

EOSBET Dice fairness report

First transaction:	2018-08-19 00:44:13
Last transaction:	2018-09-05 23:59:59
Total resolvebet transactions:	1242825
Total betreceipt transactions:	1241597
Number of lost betreceipt transactions:	1228
Percentage of lost betreceipt transactions:	0.098807153
Total wagers, EOS:	14735884.8270
Total payouts, EOS:	14558474.8573
Difference, EOS:	177409.9697
Difference, percent:	1.203931571
Number of players:	2855
Average wager, EOS:	11.8685
Maximum wager, EOS:	36019.5886
Average payout, EOS:	11.7256
Maximum payout, EOS:	37345.1094

This report is based on data exported by nodeos ZMQ plugin. The script 'eosbet_dice_getdata.pl' is extracting all actions named 'betreceipt' and 'resolvebet' issued by smart contract 'eosbetdice11', and stores them in a separate database. After that, the script 'eosbet_dice_report.pl' generates this Excel report.

The dice players are transferring EOS tokens to the 'eosbetdice11' smart contract with roll_under number specified in memo. An external oracle is calling 'betresolve' action and specifying a digital signature of the bet data by using the casino's private key. The 'betresolve' action calculates the dice rolling result between 1 and 100 from the signature bits, and if the result is above the roll_under number, the player receives the payout in EOS.

At the end of processing, 'betresolve' generates a deferred action named 'betreceipt'. A small number of receipts is lost in EOS network because of congestion.

The following two worksheets represent chi-squared test of dice rolls. This is a standard statistical method that tests a game fairness and uniform statistical distribution. The chi-squared confidence of 1 indicates that the random distribution is completely uniform and not forged.

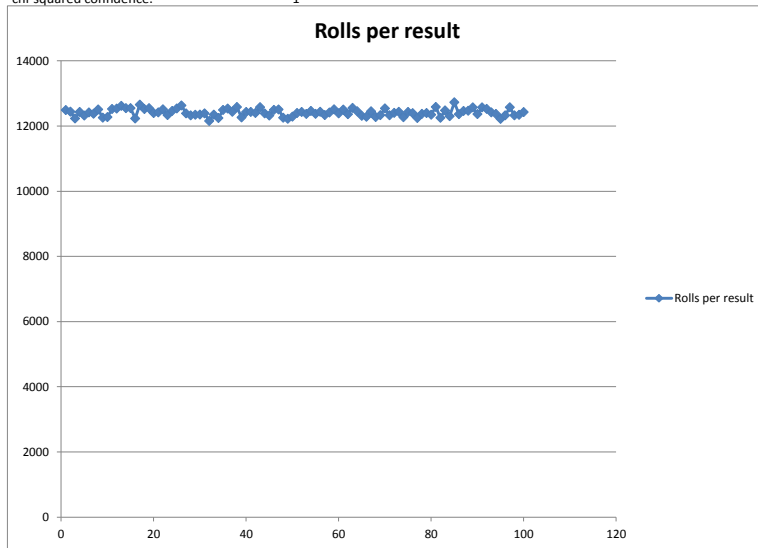
The report is generated from publicly available data on the blockchain, and with open-source tools available on GitHub at https://github.com/cc32d9/eos_game_reports

Total processing of blockchain data as of end of September takes about 4 days on a modern mid-range server.

Random roll	Count	Average
1	12491	12415.97
2	12442	12415.97
3	12233	12415.97
4	12434	12415.97
5	12322	12415.97
6	12418	12415.97
7	12378	12415.97
8	12510	12415.97
9	12258	12415.97
10	12275	12415.97
11	12524	12415.97
12	12536	12415.97
13	12620	12415.97
14	12549	12415.97
15	12550	12415.97
16	12232	12415.97
17	12657	12415.97
18	12522	12415.97
19	12549	12415.97
20	12399	12415.97
21	12419	12415.97
22	12514	12415.97
23	12337	12415.97
24	12464	12415.97
25	12540	12415.97
26	12632	12415.97
27	12389	12415.97
28	12328	12415.97
29	12347	12415.97
30	12353	12415.97
31	12389	12415.97
32	12156	12415.97
33	12350	12415.97
34	12247	12415.97
35	12494	12415.97
36	12537	12415.97
37	12438	12415.97
38	12584	12415.97
39	12265	12415.97
40	12432	12415.97
41	12434	12415.97
42	12402	12415.97
43	12579	12415.97
44	12389	12415.97
45	12322	12415.97
46	12496	12415.97
47	12509	12415.97
48	12256	12415.97
49	12223	12415.97
50	12289	12415.97
51	12400	12415.97
52	12433	12415.97
53	12372	12415.97
54	12464	12415.97
55	12375	12415.97
56	12439	12415.97
57	12337	12415.97
58	12416	12415.97
59	12514	12415.97
60	12389	12415.97
61	12506	12415.97
62	12364	12415.97
63	12558	12415.97
64	12454	12415.97
65	12314	12415.97
66	12285	12415.97
67	12453	12415.97
68	12277	12415.97
69	12335	12415.97
70	12542	12415.97
71	12331	12415.97
72	12405	12415.97
73	12437	12415.97
74	12272	12415.97
75	12432	12415.97
76	12396	12415.97
77	12248	12415.97
78	12375	12415.97
79	12400	12415.97
80	12348	12415.97
81	12586	12415.97
82	12254	12415.97
83	12480	12415.97
84	12303	12415.97
85	12729	12415.97
86	12366	12415.97
87	12464	12415.97
88	12470	12415.97
89	12574	12415.97
90	12367	12415.97
91	12574	12415.97
92	12527	12415.97
93	12420	12415.97
94	12372	12415.97
95	12220	12415.97
96	12328	12415.97
97	12576	12415.97
98	12329	12415.97
99	12345	12415.97
100	12429	12415.97

Count of all rolls per result

chi-squared test: 0.434499
chi-squared confidence: 1



Random roll	Count	Average
1	46	46.13
2	44	46.13
3	38	46.13
4	42	46.13
5	48	46.13
6	43	46.13
7	65	46.13
8	51	46.13
9	51	46.13
10	50	46.13
11	51	46.13
12	39	46.13
13	49	46.13
14	50	46.13
15	40	46.13
16	45	46.13
17	49	46.13
18	46	46.13
19	53	46.13
20	55	46.13
21	61	46.13
22	46	46.13
23	48	46.13
24	44	46.13
25	55	46.13
26	41	46.13
27	45	46.13
28	53	46.13
29	43	46.13
30	53	46.13
31	36	46.13
32	45	46.13
33	44	46.13
34	48	46.13
35	49	46.13
36	36	46.13
37	34	46.13
38	52	46.13
39	42	46.13
40	50	46.13
41	46	46.13
42	37	46.13
43	40	46.13
44	46	46.13
45	40	46.13
46	42	46.13
47	54	46.13
48	51	46.13
49	37	46.13
50	47	46.13
51	51	46.13
52	43	46.13
53	44	46.13
54	41	46.13
55	48	46.13
56	51	46.13
57	50	46.13
58	50	46.13
59	52	46.13
60	33	46.13
61	47	46.13
62	50	46.13
63	61	46.13
64	43	46.13
65	36	46.13
66	32	46.13
67	53	46.13
68	44	46.13
69	41	46.13
70	47	46.13
71	54	46.13
72	44	46.13
73	43	46.13
74	40	46.13
75	43	46.13
76	47	46.13
77	50	46.13
78	43	46.13
79	54	46.13
80	39	46.13
81	43	46.13
82	44	46.13
83	40	46.13
84	46	46.13
85	47	46.13
86	49	46.13
87	46	46.13
88	41	46.13
89	43	46.13
90	53	46.13
91	55	46.13
92	45	46.13
93	44	46.13
94	45	46.13
95	50	46.13
96	45	46.13
97	51	46.13
98	52	46.13
99	46	46.13
100	34	46.13

Count of rolls per result where wager is 500 EOS or higher

chi-squared test: 0.921582
chi-squared confidence: 1

