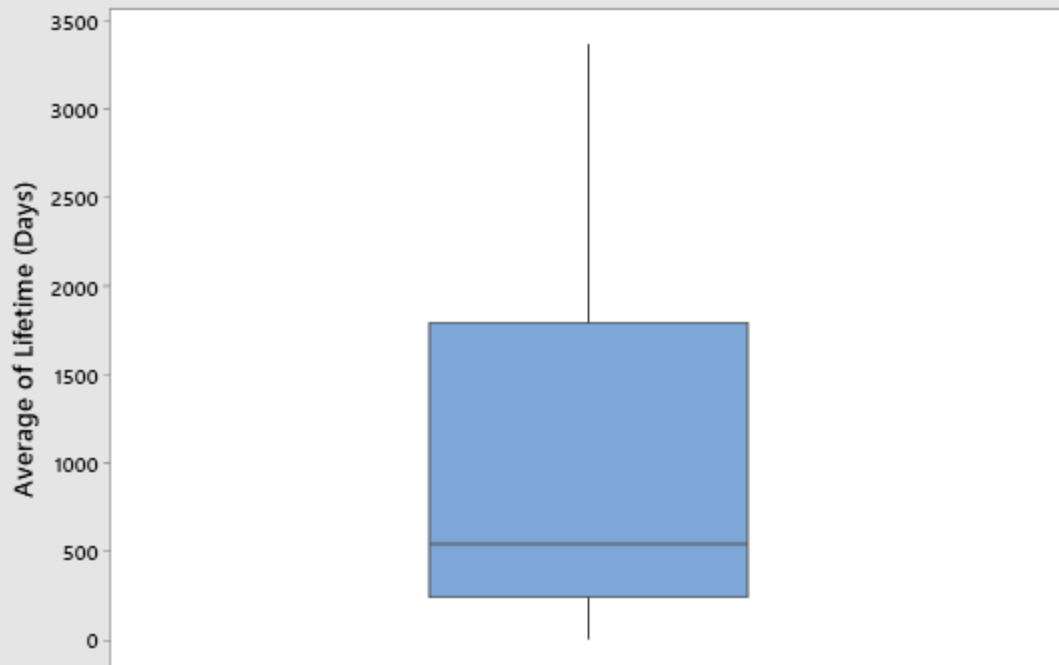# Descriptive Statistics: Average of Lifetime (Days)

## Statistics

| Variable | N | N* | Mean | SE Mean | StDev | Variance | CoefVar | Minimum | Q1 |
|---|---|---|---|---|---|---|---|---|---|
| Average of Lifetime (Days) | 62 | 0 | 1010 | 116 | 916 | 838383 | 90.61 | 15 | 244 |

| Variable | Median | Q3 | Maximum | Range | IQR | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| Average of Lifetime (Days) | 546 | 1796 | 3359 | 3345 | 1553 | 0.68 | -0.80 |

Histogram of Average of Lifetime (Days)



Histogram (with Normal Curve) of Average of Lifetime (Days)

| Mean | 1010 |
| StDev | 915.6 |
| N | 62 |
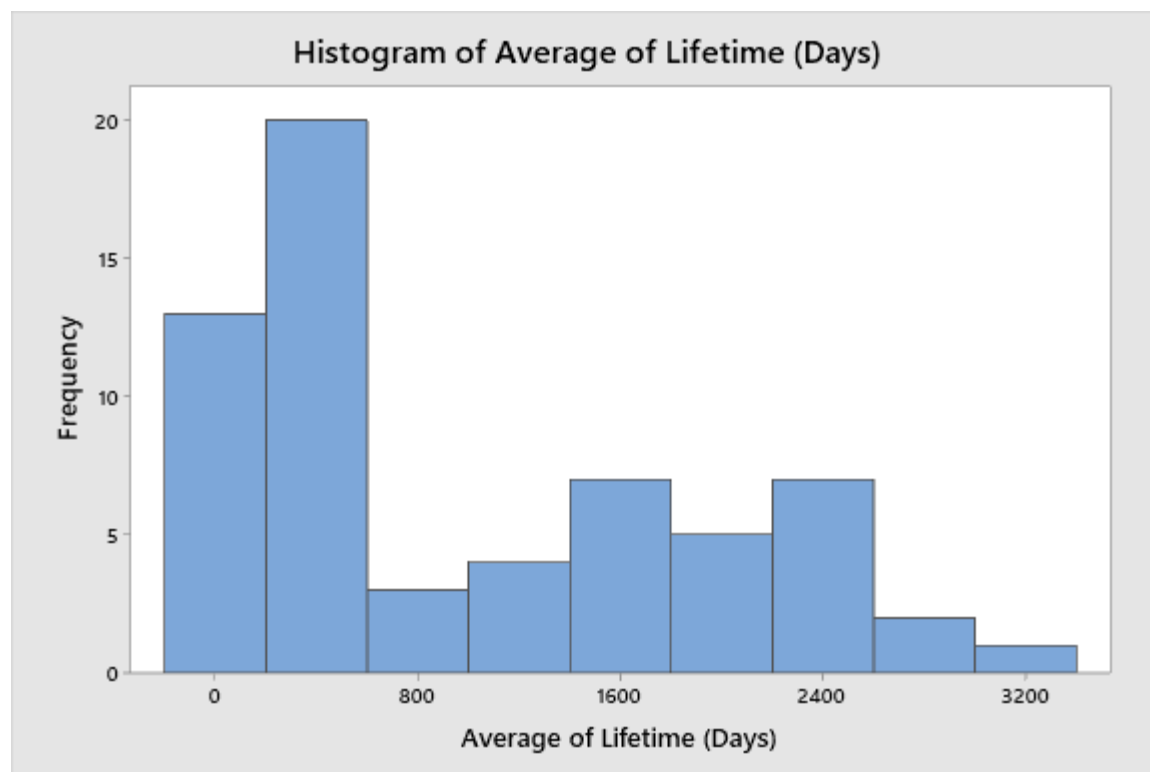
**Individual Value Plot of Average of Lifetime (Days)**

**Boxplot of Average of Lifetime (Days)**

# Probability Plot of Average of Lifetime (years)



**Probability Plot of Average of Lifetime (years)**
Logistic - 95% CI

| | |
|---|---|
| Loc | 2.519 |
| Scale | 1.490 |
| N | 62 |
| AD | 2.677 |
| P-Value | <0.005 |