

Effects of s, sample size and LF

Experiment No.	Sample Space N	Slope s	Sample Size	Least Fre. (LF)	Times of Repeated Experiment	Unique passwords	Passwords used in regression	Passwords used in regression (%)	Fitted N	Fitted s	R ²
1	1000	0.9	100	1	1000	71.197	100	100.00%	71.197	0.42949	0.75457
2	1000	0.9	100	2	1000	71.262	41.099	41.10%	12.361	0.64126	0.88426
3	1000	0.9	100	3	1000	70.963	27.201	27.20%	5.307	0.7199	0.89404
4	1000	0.9	100	4	1000	71.068	20.585	20.59%	3.173	0.68355	0.91648
5	1000	0.9	100	5	1000	70.765	17.01	17.01%	2.215	0.62248	0.95324
6	1000	0.9	200	1	1000	123.933	200	100.00%	123.933	0.51628	0.82207
7	1000	0.9	200	2	1000	124.103	102.971	51.49%	27.074	0.68839	0.92385
8	1000	0.9	200	3	1000	123.795	73.429	36.71%	12.145	0.76161	0.93545
9	1000	0.9	200	4	1000	124.121	59.139	29.57%	7.392	0.78534	0.9308
10	1000	0.9	200	5	1000	123.954	50.151	25.08%	5.242	0.78475	0.92124
11	1000	0.9	500	1	1000	245.459	500	100.00%	245.459	0.63355	0.89585
12	1000	0.9	500	2	1000	246.04	326.859	65.37%	72.899	0.72463	0.95153
13	1000	0.9	500	3	1000	245.482	250.498	50.10%	34.245	0.79694	0.96988
14	1000	0.9	500	4	1000	245.697	211.68	42.34%	21.499	0.81939	0.97029
15	1000	0.9	500	5	1000	245.586	187.536	37.51%	15.372	0.83489	0.96658
16	1000	0.9	1000	1	1000	389.36	1000	100.00%	389.36	0.73003	0.93794
17	1000	0.9	1000	2	1000	388.014	760.039	76.00%	148.053	0.75665	0.96532
18	1000	0.9	1000	3	1000	388.733	611.795	61.18%	74.478	0.80738	0.97978
19	1000	0.9	1000	4	1000	388.774	530.803	53.08%	47.184	0.83307	0.9834
20	1000	0.9	1000	5	1000	388.839	476.921	47.69%	33.829	0.84714	0.98355
21	1000	0.9	2000	1	1000	573.821	2000	100.00%	573.821	0.836	0.96441
22	1000	0.9	2000	2	1000	573.607	1712.451	85.62%	286.058	0.79082	0.97734
23	1000	0.9	2000	3	1000	574.446	1455.076	72.75%	158.041	0.81806	0.98569
24	1000	0.9	2000	4	1000	574.011	1287.865	64.39%	102.03	0.84009	0.98946
25	1000	0.9	2000	5	1000	574.229	1173.16	58.66%	73.534	0.85445	0.99081
26	1000	0.9	5000	1	1000	828.243	5000	100.00%	828.243	0.96395	0.96369
27	1000	0.9	5000	2	1000	828.466	4760.094	95.20%	588.56	0.86171	0.98901
28	1000	0.9	5000	3	1000	827.675	4379.226	87.58%	397.276	0.84264	0.99184
29	1000	0.9	5000	4	1000	828.601	4014.673	80.29%	276.308	0.84987	0.99359
30	1000	0.9	5000	5	1000	828.281	3724.258	74.49%	203.349	0.85977	0.99483
31	1000	0.9	10000	1	1000	953.483	10000	100.00%	953.483	1.0137	0.94344
32	1000	0.9	10000	2	1000	953.545	9884.596	98.85%	838.141	0.92979	0.98508
33	1000	0.9	10000	3	1000	953.125	9582.08	95.82%	686.791	0.88412	0.99466
34	1000	0.9	10000	4	1000	953.483	9146.947	91.47%	541.471	0.86797	0.99618
35	1000	0.9	10000	5	1000	953.365	8683.549	86.84%	425.614	0.86639	0.99664
36	1000	0.9	20000	1	1000	995.527	20000	100.00%	995.527	0.99464	0.94387
37	1000	0.9	20000	2	1000	995.514	19979.918	99.90%	975.432	0.96883	0.96961
38	1000	0.9	20000	3	1000	995.521	19886.123	99.43%	928.45	0.9389	0.98629
39	1000	0.9	20000	4	1000	995.55	19665.232	98.33%	855.099	0.91233	0.99444
40	1000	0.9	20000	5	1000	995.544	19298.183	96.49%	763.027	0.89428	0.99741
41	1000	1	100	1	1000	63.025	100	100.00%	63.025	0.52461	0.78789
42	1000	1	100	2	1000	62.835	49.97	49.97%	12.805	0.7704	0.91049
43	1000	1	100	3	1000	63.127	36.523	36.52%	6.182	0.83085	0.91404
44	1000	1	100	4	1000	63.295	29.717	29.72%	3.894	0.8396	0.91578
45	1000	1	100	5	1000	63.02	25.703	25.70%	2.868	0.81463	0.94328
46	1000	1	200	1	1000	108.248	200	100.00%	108.248	0.60089	0.84
47	1000	1	200	2	1000	107.926	117.963	58.98%	25.889	0.80817	0.94113
48	1000	1	200	3	1000	107.86	91.971	45.99%	12.822	0.87878	0.94987
49	1000	1	200	4	1000	108.106	78.002	39.00%	8.329	0.8999	0.94413
50	1000	1	200	5	1000	107.863	69.594	34.80%	6.206	0.89833	0.93663
51	1000	1	500	1	1000	210.837	500	100.00%	210.837	0.7069	0.89956
52	1000	1	500	2	1000	211.424	352.863	70.57%	64.287	0.83811	0.96025
53	1000	1	500	3	1000	210.679	291.119	58.22%	32.37	0.90412	0.97432
54	1000	1	500	4	1000	210.61	257.515	51.50%	21.75	0.92729	0.97584
55	1000	1	500	5	1000	210.585	235.629	47.13%	16.232	0.93968	0.97422
56	1000	1	1000	1	1000	333.303	1000	100.00%	333.303	0.79347	0.93663
57	1000	1	1000	2	1000	334.115	790.493	79.05%	124.608	0.86002	0.97049
58	1000	1	1000	3	1000	333.586	674.707	67.47%	66.287	0.91394	0.98336
59	1000	1	1000	4	1000	334.01	607.255	60.73%	43.954	0.94098	0.98636
60	1000	1	1000	5	1000	333.415	563.88	56.39%	32.942	0.95198	0.98616
61	1000	1	2000	1	1000	499.656	2000	100.00%	499.656	0.88778	0.96366
62	1000	1	2000	2	1000	500.223	1733.601	86.68%	233.824	0.88444	0.97855
63	1000	1	2000	3	1000	499.21	1530.225	76.51%	131.605	0.92324	0.98803

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64	1000	1	2000	4	1000	499.577	1400.291	70.01%	88.466	0.9458	0.99111
65	1000	1	2000	5	1000	499.148	1311.32	65.57%	66.222	0.9582	0.99208
66	1000	1	5000	1	1000	752.461	5000	100.00%	752.461	1.01619	0.97573
67	1000	1	5000	2	1000	752.598	4733.638	94.67%	486.236	0.93632	0.98907
68	1000	1	5000	3	1000	752.468	4391.804	87.84%	315.773	0.93721	0.99205
69	1000	1	5000	4	1000	752.436	4106.626	82.13%	220.5	0.9506	0.99436
70	1000	1	5000	5	1000	752.358	3889.74	77.79%	166.274	0.96333	0.99548
71	1000	1	10000	1	1000	908.599	10000	100.00%	908.599	1.08909	0.96304
72	1000	1	10000	2	1000	908.043	9829.052	98.29%	737.095	0.99512	0.99181
73	1000	1	10000	3	1000	908.03	9477.62	94.78%	561.417	0.9633	0.9953
74	1000	1	10000	4	1000	908.509	9065.344	90.65%	424.225	0.96068	0.99611
75	1000	1	10000	5	1000	907.866	8688.396	86.88%	329.78	0.96549	0.99685
76	1000	1	20000	1	1000	984.058	20000	100.00%	984.058	1.10309	0.95018
77	1000	1	20000	2	1000	983.72	19946.846	99.73%	930.566	1.05162	0.98222
78	1000	1	20000	3	1000	983.926	19762.425	98.81%	838.417	1.01123	0.99423
79	1000	1	20000	4	1000	984.153	19422.566	97.11%	725.268	0.98795	0.99746
80	1000	1	20000	5	1000	984.16	18975.485	94.88%	613.526	0.9782	0.99805
81	1000	1.1	100	1	1000	54.936	100	100.00%	54.936	0.62137	0.81416
82	1000	1.1	100	2	1000	54.621	57.948	57.95%	12.569	0.89551	0.92643
83	1000	1.1	100	3	1000	54.695	46.187	46.19%	6.708	0.95506	0.92821
84	1000	1.1	100	4	1000	54.714	39.41	39.41%	4.461	0.97816	0.92718
85	1000	1.1	100	5	1000	54.892	34.919	34.92%	3.376	0.94041	0.93504
86	1000	1.1	200	1	1000	92.02	200	100.00%	92.02	0.6952	0.85708
87	1000	1.1	200	2	1000	91.949	132.001	66.00%	23.95	0.92842	0.95254
88	1000	1.1	200	3	1000	91.918	109.895	54.95%	12.933	0.9921	0.95856
89	1000	1.1	200	4	1000	92.304	97.253	48.63%	8.905	1.00484	0.95599
90	1000	1.1	200	5	1000	92.248	88.555	44.28%	6.721	1.01064	0.95106
91	1000	1.1	500	1	1000	176.8	500	100.00%	176.8	0.7858	0.90293
92	1000	1.1	500	2	1000	176.929	378.746	75.75%	55.675	0.95075	0.96807
93	1000	1.1	500	3	1000	176.996	328.652	65.73%	30.63	1.01185	0.978
94	1000	1.1	500	4	1000	177.009	300.494	60.10%	21.133	1.03506	0.97901
95	1000	1.1	500	5	1000	177.088	280.216	56.04%	16.144	1.04769	0.9782
96	1000	1.1	1000	1	1000	280.229	1000	100.00%	280.229	0.85912	0.93301
97	1000	1.1	1000	2	1000	279.597	823.359	82.34%	102.956	0.96763	0.9747
98	1000	1.1	1000	3	1000	279.838	731.933	73.19%	57.415	1.02494	0.98596
99	1000	1.1	1000	4	1000	279.679	679.826	67.98%	40.115	1.04337	0.9877
100	1000	1.1	1000	5	1000	279.74	642.54	64.25%	30.869	1.05437	0.98785
101	1000	1.1	2000	1	1000	422.913	2000	100.00%	422.913	0.94159	0.95963
102	1000	1.1	2000	2	1000	423.033	1764.95	88.25%	187.983	0.98221	0.98023
103	1000	1.1	2000	3	1000	422.791	1607.099	80.35%	108.727	1.02765	0.98965
104	1000	1.1	2000	4	1000	422.643	1507.696	75.38%	75.595	1.05071	0.9922
105	1000	1.1	2000	5	1000	422.641	1439.189	71.96%	58.467	1.06001	0.99277
106	1000	1.1	5000	1	1000	660.911	5000	100.00%	660.911	1.0638	0.97994
107	1000	1.1	5000	2	1000	661.407	4727.671	94.55%	389.078	1.01786	0.98808
108	1000	1.1	5000	3	1000	661.186	4442.399	88.85%	246.086	1.03724	0.9927
109	1000	1.1	5000	4	1000	660.767	4228.228	84.56%	174.733	1.05452	0.99499
110	1000	1.1	5000	5	1000	661.523	4069.102	81.38%	135.062	1.06601	0.99596
111	1000	1.1	10000	1	1000	837.722	10000	100.00%	837.722	1.14875	0.97759
112	1000	1.1	10000	2	1000	838.21	9777.565	97.78%	615.775	1.06162	0.99318
113	1000	1.1	10000	3	1000	837.465	9424.701	94.25%	438.476	1.05093	0.99497
114	1000	1.1	10000	4	1000	837.516	9082.435	90.82%	324.644	1.05852	0.99625
115	1000	1.1	10000	5	1000	837.804	8798.937	87.99%	253.952	1.06706	0.99705
116	1000	1.1	20000	1	1000	954.602	20000	100.00%	954.602	1.1961	0.96361
117	1000	1.1	20000	2	1000	954.452	19890.996	99.45%	845.448	1.1198	0.99154
118	1000	1.1	20000	3	1000	953.954	19610.189	98.05%	704.578	1.08299	0.99684
119	1000	1.1	20000	4	1000	954.391	19212.55	96.06%	572.268	1.07154	0.99762
120	1000	1.1	20000	5	1000	954.559	18790.81	93.95%	467.258	1.07168	0.99793

For more detailed data, please refer to:

http://wangdingg.weebly.com/uploads/2/0/3/6/20366987/simulated_zipf.xls