```
 SET DECIMAL DOT.

GET DATA  /TYPE=TXT
  /FILE="/Users/pieter/Documents/BCSLab/Deliverables/D22_Tools_M24/ContractMut/data_and_images/kill_summary_000_1120.csv"
  /DELIMITERS=","
  /QUALIFIER='"'
  /ARRANGEMENT=DELIMITED
  /FIRSTCASE=2
  /DATATYPEMIN PERCENTAGE=95.0
  /VARIABLES=
   run A13
   maxTx F2
   name A36
   address E40
   SLOC F4
   transactions F7
   ether A30
   version A7
   registration_date ADATE10
   block F1
   maxGeneratedTx F2
   uniqueCallCnt F2
   methodCnt F2
   instructionCnt F5
   executionCnt F4
   executionSum F6
   txCnt F2
   txFailCnt F2
   compFailCnt F3
   mutCnt F3
   eqCnt F3
   varCnt F3
   intCnt F2
   mutNotEqCnt F2
   killCnt F2
   coverCnt F2
   coverKillCnt F2
```

```
COMPUTE createCnt = mutCnt + compFailCnt.

COMPUTE compFailCnt_PercentageOf_createCnt= -1.
IF( instructionCnt > 0 ) compFailCnt_PercentageOf_createCnt= compFailCnt * 100 / createCnt.
MISSING VALUES compFailCnt_PercentageOf_createCnt(-1).

COMPUTE uniqueCallCnt_PercentageOf_methodCnt= -1.
IF( methodCnt > 0 ) uniqueCallCnt_PercentageOf_methodCnt= uniqueCallCnt * 100 / methodCnt.
MISSING VALUES uniqueCallCnt_PercentageOf_methodCnt(-1).

COMPUTE executionCnt_PercentageOf_instructionCnt= -1.
IF( instructionCnt > 0 ) executionCnt_PercentageOf_instructionCnt= executionCnt * 100 / instructionCnt.
MISSING VALUES executionCnt_PercentageOf_instructionCnt(-1).

COMPUTE intCnt_PercentageOf_varCnt= -1.
IF( varCnt > 0 ) intCnt_PercentageOf_varCnt= intCnt * 100 / varCnt.
MISSING VALUES intCnt_PercentageOf_varCnt(-1).

COMPUTE eqCnt_PercentageOf_mutCnt= -1.
IF( mutCnt > 0 ) eqCnt_PercentageOf_mutCnt= eqCnt * 100 / mutCnt.
MISSING VALUES eqCnt_PercentageOf_mutCnt(-1).

COMPUTE coverCnt_PercentageOf_mutNotEqCnt= -1.
IF( mutNotEqCnt > 0 ) coverCnt_PercentageOf_mutNotEqCnt= coverCnt * 100 / mutNotEqCnt.
MISSING VALUES coverCnt_PercentageOf_mutNotEqCnt(-1).

COMPUTE killCnt_PercentageOf_mutNotEqCnt= -1.
IF( mutNotEqCnt > 0 ) killCnt_PercentageOf_mutNotEqCnt= killCnt * 100 / mutNotEqCnt.
MISSING VALUES killCnt_PercentageOf_mutNotEqCnt(-1).

COMPUTE coverKillCnt_PercentageOf_coverCnt= -1.
IF( coverCnt > 0 ) coverKillCnt_PercentageOf_coverCnt= coverKillCnt * 100 / coverCnt.
MISSING VALUES coverKillCnt_PercentageOf_coverCnt(-1).

COMPUTE manual = -1.
IF( run = "TxEvMethLimit" & txCnt = 50 & txFailCnt <= 5 & coverKillCnt_PercentageOf_coverCnt< 5 ) manual = 1.
IF( run = "TxEvMethLimit" & txCnt = 50 & txFailCnt <= 5 & coverKillCnt_PercentageOf_coverCnt> 22.5 & coverKillCnt_PercentageOf_cover
```

```
Cnt < 27.5 ) manual = 2.
IF( run = "TxEvMethLimit" & txCnt = 50 & txFailCnt <= 5 & coverKillCnt_PercentageOf_coverCnt> 47.5 & coverKillCnt_PercentageOf_cover
Cnt < 52.5 ) manual = 3.
IF( run = "TxEvMethLimit" & txCnt = 50 & txFailCnt <= 5 & coverKillCnt_PercentageOf_coverCnt> 72.5 & coverKillCnt_PercentageOf_cover
Cnt < 77.5 ) manual = 4.
IF( run = "TxEvMethLimit" & txCnt = 50 & txFailCnt <= 5 & coverKillCnt_PercentageOf_coverCnt> 95 ) manual = 5.
MISSING VALUES manual (-1).

ADD VALUE LABELS manual
1 'normalised mutation score about 0%'
2 'normalised mutation score about 25%'
3 'normalised mutation score about 50%'
4 'normalised mutation score about 75%'
5 'normalised mutation score about 100%'.

VARIABLE LABELS
manual 'Consider to analyse this contract manually'
run 'Choice of killing criteria'
maxTx 'Maximum number of transactions'
name 'Contract name'
        version 'Solidity compiler version used when the contract was verified'
block 'Contract uses block.* special functions (should be 0)'
maxGeneratedTx 'Maximum number of transactions generated (should be 50)'
uniqueCallCnt 'Number of unique methods called by the transactions'
methodCnt 'Number of methods in the contract'
instructionCnt 'Number of EVM instruction locations in the instruction space of the original'
executionCnt 'Number of EVM instruction locations in the instruction space of the original that were executed'
executionSum 'Total number of EVM instructions executed by the original'
txCnt 'Number of transactions'
txFailCnt 'Number of failed transactions'
createCnt 'Number of mutants created'
compFailCnt 'Number of mutants created that failed to compile'
compFailCnt_PercentageOf_createCnt'Percentage of mutants created that failed to compile'
mutCnt 'Number of functional mutants'
eqCnt 'Number of equivalent mutants'
varCnt 'Number of variable declarations in the original contract'
intCnt 'Number of integer variable declarations in the original contract'
intCnt_PercentageOf_varCnt 'Percentage of integer variable declarations of the total number of variable delcarations'
mutNotEqCnt 'Number non-equivalent mutants'
```

```
killCnt 'Number of non-equivalent mutants killed by the test'
coverCnt 'Number of non-equivalent mutants covered by the test'
coverKillCnt 'Number of non-equivalent and covered mutants killed by the test'
uniqueCallCnt_PercentageOf_methodCnt'Percentage of unique calls from the number of methods in the contract'
executionCnt_PercentageOf_instructionCnt'Percentage of executed EVM instructions in the contract'
eqCnt_PercentageOf_mutCnt 'Percentage of all mutants that are equivalent'
killCnt_PercentageOf_mutNotEqCnt'Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)'
coverCnt_PercentageOf_mutNotEqCnt'Percentage of non-equivalent mutants that are covered'
coverKillCnt_PercentageOf_coverCnt'Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation p
ercentage)'.

GRAPH
  /ERRORBAR(CI 95)=killCnt_PercentageOf_mutNotEqCntBY maxTx by run.
```

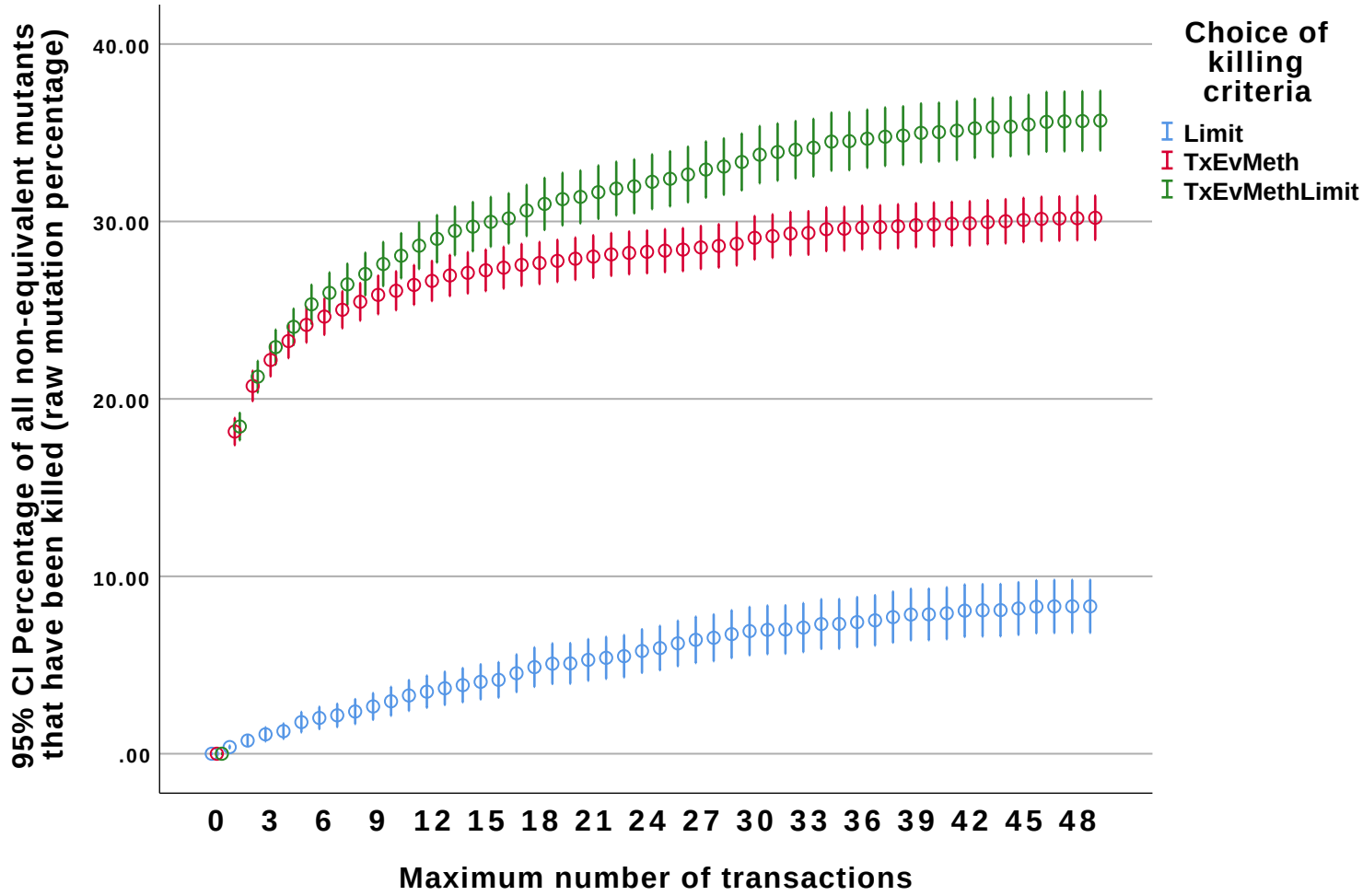
Graph

Notes

Output Created		**01-OCT-2019 10:35:...**
Comments		
Input	**Data**	**/Users/pieter/Documents/BCSLab/Deliverables/D22_Tools_M24/ContractMut/data_and_images/kill_summary_000_1120.csv**
	Filter	**<none>**
	Weight	**<none>**
	Split File	**<none>**
	N of Rows in Working Data File	**144450**
Syntax		**GRAPH /ERRORBAR(CI 95) =killCnt_PercentageOf_mutNotEqCnt BY maxTx by run.**

Notes

Resources	Processor Time	00:00:14.63
	Elapsed Time	00:00:07.00

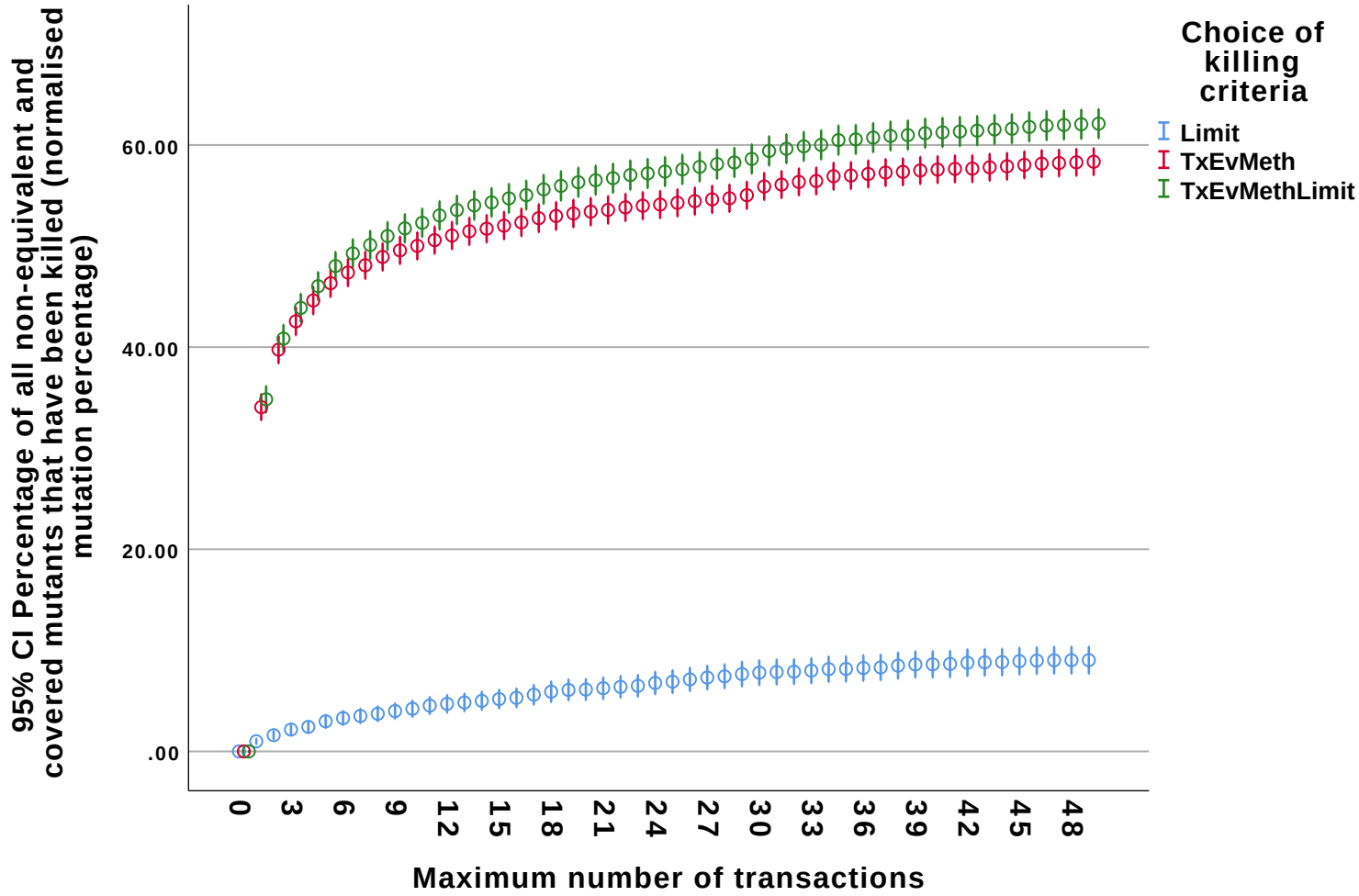



```
GRAPH
 /ERRORBAR(CI 95)=coverKillCnt_PercentageOf_coverCntBY maxTx by run.
```

Graph

Notes

Output Created		01-OCT-2019 10:35:...
Comments		
Input	Data	/Users/pieter/Documents/BCSLab/Deliverables/D22_Tools_M24/ContractMut/data_and_images/kill_summary_000_1120.csv
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	144450
Syntax		GRAPH /ERRORBAR(CI 95) =coverKillCnt_PercentageOf_coverCnt BY maxTx by run.
Resources	Processor Time	00:00:11.36
	Elapsed Time	00:00:05.00




```
FREQUENCIES VARIABLES=manual
 /STATISTICS=MEAN
```

```
/ORDER=ANALYSIS.
```

Frequencies

Notes

Output Created		01-OCT-2019 10:36:...
Comments		
Input	Data	/Users/pieter/Documents/BCSLab/Deliverables/D22_Tools_M24/ContractMut/data_and_images/kill_summary_000_1120.csv
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	144450
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=manual /STATISTICS=MEAN /ORDER=ANALYSIS.
Resources	Processor Time	00:00:10.83
	Elapsed Time	00:00:04.00

Statistics

Consider to analyse this contract manually

N	Valid	120
	Missing	144330
Mean		4.0083

Consider to analyse this contract manually

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	normalised mutation score about 0%	2	.0	1.7	1.7
	normalised mutation score about 25%	4	.0	3.3	5.0
	normalised mutation score about 50%	31	.0	25.8	30.8
	normalised mutation score about 75%	37	.0	30.8	61.7
	normalised mutation score about 100%	46	.0	38.3	100.0
	Total	120	.1	100.0	
Missing	-1.00	144330	99.9		
Total		144450	100.0		

```
 SORT CASES  BY run.
SPLIT FILE SEPARATE BY run.

* NONPAR CORR
*   /VARIABLES=
*  killCnt_PercentageOf_mutNotEqCnt
```

```
*  coverKillCnt_PercentageOf_coverCnt
*   maxTx
*   /PRINT=KENDALL TWOTAIL NOSIG
*   /MISSING=PAIRWISE.

COMPUTE maxTx_filter=0.
IF( maxTx=49 ) maxTx_filter = 1.
FILTER BY maxTx_filter.

DESCRIPTIVES VARIABLES=block
maxGeneratedTx
uniqueCallCnt
methodCnt
instructionCnt
executionCnt
executionSum
txCnt
txFailCnt
createCnt
compFailCnt
mutCnt
eqCnt
varCnt
intCnt
mutNotEqCnt
coverCnt
killCnt
uniqueCallCnt_PercentageOf_methodCnt
executionCnt_PercentageOf_instructionCnt
intCnt_PercentageOf_varCnt
intCnt_PercentageOf_varCnt
compFailCnt_PercentageOf_createCnt
eqCnt_PercentageOf_mutCnt
coverCnt_PercentageOf_mutNotEqCnt
killCnt_PercentageOf_mutNotEqCnt
coverKillCnt_PercentageOf_coverCnt
  /STATISTICS=MIN MAX MEAN STDDEV SUM.
```

Descriptives

Notes

Output Created		01-OCT-2019 10:36:...
Comments		
Input	Data	/Users/pieter/Documents/BCSLab/Deliverables/D22_Tools_M24/ContractMut/data_and_images/kill_summary_000_1120.csv
	Filter	maxTx_filter
	Weight	<none>
	Split File	Choice of killing criteria
	N of Rows in Working Data File	2889
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	All non-missing data are used.

Notes

Syntax	**DESCRIPTIVES VARIABLES=block maxGeneratedTx uniqueCallCnt methodCnt instructionCnt executionCnt executionSum txCnt txFailCnt createCnt compFailCnt mutCnt eqCnt varCnt intCnt mutNotEqCnt coverCnt killCnt** **uniqueCallCnt_PercentageOf_methodCnt** **executionCnt_PercentageOf_instructionCnt** **intCnt_PercentageOf_varCnt** **intCnt_PercentageOf_varCnt** **compFailCnt_PercentageOf_createCnt** **eqCnt_PercentageOf_mutCnt** **coverCnt_PercentageOf_mutNotEqCnt** **killCnt_PercentageOf_mutNotEqCnt** **coverKillCnt_PercentageOf_coverCnt /STATISTICS=MIN MAX MEAN STDDEV SUM.**

Notes

Resources	Processor Time	00:00:00.44
	Elapsed Time	00:00:00.00

Choice of killing criteria = Limit

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Contract uses block.* special functions (should be 0)	963	0	0	0	.00	.000
Maximum number of transactions generated (should be 50)	963	50	50	48150	50.00	.000
Number of unique methods called by the transactions	963	2	13	3521	3.66	1.849
Number of methods in the contract	954	2	86	20895	21.90	11.048
Number of EVM instruction locations in the instruction space of the original	963	43	14162	3304002	3430.95	2089.305
Number of EVM instruction locations in the instruction space of the original that were executed	963	35	6645	1574239	1634.72	967.884
Total number of EVM instructions executed by the original	963	1080	233231	56543159	58715.64	32187.249

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Number of transactions	963	50	50	48150	50.00	.000
Number of failed transactions	963	0	49	14961	15.54	19.282
Number of mutants created	963	50.00	389.00	71314.00	74.0540	35.98875
Number of mutants created that failed to compile	963	0	167	11252	11.68	18.857
Number of functional mutants	963	37	359	60062	62.37	25.339
Number of equivalent mutants	963	0	309	12192	12.66	25.666
Number of variable declarations in the original contract	963	2	949	99486	103.31	87.507
Number of integer variable declarations in the original contract	963	0	33	368	.38	2.100
Number non-equivalent mutants	963	2	50	47870	49.71	3.112
Number of non-equivalent mutants covered by the test	963	0	44	16046	16.66	8.667
Number of non-equivalent mutants killed by the test	963	0	50	3988	4.14	11.755

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Percentage of unique calls from the number of methods in the contract	954	2.99	100.00	18527.51	19.4209	11.49812
Percentage of executed EVM instructions in the contract	963	6.08	98.37	49505.34	51.4074	15.89335
Percentage of integer variable declarations of the total number of variable delcarations	963	.00	29.63	264.72	.2749	1.78620
Percentage of mutants created that failed to compile	963	.00	64.08	11892.79	12.3497	13.21759
Percentage of all mutants that are equivalent	963	.00	96.55	14986.48	15.5623	15.00506
Percentage of non-equivalent mutants that are covered	963	.00	100.00	32423.87	33.6697	17.54178
Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	963	.00	100.00	8001.86	8.3093	23.58376
Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	957	.00	100.00	8641.20	9.0295	20.83247
Valid N (listwise)	948					

a. Choice of killing criteria = Limit

Choice of killing criteria = TxEvMeth

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Contract uses block.* special functions (should be 0)	963	0	0	0	.00	.000
Maximum number of transactions generated (should be 50)	963	50	50	48150	50.00	.000
Number of unique methods called by the transactions	963	2	13	3521	3.66	1.849
Number of methods in the contract	954	2	86	20895	21.90	11.048
Number of EVM instruction locations in the instruction space of the original	963	43	14162	3304002	3430.95	2089.305
Number of EVM instruction locations in the instruction space of the original that were executed	963	35	6645	1574239	1634.72	967.884
Total number of EVM instructions executed by the original	963	1080	233231	56543159	58715.64	32187.249
Number of transactions	963	50	50	48150	50.00	.000
Number of failed transactions	963	0	49	14961	15.54	19.282

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Number of mutants created	963	50.00	389.00	71314.00	74.0540	35.98875
Number of mutants created that failed to compile	963	0	167	11252	11.68	18.857
Number of functional mutants	963	37	359	60062	62.37	25.339
Number of equivalent mutants	963	0	309	12192	12.66	25.666
Number of variable declarations in the original contract	963	2	949	99486	103.31	87.507
Number of integer variable declarations in the original contract	963	0	33	368	.38	2.100
Number non-equivalent mutants	963	2	50	47870	49.71	3.112
Number of non-equivalent mutants covered by the test	963	0	44	16046	16.66	8.667
Number of non-equivalent mutants killed by the test	963	0	50	14433	14.99	9.854
Percentage of unique calls from the number of methods in the contract	954	2.99	100.00	18527.51	19.4209	11.49812

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Percentage of executed EVM instructions in the contract	963	6.08	98.37	49505.34	51.4074	15.89335
Percentage of integer variable declarations of the total number of variable delcarations	963	.00	29.63	264.72	.2749	1.78620
Percentage of mutants created that failed to compile	963	.00	64.08	11892.79	12.3497	13.21759
Percentage of all mutants that are equivalent	963	.00	96.55	14986.48	15.5623	15.00506
Percentage of non-equivalent mutants that are covered	963	.00	100.00	32423.87	33.6697	17.54178
Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	963	.00	100.00	29090.73	30.2084	19.71658
Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	957	.00	100.00	55836.50	58.3454	20.80248
Valid N (listwise)	948					

a. Choice of killing criteria = TxEvMeth

Choice of killing criteria = TxEvMethLimit

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Contract uses block.* special functions (should be 0)	963	0	0	0	.00	.000
Maximum number of transactions generated (should be 50)	963	50	50	48150	50.00	.000
Number of unique methods called by the transactions	963	2	13	3521	3.66	1.849
Number of methods in the contract	954	2	86	20895	21.90	11.048
Number of EVM instruction locations in the instruction space of the original	963	43	14162	3304002	3430.95	2089.305
Number of EVM instruction locations in the instruction space of the original that were executed	963	35	6645	1574239	1634.72	967.884
Total number of EVM instructions executed by the original	963	1080	233231	56543159	58715.64	32187.249
Number of transactions	963	50	50	48150	50.00	.000
Number of failed transactions	963	0	49	14961	15.54	19.282
Number of mutants created	963	50.00	389.00	71314.00	74.0540	35.98875

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Number of mutants created that failed to compile	963	0	167	11252	11.68	18.857
Number of functional mutants	963	37	359	60062	62.37	25.339
Number of equivalent mutants	963	0	309	12192	12.66	25.666
Number of variable declarations in the original contract	963	2	949	99486	103.31	87.507
Number of integer variable declarations in the original contract	963	0	33	368	.38	2.100
Number non-equivalent mutants	963	2	50	47870	49.71	3.112
Number of non-equivalent mutants covered by the test	963	0	44	16046	16.66	8.667
Number of non-equivalent mutants killed by the test	963	0	50	17056	17.71	13.288
Percentage of unique calls from the number of methods in the contract	954	2.99	100.00	18527.51	19.4209	11.49812

Descriptive Statistics[a]

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Percentage of executed EVM instructions in the contract	963	6.08	98.37	49505.34	51.4074	15.89335
Percentage of integer variable declarations of the total number of variable delcarations	963	.00	29.63	264.72	.2749	1.78620
Percentage of mutants created that failed to compile	963	.00	64.08	11892.79	12.3497	13.21759
Percentage of all mutants that are equivalent	963	.00	96.55	14986.48	15.5623	15.00506
Percentage of non-equivalent mutants that are covered	963	.00	100.00	32423.87	33.6697	17.54178
Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	963	.00	100.00	34361.81	35.6821	26.59293
Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	957	.00	100.00	59440.16	62.1109	22.60227
Valid N (listwise)	948					

a. Choice of killing criteria = TxEvMethLimit

```
FREQUENCIES VARIABLES=uniqueCallCnt
  /STATISTICS=MEAN
  /ORDER=ANALYSIS.
```

Frequencies

Notes

Output Created		01-OCT-2019 10:36:...
Comments		
Input	Data	/Users/pieter/Documents/BCSLab/Deliverables/D22_Tools_M24/ContractMut/data_and_images/kill_summary_000_1120.csv
	Filter	maxTx_filter
	Weight	<none>
	Split File	Choice of killing criteria
	N of Rows in Working Data File	2889
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=uniqueCallCnt /STATISTICS=MEAN /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.37
	Elapsed Time	00:00:01.00

Choice of killing criteria = Limit

Statistics[a]

Number of unique methods called by the transactions

N	Valid	963
	Missing	0
Mean		3.66

a. Choice of killing criteria = Limit

Number of unique methods called by the transactions[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	304	31.6	31.6	31.6
	3	256	26.6	26.6	58.2
	4	175	18.2	18.2	76.3
	5	100	10.4	10.4	86.7
	6	52	5.4	5.4	92.1
	7	31	3.2	3.2	95.3
	8	21	2.2	2.2	97.5
	9	9	.9	.9	98.4
	10	6	.6	.6	99.1
	11	3	.3	.3	99.4
	12	4	.4	.4	99.8
	13	2	.2	.2	100.0
	Total	963	100.0	100.0	

a. Choice of killing criteria = Limit

Choice of killing criteria = TxEvMeth

Statistics[a]

Number of unique methods called by the transactions

N	Valid	963
	Missing	0
Mean		3.66

a. Choice of killing criteria = TxEvMeth

Number of unique methods called by the transactions[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	304	31.6	31.6	31.6
	3	256	26.6	26.6	58.2
	4	175	18.2	18.2	76.3
	5	100	10.4	10.4	86.7
	6	52	5.4	5.4	92.1
	7	31	3.2	3.2	95.3
	8	21	2.2	2.2	97.5
	9	9	.9	.9	98.4
	10	6	.6	.6	99.1
	11	3	.3	.3	99.4
	12	4	.4	.4	99.8
	13	2	.2	.2	100.0
	Total	963	100.0	100.0	

a. Choice of killing criteria = TxEvMeth

Choice of killing criteria = TxEvMethLimit

Statistics[a]

Number of unique methods called by the transactions

N	Valid	963
	Missing	0
Mean		3.66

a. Choice of killing criteria = TxEvMethLimit

Number of unique methods called by the transactions[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	304	31.6	31.6	31.6
	3	256	26.6	26.6	58.2
	4	175	18.2	18.2	76.3
	5	100	10.4	10.4	86.7
	6	52	5.4	5.4	92.1
	7	31	3.2	3.2	95.3
	8	21	2.2	2.2	97.5
	9	9	.9	.9	98.4
	10	6	.6	.6	99.1
	11	3	.3	.3	99.4
	12	4	.4	.4	99.8

Number of unique methods called by the transactions[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
	13	2	.2	.2	100.0
	Total	963	100.0	100.0	

a. Choice of killing criteria = TxEvMethLimit

```
 NONPAR CORR
  /VARIABLES=
killCnt_PercentageOf_mutNotEqCnt
coverCnt_PercentageOf_mutNotEqCnt
coverKillCnt_PercentageOf_coverCnt
executionCnt_PercentageOf_instructionCnt
uniqueCallCnt_PercentageOf_methodCnt
instructionCnt
methodCnt
  /PRINT=KENDALL TWOTAIL NOSIG
  /MISSING=PAIRWISE.
```

Nonparametric Correlations

Notes

Output Created		01-OCT-2019 10:36:...
Comments		
Input	Data	/Users/pieter/Documents/BCSLab/Deliverables/D22_Tools_M24/ContractMut/data_and_images/kill_summary_000_1120.csv
	Filter	maxTx_filter
	Weight	<none>
	Split File	Choice of killing criteria
	N of Rows in Working Data File	2889
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.

Notes

Syntax		NONPAR CORR /VARIABLES= killCnt_PercentageOf_mutNotEqCnt coverCnt_PercentageOf_mutNotEqCnt coverKillCnt_PercentageOf_coverCnt executionCnt_PercentageOf_instructionCnt uniqueCallCnt_PercentageOf_methodCnt instructionCnt methodCnt /PRINT=KENDALL TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.58
	Elapsed Time	00:00:01.00
	Number of Cases Allowed	314572 cases [a]

a. Based on availability of workspace memory

Choice of killing criteria = Limit

Correlations[a]

			Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Percentage of non-equivalent mutants that are covered	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Percentage of executed EVM instructions in the contract	Percentage of unique calls from the number of methods in the contract
Kendall's tau_b	Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Correlation Coefficient	1.000	.237**	.914**	.198**	.037
		Sig. (2-tailed)	.	.000	.000	.000	.132
		N	963	963	957	963	954
	Percentage of non-equivalent mutants that are covered	Correlation Coefficient	.237**	1.000	.190**	.522**	.208**
		Sig. (2-tailed)	.000	.	.000	.000	.000
		N	963	963	957	963	954
	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Correlation Coefficient	.914**	.190**	1.000	.160**	.030
		Sig. (2-tailed)	.000	.000	.	.000	.216
		N	957	957	957	957	948
	Percentage of executed EVM instructions in the contract	Correlation Coefficient	.198**	.522**	.160**	1.000	.279**
		Sig. (2-tailed)	.000	.000	.000	.	.000
		N	963	963	957	963	954
	Percentage of unique calls from the number of methods in the contract	Correlation Coefficient	.037	.208**	.030	.279**	1.000
		Sig. (2-tailed)	.132	.000	.216	.000	.
		N	954	954	948	954	954
	Number of EVM instruction locations in the instruction space of the original	Correlation Coefficient	.011	-.137**	.012	-.306**	-.298**
		Sig. (2-tailed)	.663	.000	.632	.000	.000
		N	963	963	957	963	954

Correlations[a]

			Number of EVM instruction locations in the instruction space of the original	Number of methods in the contract
Kendall's tau_b	Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Correlation Coefficient	.011	.019
		Sig. (2-tailed)	.663	.440
		N	963	954
	Percentage of non-equivalent mutants that are covered	Correlation Coefficient	-.137**	-.131**
		Sig. (2-tailed)	.000	.000
		N	963	954
	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Correlation Coefficient	.012	.014
		Sig. (2-tailed)	.632	.568
		N	957	948
	Percentage of executed EVM instructions in the contract	Correlation Coefficient	-.306**	-.225**
		Sig. (2-tailed)	.000	.000
		N	963	954
	Percentage of unique calls from the number of methods in the contract	Correlation Coefficient	-.298**	-.417**
		Sig. (2-tailed)	.000	.000
		N	954	954
	Number of EVM instruction locations in the instruction space of the original	Correlation Coefficient	1.000	.690**
		Sig. (2-tailed)	.	.000
		N	963	954

Correlations[a]

		Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Percentage of non-equivalent mutants that are covered	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Percentage of executed EVM instructions in the contract	Percentage of unique calls from the number of methods in the contract
Number of methods in the contract	Correlation Coefficient	.019	-.131**	.014	-.225**	-.417**
	Sig. (2-tailed)	.440	.000	.568	.000	.000
	N	954	954	948	954	954

Correlations[a]

		Number of EVM instruction locations in the instruction space of the original	Number of methods in the contract
Number of methods in the contract	Correlation Coefficient	.690**	1.000
	Sig. (2-tailed)	.000	.
	N	954	954

**. Correlation is significant at the 0.01 level (2-tailed).

a. Choice of killing criteria = Limit

Choice of killing criteria = TxEvMeth

Correlations[a]

			Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Percentage of non-equivalent mutants that are covered	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Percentage of executed EVM instructions in the contract	Percentage of unique calls from the number of methods in the contract
Kendall's tau_b	Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Correlation Coefficient	1.000	.564**	.437**	.488**	.102**
		Sig. (2-tailed)	.	.000	.000	.000	.000
		N	963	963	957	963	954
	Percentage of non-equivalent mutants that are covered	Correlation Coefficient	.564**	1.000	.101**	.522**	.208**
		Sig. (2-tailed)	.000	.	.000	.000	.000
		N	963	963	957	963	954
	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Correlation Coefficient	.437**	.101**	1.000	.133**	-.036
		Sig. (2-tailed)	.000	.000	.	.000	.098
		N	957	957	957	957	948
	Percentage of executed EVM instructions in the contract	Correlation Coefficient	.488**	.522**	.133**	1.000	.279**
		Sig. (2-tailed)	.000	.000	.000	.	.000
		N	963	963	957	963	954
	Percentage of unique calls from the number of methods in the contract	Correlation Coefficient	.102**	.208**	-.036	.279**	1.000
		Sig. (2-tailed)	.000	.000	.098	.000	.
		N	954	954	948	954	954
	Number of EVM instruction locations in the instruction space of the original	Correlation Coefficient	-.139**	-.137**	-.024	-.306**	-.298**
		Sig. (2-tailed)	.000	.000	.263	.000	.000
		N	963	963	957	963	954

Correlations[a]

			Number of EVM instruction locations in the instruction space of the original	Number of methods in the contract
Kendall's tau_b	Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Correlation Coefficient	-.139**	-.106**
		Sig. (2-tailed)	.000	.000
		N	963	954
	Percentage of non-equivalent mutants that are covered	Correlation Coefficient	-.137**	-.131**
		Sig. (2-tailed)	.000	.000
		N	963	954
	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Correlation Coefficient	-.024	.001
		Sig. (2-tailed)	.263	.960
		N	957	948
	Percentage of executed EVM instructions in the contract	Correlation Coefficient	-.306**	-.225**
		Sig. (2-tailed)	.000	.000
		N	963	954
	Percentage of unique calls from the number of methods in the contract	Correlation Coefficient	-.298**	-.417**
		Sig. (2-tailed)	.000	.000
		N	954	954
	Number of EVM instruction locations in the instruction space of the original	Correlation Coefficient	1.000	.690**
		Sig. (2-tailed)	.	.000
		N	963	954

Correlations[a]

		Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Percentage of non-equivalent mutants that are covered	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Percentage of executed EVM instructions in the contract	Percentage of unique calls from the number of methods in the contract
Number of methods in the contract	Correlation Coefficient	-.106**	-.131**	.001	-.225**	-.417**
	Sig. (2-tailed)	.000	.000	.960	.000	.000
	N	954	954	948	954	954

Correlations[a]

		Number of EVM instruction locations in the instruction space of the original	Number of methods in the contract
Number of methods in the contract	Correlation Coefficient	.690**	1.000
	Sig. (2-tailed)	.000	.
	N	954	954

**. Correlation is significant at the 0.01 level (2-tailed).

a. Choice of killing criteria = TxEvMeth

Choice of killing criteria = TxEvMethLimit

Correlations[a]

			Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Percentage of non-equivalent mutants that are covered	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Percentage of executed EVM instructions in the contract	Percentage of unique calls from the number of methods in the contract
Kendall's tau_b	Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Correlation Coefficient	1.000	.507**	.509**	.451**	.093**
		Sig. (2-tailed)	.	.000	.000	.000	.000
		N	963	963	957	963	954
	Percentage of non-equivalent mutants that are covered	Correlation Coefficient	.507**	1.000	.107**	.522**	.208**
		Sig. (2-tailed)	.000	.	.000	.000	.000
		N	963	963	957	963	954
	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Correlation Coefficient	.509**	.107**	1.000	.142**	-.020
		Sig. (2-tailed)	.000	.000	.	.000	.376
		N	957	957	957	957	948
	Percentage of executed EVM instructions in the contract	Correlation Coefficient	.451**	.522**	.142**	1.000	.279**
		Sig. (2-tailed)	.000	.000	.000	.	.000
		N	963	963	957	963	954
	Percentage of unique calls from the number of methods in the contract	Correlation Coefficient	.093**	.208**	-.020	.279**	1.000
		Sig. (2-tailed)	.000	.000	.376	.000	.
		N	954	954	948	954	954
	Number of EVM instruction locations in the instruction space of the original	Correlation Coefficient	-.109**	-.137**	-.003	-.306**	-.298**
		Sig. (2-tailed)	.000	.000	.906	.000	.000
		N	963	963	957	963	954

Correlations[a]

			Number of EVM instruction locations in the instruction space of the original	Number of methods in the contract
Kendall's tau_b	Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Correlation Coefficient	-.109**	-.076**
		Sig. (2-tailed)	.000	.001
		N	963	954
	Percentage of non-equivalent mutants that are covered	Correlation Coefficient	-.137**	-.131**
		Sig. (2-tailed)	.000	.000
		N	963	954
	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Correlation Coefficient	-.003	.018
		Sig. (2-tailed)	.906	.424
		N	957	948
	Percentage of executed EVM instructions in the contract	Correlation Coefficient	-.306**	-.225**
		Sig. (2-tailed)	.000	.000
		N	963	954
	Percentage of unique calls from the number of methods in the contract	Correlation Coefficient	-.298**	-.417**
		Sig. (2-tailed)	.000	.000
		N	954	954
	Number of EVM instruction locations in the instruction space of the original	Correlation Coefficient	1.000	.690**
		Sig. (2-tailed)	.	.000
		N	963	954

Correlations[a]

		Percentage of all non-equivalent mutants that have been killed (raw mutation percentage)	Percentage of non-equivalent mutants that are covered	Percentage of all non-equivalent and covered mutants that have been killed (normalised mutation percentage)	Percentage of executed EVM instructions in the contract	Percentage of unique calls from the number of methods in the contract
Number of methods in the contract	Correlation Coefficient	-.076**	-.131**	.018	-.225**	-.417**
	Sig. (2-tailed)	.001	.000	.424	.000	.000
	N	954	954	948	954	954

Correlations[a]

		Number of EVM instruction locations in the instruction space of the original	Number of methods in the contract
Number of methods in the contract	Correlation Coefficient	.690**	1.000
	Sig. (2-tailed)	.000	.
	N	954	954

**. Correlation is significant at the 0.01 level (2-tailed).

a. Choice of killing criteria = TxEvMethLimit