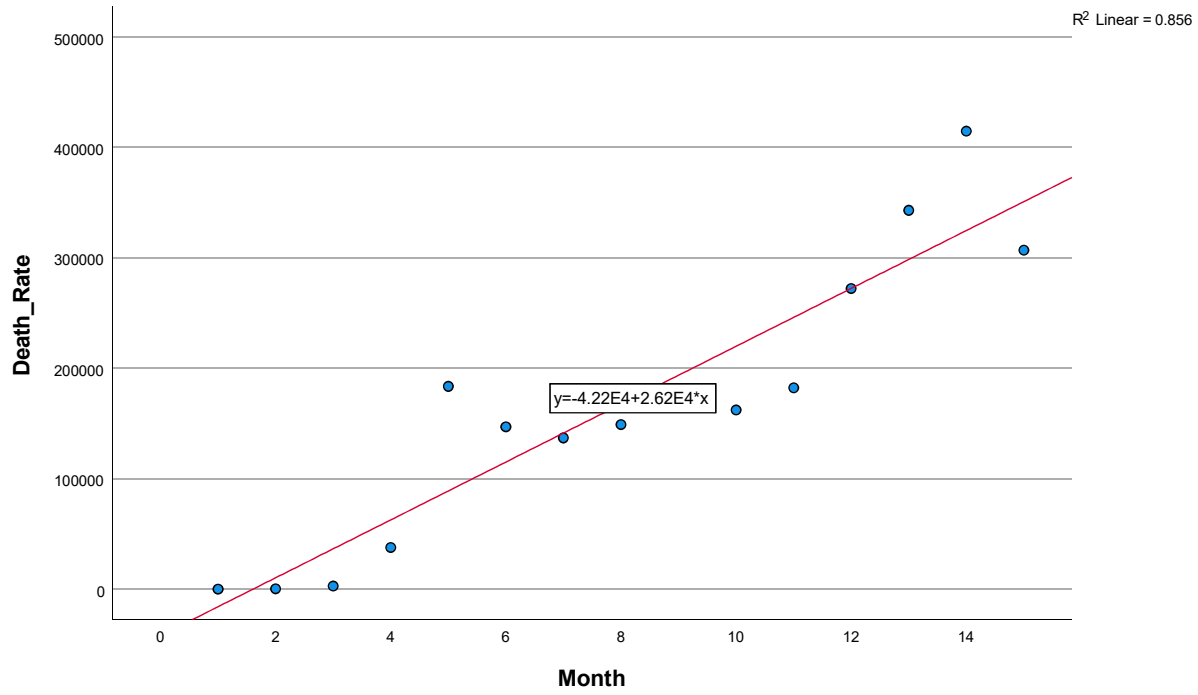
```
DATASET ACTIVATE DataSet4.
DATASET CLOSE DataSet6.

SAVE OUTFILE='D:\Project\Ana.sav'
  /COMPRESSED.
GRAPH
  /SCATTERPLOT(BIVAR)=Month WITH Death_Rate
  /MISSING=LISTWISE.
```

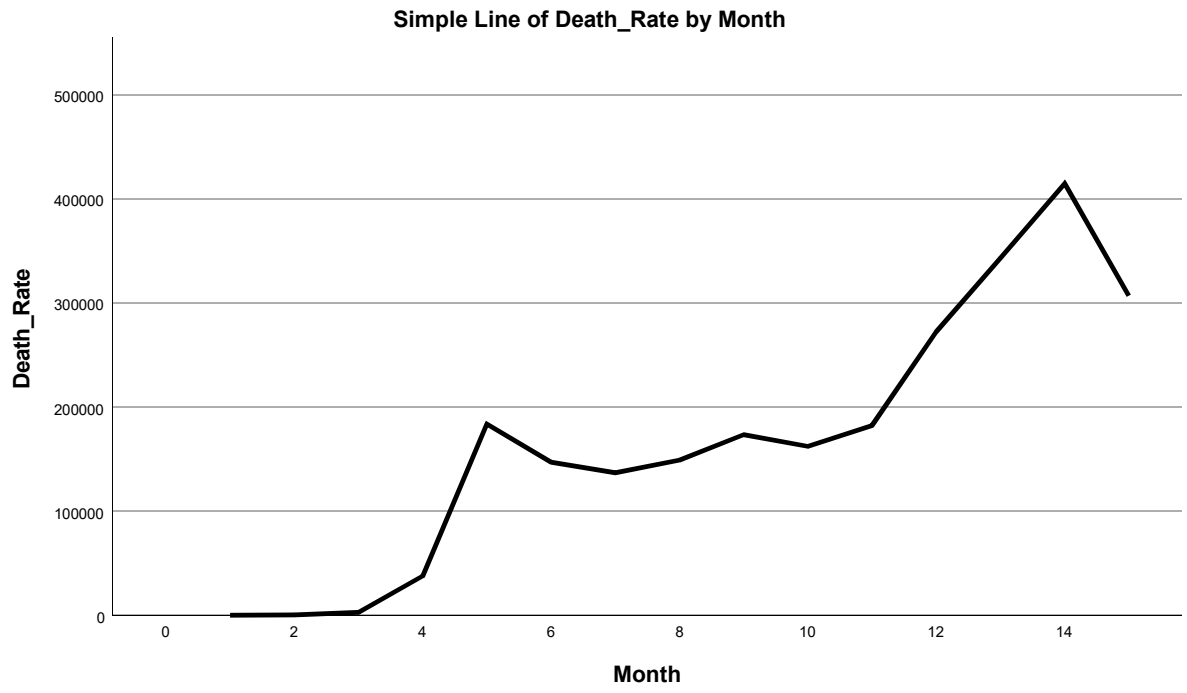
Graph

```
[DataSet4] D:\Project\Ana.sav
```




```
* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=Month Death_Rate MISSING=LISTWISE REPORT
MISSING=NO
  /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: Month=col(source(s), name("Month"))
  DATA: Death_Rate=col(source(s), name("Death_Rate"))
  GUIDE: axis(dim(1), label("Month"))
  GUIDE: axis(dim(2), label("Death_Rate"))
  GUIDE: text.title(label("Simple Line of Death_Rate by Month"))
  ELEMENT: line(position(Month*Death_Rate), missing.wings())
END GPL.
```

GGraph




```
* Curve Estimation.
TSET NEWVAR=NONE.
CURVEFIT
  /VARIABLES=Month WITH Death_Rate
  /CONSTANT
  /MODEL=LINEAR GROWTH EXPONENTIAL
  /PLOT FIT.
```

Curve Fit

Model Description

Model Name		MOD_1
Dependent Variable	1	Month
Equation	1	Linear
	2	Growth[a]
	3	Exponential[a]
Independent Variable		Death_Rate
Constant		Included
Variable Whose Values Label Observations in Plots		Unspecified

a. The model requires all non-missing values to be positive.

Case Processing Summary

	N
Total Cases	17
Excluded Cases[a]	2
Forecasted Cases	0
Newly Created Cases	0

a. Cases with a missing value in any variable are excluded from the analysis.

Variable Processing Summary

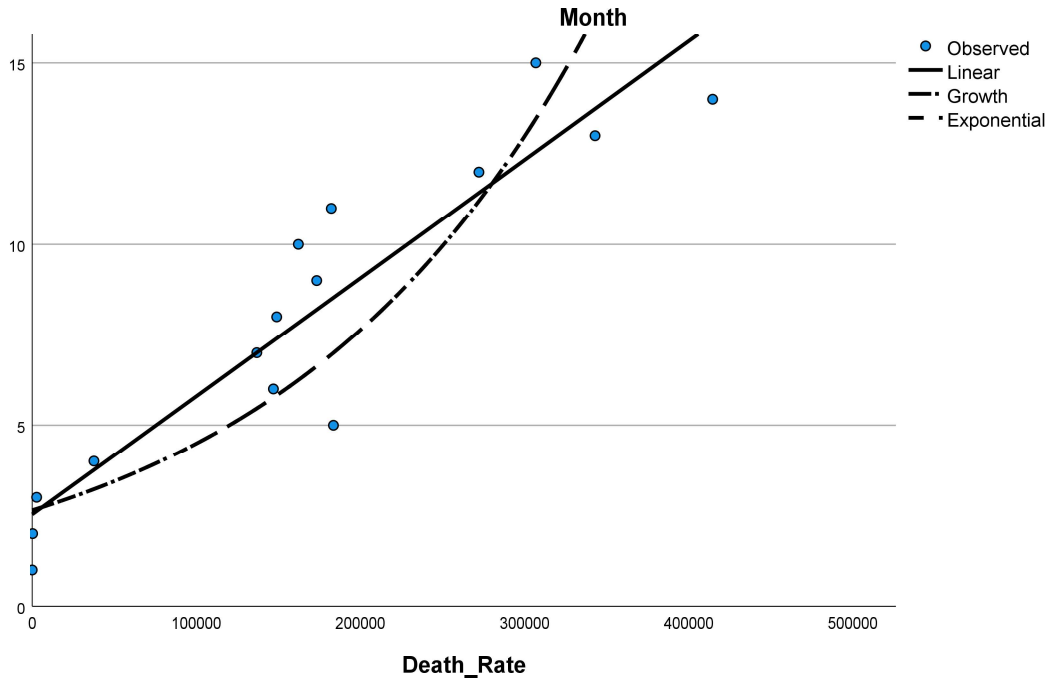
		Variables	
		Dependent	Independent
		Month	Death_Rate
Number of Positive Values		15	15
Number of Zeros		0	0
Number of Negative Values		0	0
Number of Missing Values	User-Missing	0	0
	System-Missing	2	2

Model Summary and Parameter Estimates

Dependent Variable: Month

	Model Summary					Parameter Estimates	
Equation	R Square	F	df1	df2	Sig.	Constant	b1
Linear	.856	77.414	1	13	.000	2.529	3.267E-5
Growth	.739	36.792	1	13	.000	.971	5.307E-6
Exponential	.739	36.792	1	13	.000	2.641	5.307E-6

The independent variable is Death_Rate.




```
GET
  FILE='E:\Covid19\covid.sav'.
DATASET NAME DataSet8 WINDOW=FRONT.
DATE M 1 12 Y 2020.

The following new variables are being created:

  Name        Label

  YEAR_       YEAR, not periodic
  MONTH_      MONTH, period 12
  DATE_       Date.  Format:  "MMM YYYY"
DATE M 1 12 Y 2020.

The following new variables are being created:

  Name        Label

  YEAR_       YEAR, not periodic
  MONTH_      MONTH, period 12
  DATE_       Date.  Format:  "MMM YYYY"
DATASET ACTIVATE DataSet4.
DATASET CLOSE DataSet8.
DATE M 1 12 Y 2020.

The following new variables are being created:

  Name        Label

  YEAR_       YEAR, not periodic
  MONTH_      MONTH, period 12
  DATE_       Date.  Format:  "MMM YYYY"
```

```
* Sequence Charts.
TSPLOT VARIABLES=Death_Rate
  /ID=DATE_
  /NOLOG
  /FORMAT NOFILL NOREFERENCE.
```

Sequence Plot

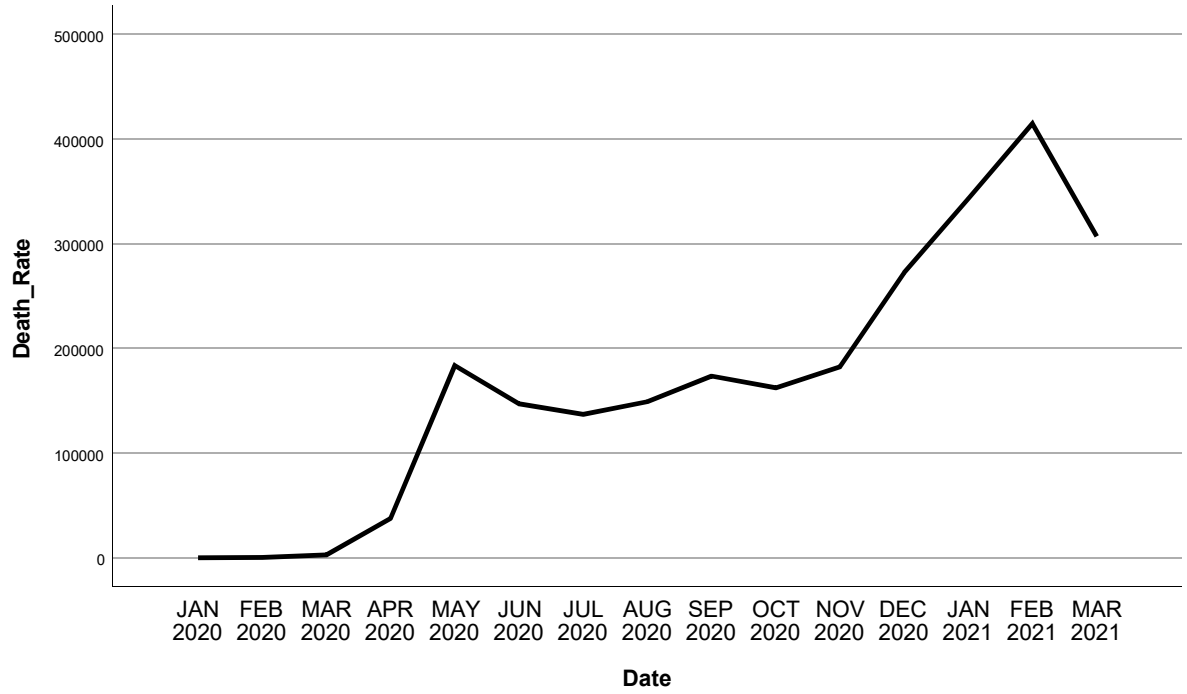
Model Description

Model Name	MOD_2
Series or Sequence 1	Death_Rate
Transformation	None
Non-Seasonal Differencing	0
Seasonal Differencing	0
Length of Seasonal Period	12
Horizontal Axis Labels	Date_
Intervention Onsets	None
Reference Lines	None
Area Below the Curve	Not filled

Applying the model specifications from MOD_2

Case Processing Summary

		Death_Rate
Series or Sequence Length		15
Number of Missing Values in the Plot	User-Missing	0
	System-Missing	0




```
PREDICT THRU YEAR 2022 MONTH 12.
* Time Series Modeler.
TSMODEL
   /MODELSUMMARY  PRINT=[MODELFIT]
   /MODELSTATISTICS  DISPLAY=YES MODELFIT=[ SRSQUARE]
   /MODELDETAILS  PRINT=[ FORECASTS]
   /SERIESPLOT OBSERVED FORECAST
   /OUTPUTFILTER DISPLAY=ALLMODELS
   /SAVE  PREDICTED(Predicted) LCL(LCL) UCL(UCL)
   /AUXILIARY  CILEVEL=99.9 MAXACFLAGS=24
   /MISSING USERMISSING=EXCLUDE
   /MODEL DEPENDENT=Death_Rate CumulativeFrequency
      OUTFILE='E:\Covid19\time.xml'
      PREFIX='Model'
   /EXPERTMODELER TYPE=[ARIMA EXSMOOTH] TRYSEASONAL=YES
   /AUTOOUTLIER  DETECT=OFF.
```

Time Series Modeler

Model Description

			Model Type
Model ID	Death_Rate	Model_1	Winters' Additive
	CumulativeFrequency	Model_2	ARIMA(0,2,0)

Model Summary

Model Fit

Fit Statistic	Mean	SE	Minimum	Maximum	Percentile 5
Stationary R-squared	.444	.628	7.772E-16	.888	7.772E-16
R-squared	.988	.008	.983	.994	.983
RMSE	40556.447	32115.521	17847.344	63265.549	17847.344
MAPE	35208.407	49702.917	63.137	70353.676	63.137
MaxAPE	522115.463	737400.073	694.871	1043536.055	694.871
MAE	28054.165	25921.029	9725.230	46383.101	9725.230
MaxAE	82126.153	69619.124	32897.998	131354.308	32897.998
Normalized BIC	21.214	1.546	20.121	22.307	20.121

Model Fit

Fit Statistic	Percentile 10	25	50	75	90
Stationary R-squared	7.772E-16	7.772E-16	.444	.888	.888
R-squared	.983	.983	.988	.994	.994
RMSE	17847.344	17847.344	40556.447	63265.549	63265.549
MAPE	63.137	63.137	35208.407	70353.676	70353.676
MaxAPE	694.871	694.871	522115.463	1043536.055	1043536.055
MAE	9725.230	9725.230	28054.165	46383.101	46383.101
MaxAE	32897.998	32897.998	82126.153	131354.308	131354.308
Normalized BIC	20.121	20.121	21.214	22.307	22.307

Model Fit

Fit Statistic	Percentile 95
Stationary R-squared	.888
R-squared	.994
RMSE	63265.549
MAPE	70353.676
MaxAPE	1043536.055
MAE	46383.101
MaxAE	131354.308
Normalized BIC	22.307

Model Statistics

Model	Number of Predictors	Model Fit statistics	Ljung-Box Q(18)		
		Stationary R-squared	Statistics	DF	Sig.
Death_Rate-Model_1	0	.888	.	0	.
CumulativeFrequency-Model_2	0	7.772E-16	.	0	.

Model Statistics

Model	Number of Outliers
Death_Rate-Model_1	0
CumulativeFrequency-Model_2	0

Forecast

Model		Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021
Death_Rate-Model_1	Forecast	390623	536576	499996	489891	502007
	UCL	467684	614912	579586	570716	584049
	LCL	313562	458240	420405	409066	419965
CumulativeFrequency-Model_2	Forecast	2860236	3214359	3592088	3993423	4418365
	UCL	3133404	3825180	4614187	5489623	6444229
	LCL	2587069	2603538	2569989	2497223	2392501

Forecast

Model		Sep 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022
Death_Rate-Model_1	Forecast	526387	515196	535275	625236	701441
	UCL	609628	599618	620862	711973	789313
	LCL	443147	430774	449687	538499	613570
CumulativeFrequency-Model_2	Forecast	4866912	5339067	5834827	6354194	6897167
	UCL	7472764	8571227	9736438	10965791	12257099
	LCL	2261061	2106906	1933216	1742597	1537235

Forecast

Model		Feb 2022	Mar 2022	Apr 2022	May 2022
Death_Rate-Model_1	Forecast	737395	684752	744489	890442
	UCL	826387	774850	835680	982713
	LCL	648403	594654	653298	798171
CumulativeFrequency-Model_2	Forecast	7463746	8053932	8667724	9305122
	UCL	13608496	15018362	16485278	18007981
	LCL	1318997	1089502	850170	602263

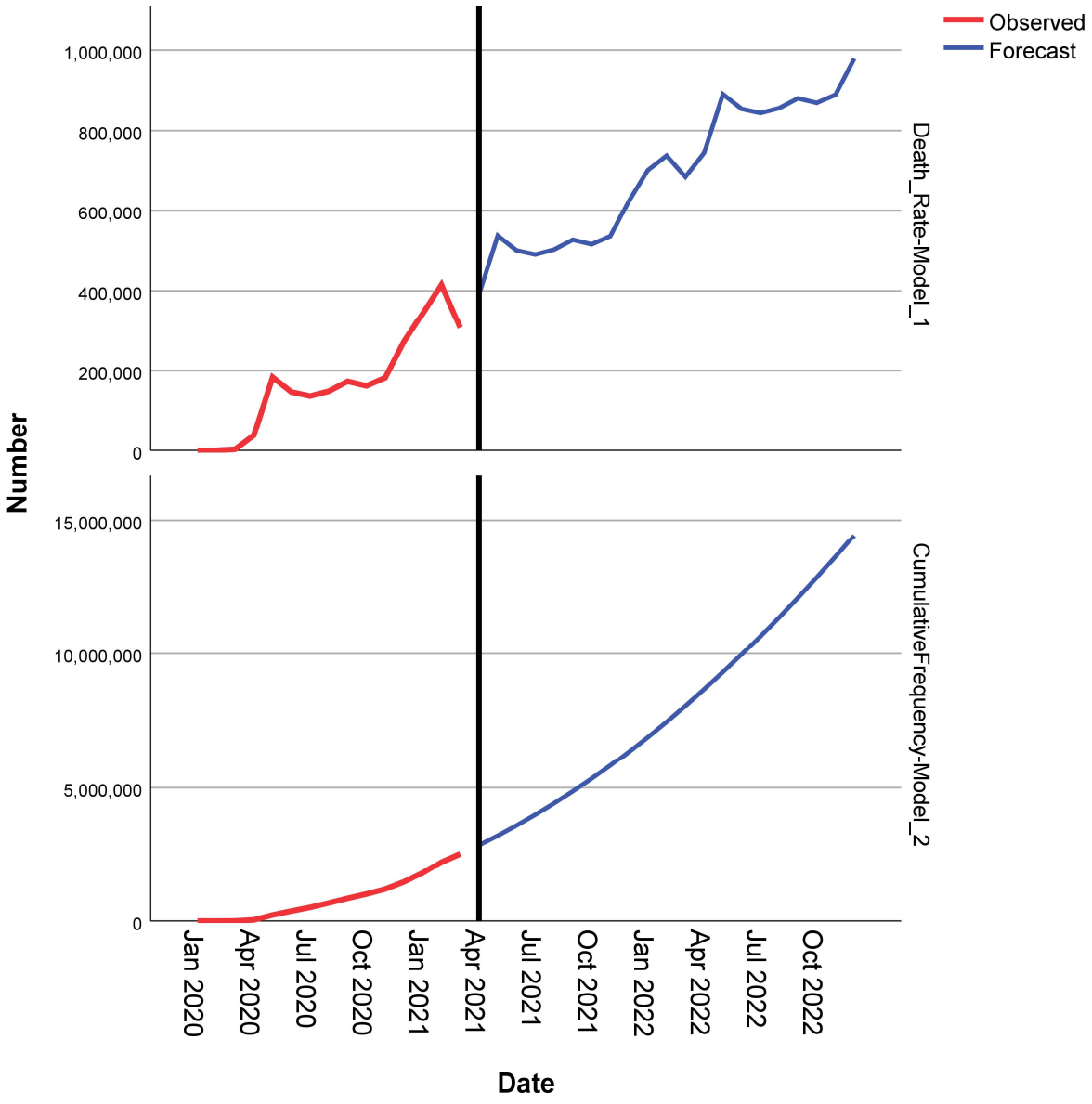
Forecast

Model		Jun 2022	Jul 2022	Aug 2022	Sep 2022
Death_Rate-Model_1	Forecast	853862	843757	855873	880253
	UCL	947200	938151	951311	976723
	LCL	760524	749364	760436	783784
CumulativeFrequency-Model_2	Forecast	9966127	10650738	11358955	12090779
	UCL	19585345	21216351	22900077	24635679
	LCL	346909	85124	-182167	-454122

Forecast

Model		Oct 2022	Nov 2022	Dec 2022
Death_Rate-Model_1	Forecast	869063	889141	979102
	UCL	966554	987643	1078605
	LCL	771572	790639	879600
CumulativeFrequency-Model_2	Forecast	12846208	13625245	14427887
	UCL	26422383	28259475	30146294
	LCL	-729966	-1008985	-1290520

For each model, forecasts start after the last non-missing in the range of the requested estimation period, and end at the last period for which non-missing values of all the predictors are available or at the end date of the requested forecast period, whichever is earlier.




```
DATASET ACTIVATE DataSet4.

SAVE OUTFILE='D:\Project\Ana.sav'
  /COMPRESSED.
NEW FILE.
DATASET NAME DataSet9 WINDOW=FRONT.
T-TEST GROUPS=Group(1 2)
  /MISSING=ANALYSIS
  /VARIABLES=Death
  /ES DISPLAY(TRUE)
  /CRITERIA=CI(.95).
```

T-Test

```
[DataSet9]
```

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Death	1	15	167448.00	126654.951	32702.168
	2	15	859991.93	833684.733	215256.473

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Death	Equal variances assumed	23.958	.000	-3.181	28
	Equal variances not assumed			-3.181	14.646

Independent Samples Test

		t-test for Equality of Means			
		Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence ... Lower
Death	Equal variances assumed	.004	-692543.933	217726.390	-1138536.225
	Equal variances not assumed	.006	-692543.933	217726.390	-1157595.888

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the ...	
		Upper	
Death	Equal variances assumed	-246551.642	
	Equal variances not assumed	-227491.979	

Independent Samples Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval	
				Lower	Upper
Death	Cohen's d	596268.275	-1.161	-1.930	-.376
	Hedges' correction	612857.018	-1.130	-1.878	-.365
	Glass's delta	833684.733	-.831	-1.596	-.040

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control group.