# API Testing

- **Goal**: API stress testing with malformed data and response time analysis.
- Number of runs is enough to distinguish noise, but is kept limited for now.
- Just as a personal opinion, it would be nice to get, in any scenario (including when dex is fully loaded), no more than **1.10 seconds 95% of the time** ; which is represented by the dotted red line on the graphs.
- Length of input parameters is voluntarily oversized to check if this is possible to jam or crash the application, or throw assertion errors.
- **Environment:** Windows 10 x64, Python 3.6.
- Only garbage data is thrown at the API of the *blocknet-client*.
- Garbage data is randomized at each run.
- Each measurement in done in seconds, and may contain a small overhead because the tests are run from full coding environment (PyCharm 2017.2), which is sometimes memory heavy.

Response time (sec.) of dxCancelTransaction

#700 runs with small to medium size garbage data

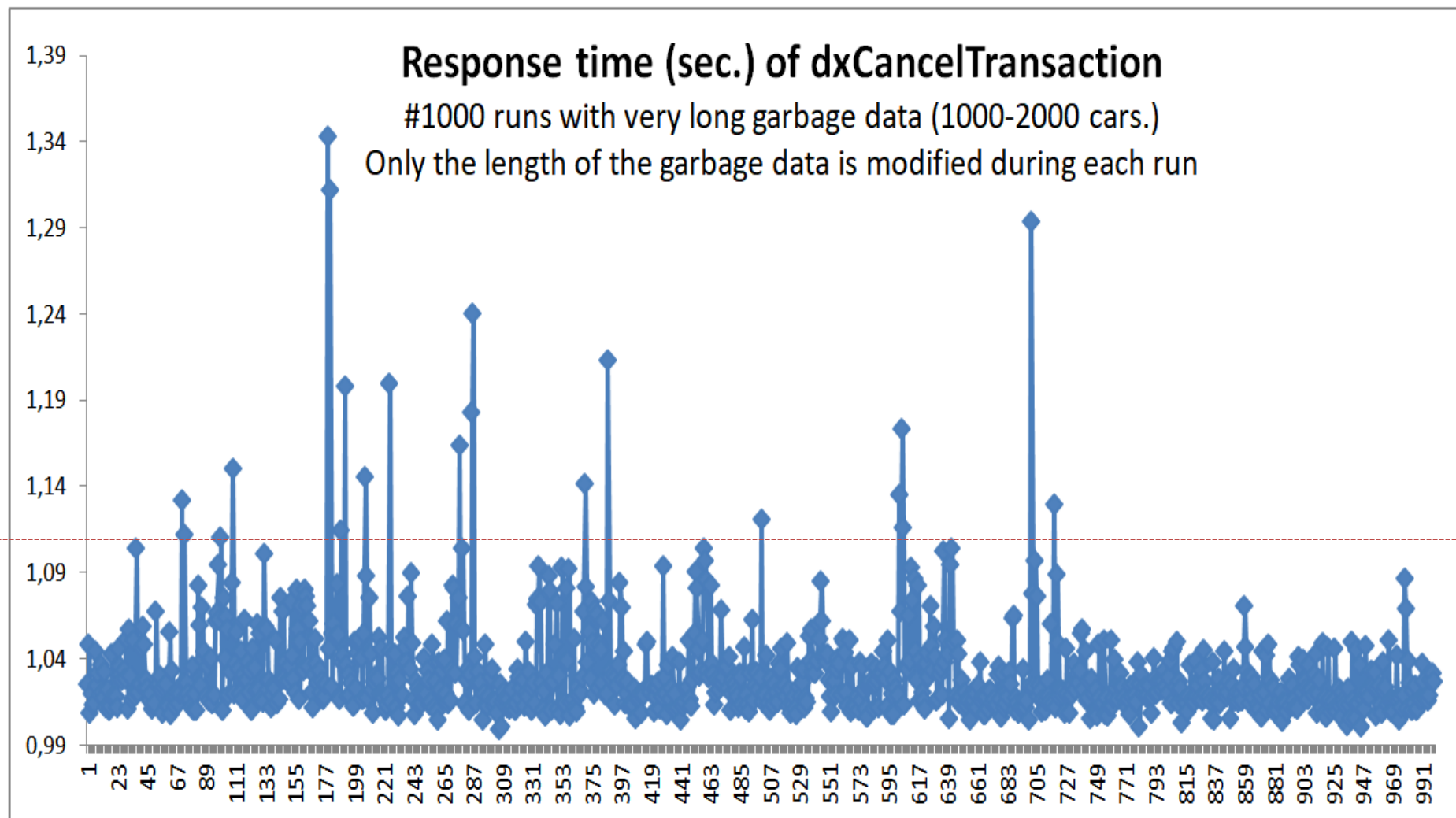Only the length of the garbage data is modified during each run
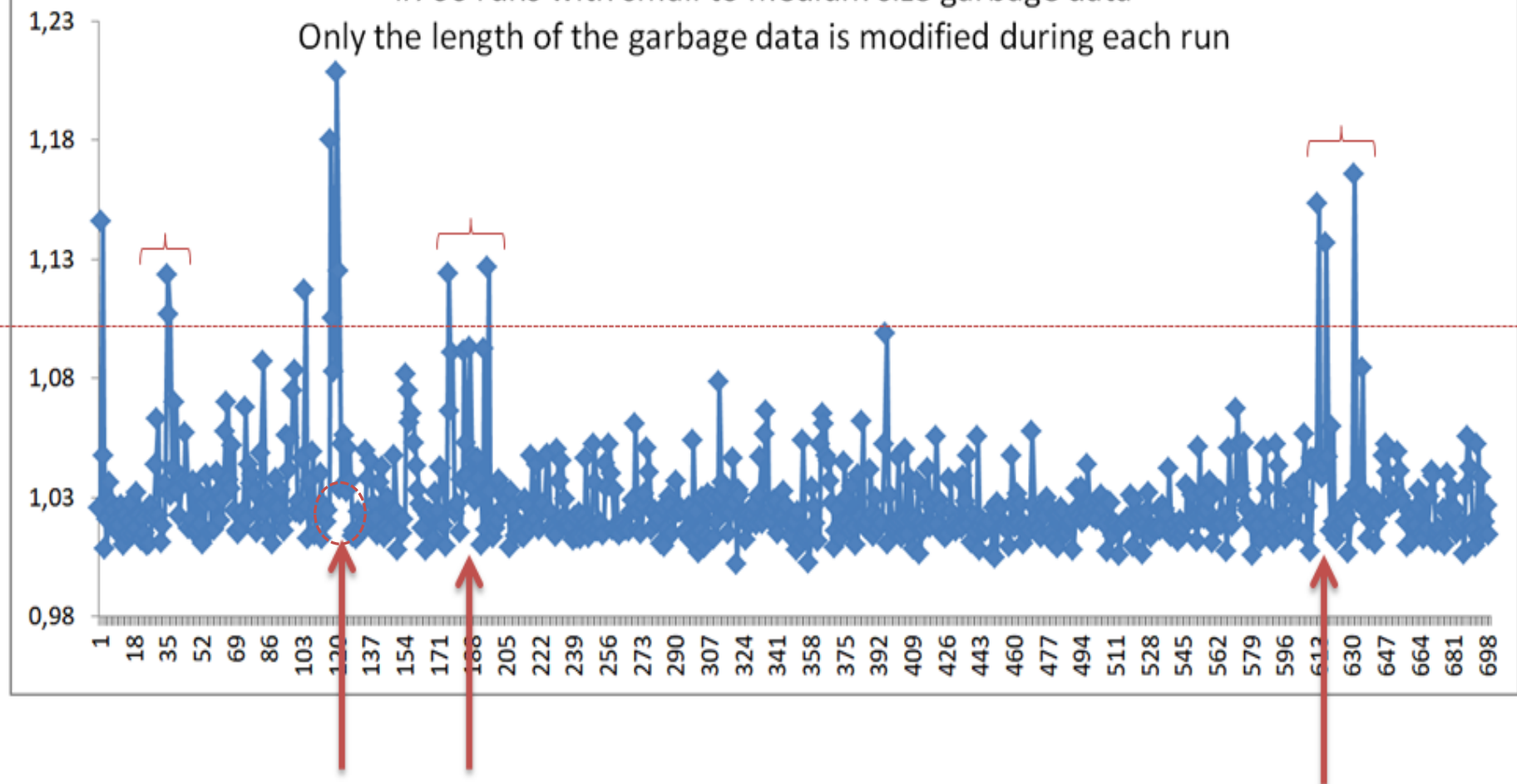
Average	Standard deviation	95% Quantile
1.029 sec.	0.02	1.06 sec.

Response time (sec.) of dxCancelTransaction
#1000 runs with very long garbage data (1000-2000 cars.)
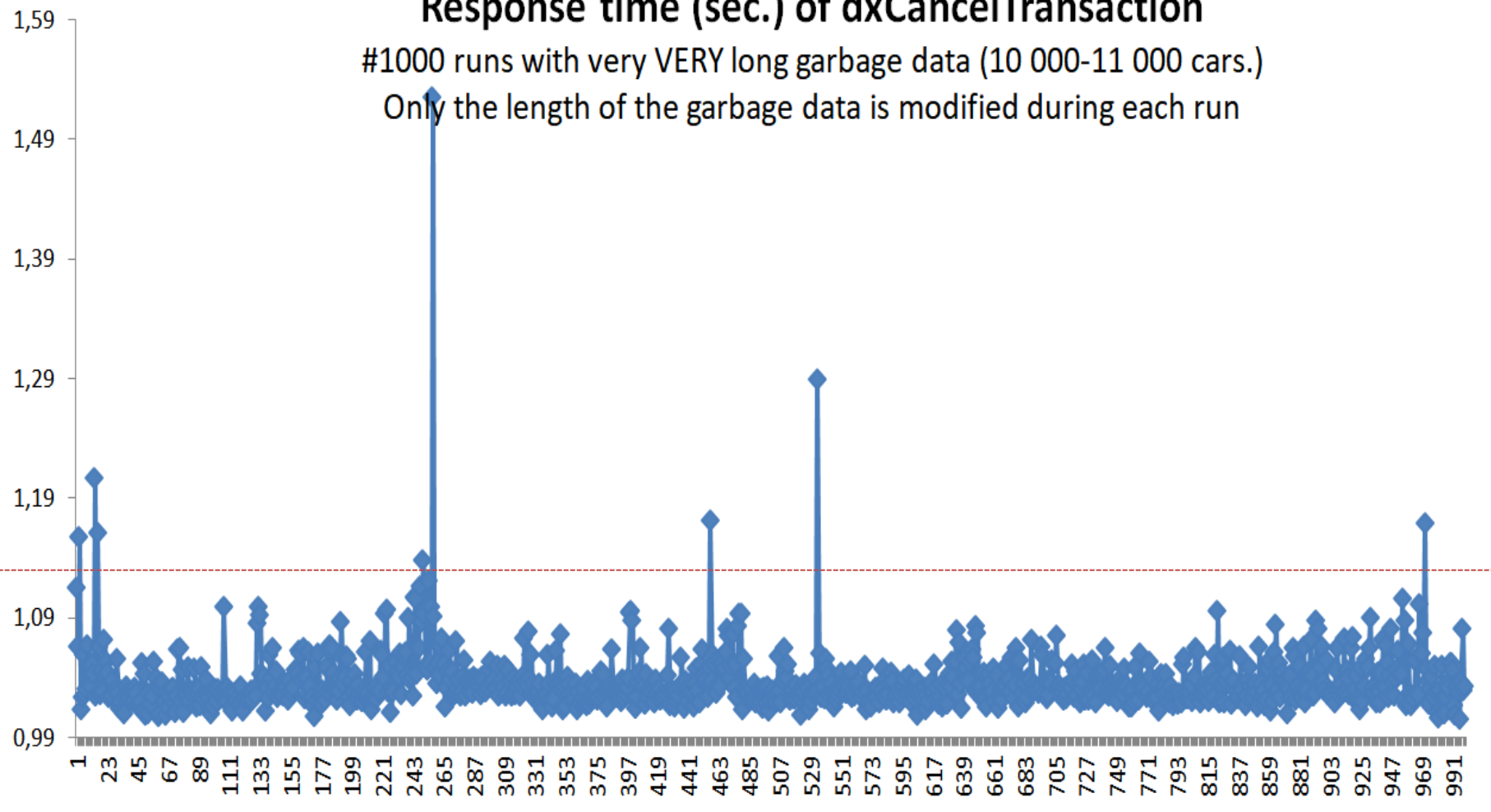Only the length of the garbage data is modified during each run

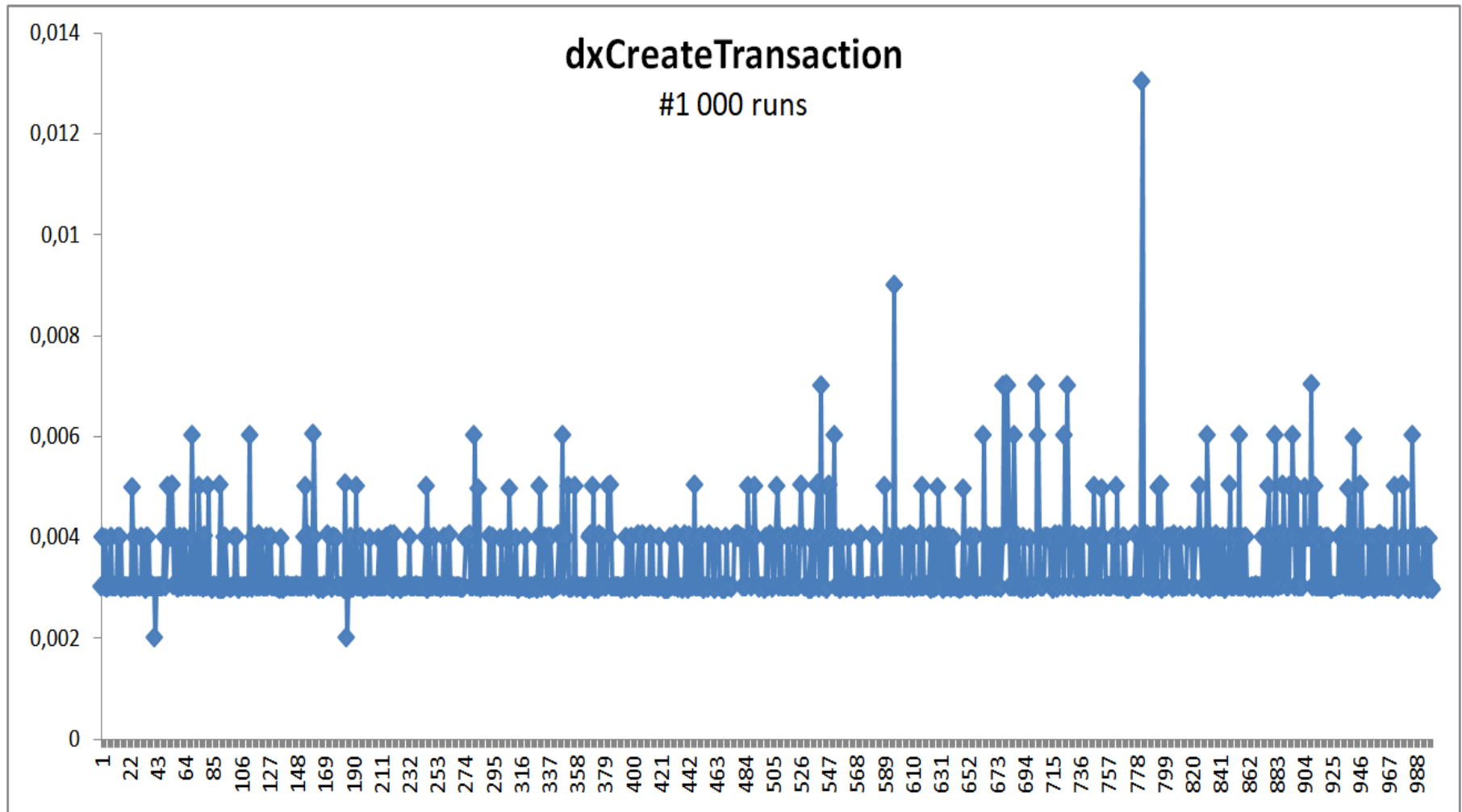| Average	Standard deviation	95% Quantile
1.031 sec.	0.03	1.08 sec.

Response time (sec.) of dxCancelTransaction

#1000 runs with very VERY long garbage data (10 000-11 000 cars.)
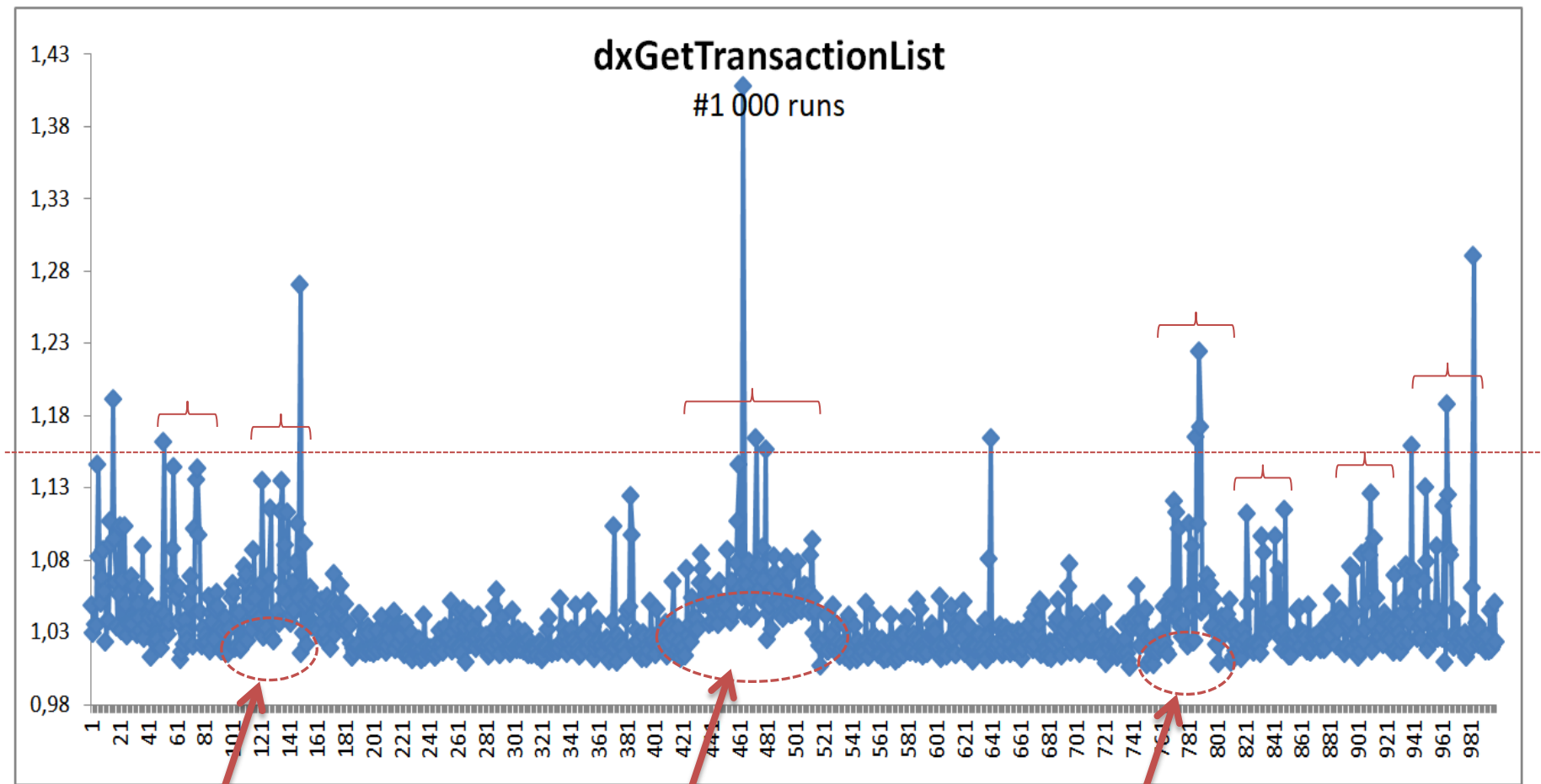Only the length of the garbage data is modified during each run

Average	Standard deviation	95% Quantile
1.036 sec.	0.02	1.07 sec.

dxCreateTransaction requires two numerical parameters aswell, so random numbers from range [-9999999999999;+9999999999999] are picked at each run to feed the API.

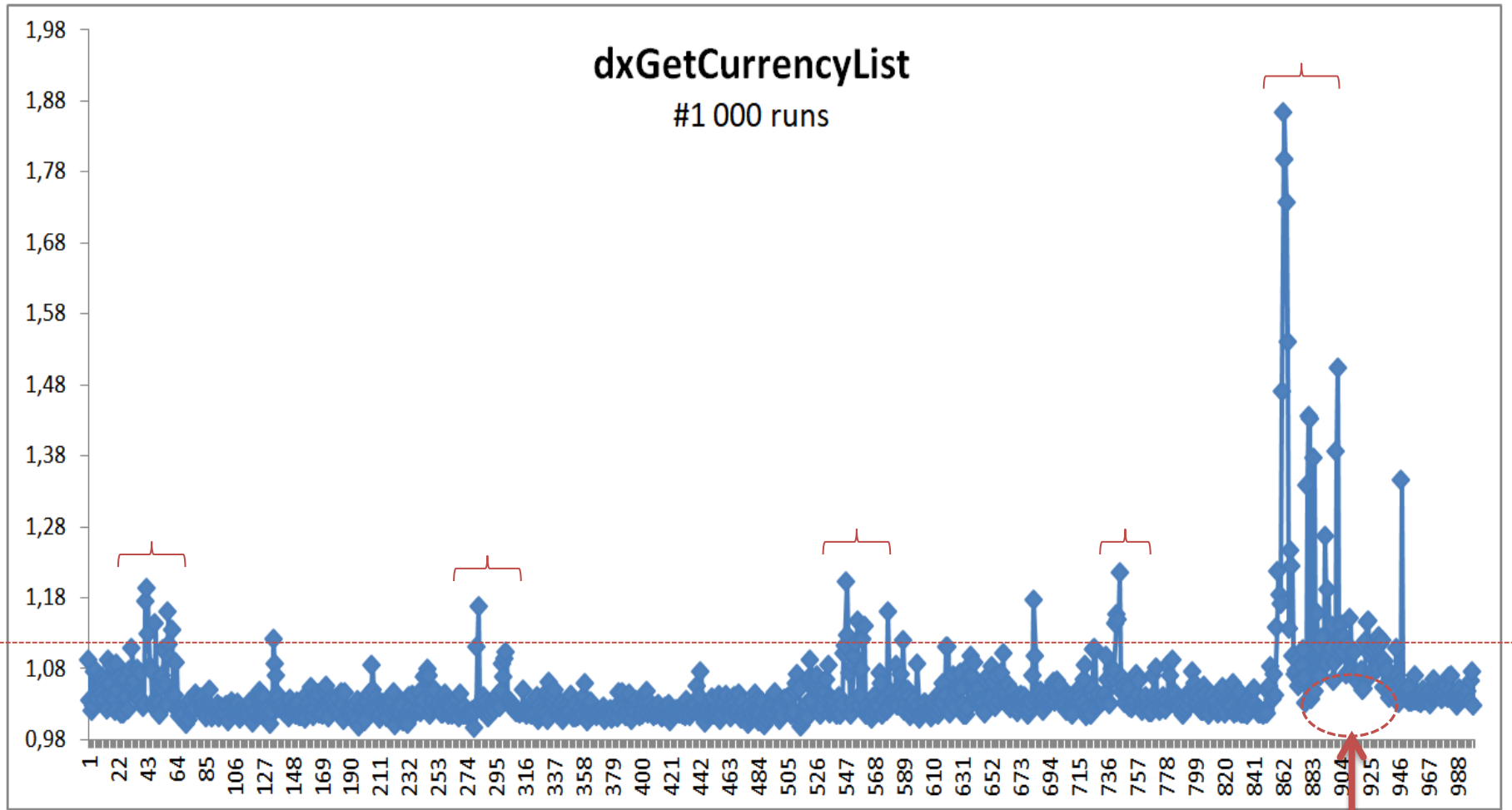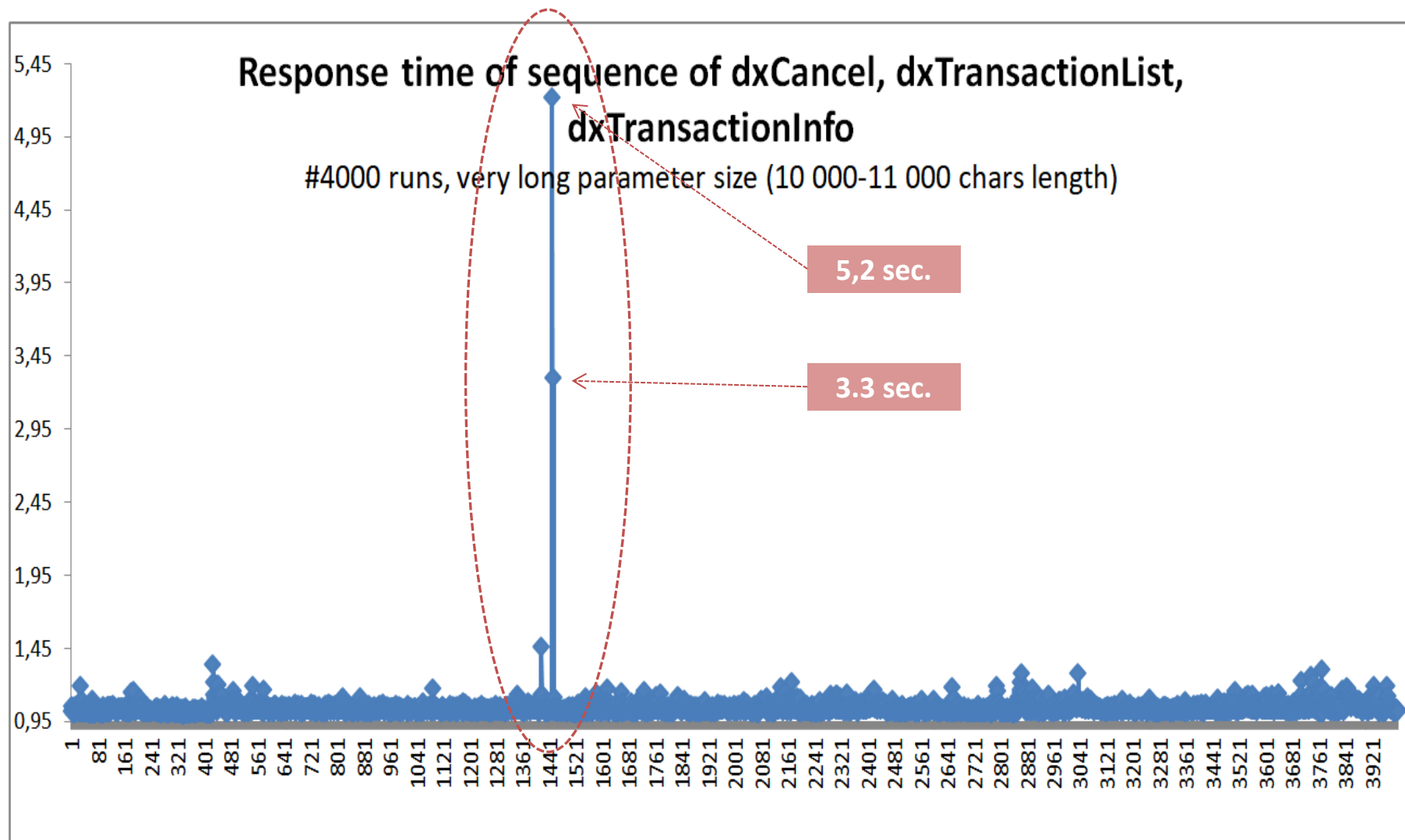| Average	Standard deviation	95% Quantile
0.003 sec.	0.0008	0.005 sec.

This may not seem much on the scale, but we'll have to check if this hole is not bigger when 1 000 users are running the same test.

Average	Standard deviation	95% Quantile
1.03 sec.	0.03	1.09 sec.

dxGetCurrencyList

#1 000 runs

Average	Standard deviation	95% Quantile
1.05 sec.	0.06	1.12 sec.

Response time of sequence of dxCancel, dxTransactionList, dxTransactionInfo

#4000 runs, very long parameter size (10 000-11 000 chars length)

5,2 sec.

3.3 sec.

Average	Standard deviation	95% Quantile
1.0385 sec.	0.08	1.085 sec.

Preliminary information for the next tests

- List of the 6 APIs included in the following tests:
  - getTransactionHistory
  - getCurrencyList
  - getTransactionInfo
  - acceptTransaction
  - getTransactionList
  - cancelTransaction
- The API to be executed at each run is selected randomly from this list by the program.
- createTransaction is excluded from the list because it skews the overall results.

Random sequence of 6 APIs (raw dataset)

#1 000 runs

dxAcceptTransaction

- In runs #1 to #800, dxAcceptTx returned regular response times [1.00 s. ; 1.3 s.]
- So, not sure if this is normal or if something bad happens here. Further investigation may be needed.
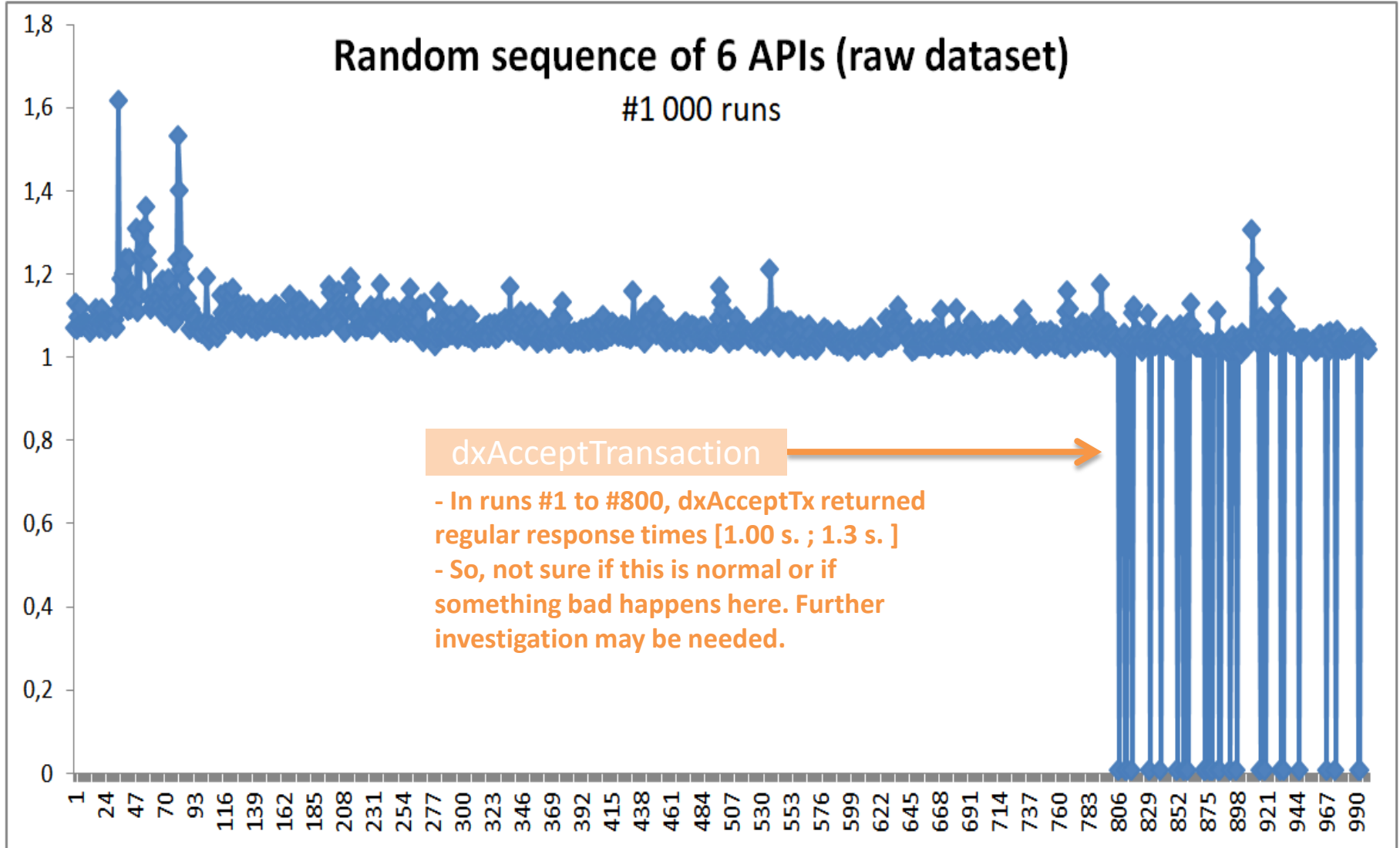
Average	Standard deviation	75% Quantile	Min	Max
1.04 sec.	0.18	1.08 sec.	0.01 sec.	1.62 sec.

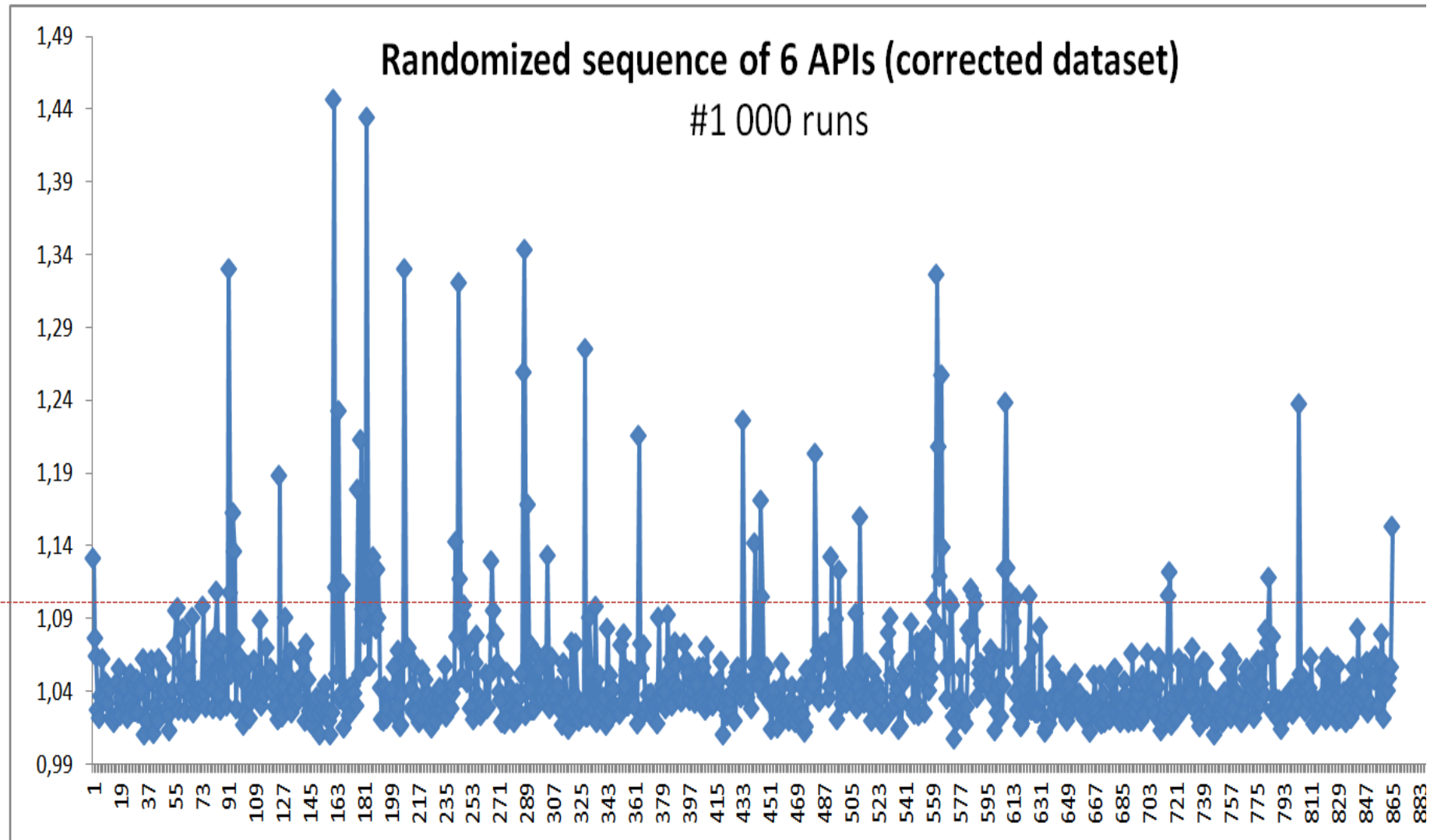## Randomized sequence of 6 APIs (corrected dataset)
#1 000 runs

Same test as previously, except the graph does not contain the very low response times of dxAcceptTransaction.
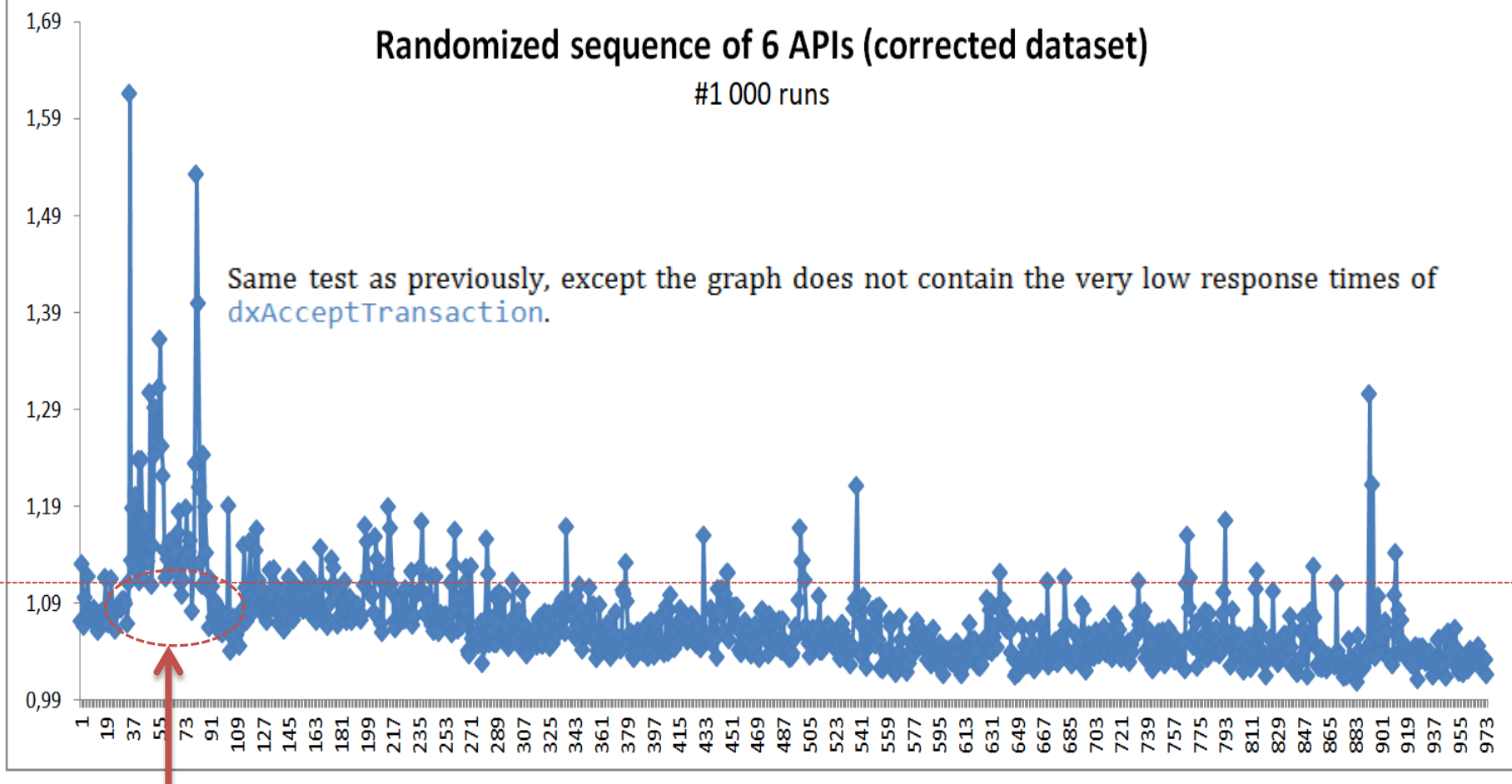
	Longest API Calls	time
34	\<function TIMED_CHECK_GET_TX_LIST at 0x000001469A00BBF8>	1,62
48	\<function TIMED_CHECK_ACCEPT_TX at 0x000001469A00B950>	1,31
54	\<function TIMED_CHECK_GET_TX_LIST at 0x000001469A00BBF8>	1,31
55	\<function TIMED_CHECK_ACCEPT_TX at 0x000001469A00B950>	1,36
80	\<function TIMED_CHECK_GET_TX_LIST at 0x000001469A00BBF8>	1,53
81	\<function TIMED_CHECK_GET_CURRENCY_LIST at 0x000001469A00BF28>	1,40
909	\<function TIMED_CHECK_GET_TX_LIST at 0x000001469A00BBF8>	1,31

Previous test is repeated to check for results consistency.

Randomized sequence of 6 APIs (corrected dataset)
#1 000 runs

Randomized sequence of 6 API (corrected dataset)

#4 000 runs