SMM Level Analysis

The dataset contains information on subset of Super Mario Maker levels played 10,000 times.

Using *kableExtra*, we give the numbers of levels by difficulty and tag.

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	Automatic	Autoscroll	Costume	Dash	Gimmick	Music	NULL	Puzzle	Remix	Shoot-'em-up	Speedrun	Theme	Thumbnail	Track	Traditional	Yoshi
Easy	83	2	19	42	53	224	357	31	5	13	40	40	14	2	20	6
Super Expert	4	12	1	78	38	13	296	29	5	4	95	42	3	8	44	10

We add a new variable to the data called clear_rate and determine which are the 5 hardest levels.

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	id	name	theme	created	difficulty	tag	liked	played	tries_taken	tries_success	clear_rate
1286	CC0C-0000-02A2-2599	!	mario_bros3	2016-09-27	Super Expert	Automatic	805	14681	14015921	8	6.00e-07
787	7FDE-0000-01E4-8A4A	Swim: The Musical	mario_bros3	2016-03-01	Super Expert	Music	5063	51564	1648014	78	4.73e-05
1270	CA4B-0000-017F-2D4E	% 0%!	mario_bros_u	2016-01-09	Super Expert	Dash	448	12669	92328	5	5.42e-05
1605	FD1F-0000-021B-DC81	The ER: Surgical Shells 2.0	mario_world	2016-04-08	Super Expert	NULL	565	10725	539412	31	5.75e-05
1626	FF23-0000-0262-A91A	Likely Lethal Survival Sprint2.0	mario_bros_u	2016-06-30	Super Expert	Speedrun	1067	29217	597303	36	6.03e-05

We determine which levels are the easiest and which the hardest based on the clear rate with the tag Yoshi.

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	id	name	theme	created	difficulty	tag	liked	played	tries_taken	tries_success	clear_rate
1347	D3DC-0000-02F1-FD69	99% IMPOSIBLE#1 (REMAKE) ZetaSSJ	mario_world	2017-01-21	Super Expert	Yoshi	1108	15299	317255	92	0.0002900
811	84D8-0000-00AA-200C	Pit of Panga: A Tale of 2 Yoshis	mario_world	2015-10-15	Super Expert	Yoshi	1463	40427	557229	261	0.0004684
660	6BB1-0000-00A7-EAEE	5(HARD)	mario_bros_u	2015-09-14	Super Expert	Yoshi	762	35264	177213	122	0.0006884
692	7011-0000-0034-6480	Pit of Panga: No Mah Yoshi	mario_world	2015-09-14	Super Expert	Yoshi	1959	44458	660495	849	0.0012854
1529	F1D7-0000-02AC-5BE1	Don't unchain the real monster..	mario_world	2016-10-15	Super Expert	Yoshi	1401	16192	112922	649	0.0057473
1193	C046-0000-003F-3825	Will You Save Your Son?	mario_world	2015-09-15	Super Expert	Yoshi	2764	23995	184709	1700	0.0092037
1048	A8E8-0000-0020-8785	Yoshi's Lake of desperation	mario_bros_u	2015-09-12	Super Expert	Yoshi	10960	97094	502759	4655	0.0092589
1325	D17D-0000-025F-AADF	Kaizo College: Just Wing It	mario_world	2016-06-26	Super Expert	Yoshi	6691	88205	956305	13238	0.0138429
626	6650-0000-00F3-4EED	Yoshi's DEFINITIVE Plan	mario_world	2015-11-21	Super Expert	Yoshi	4100	38547	340572	5139	0.0150893
966	9B5E-0000-00B5-34B2	Egg Carrier Yoshis!	mario_world	2015-10-19	Super Expert	Yoshi	1178	10710	40874	645	0.0157802
991	9F40-0000-0327-3CC7	… ww 1 1	mario_bros	2017-04-27	Easy	Yoshi	1342	15253	29680	11287	0.3802898
1148	B93D-0000-0030-5F50	P ! Go to buy P-switch!	mario_world	2015-09-13	Easy	Yoshi	3069	37915	60700	27912	0.4598353
5	00BC-0000-0253-5FF8	40 U.N. ? (8)	mario_bros_u	2016-06-10	Easy	Yoshi	6117	39394	61607	31678	0.5141948
951	9895-0000-003C-F6EE	Please Dance	mario_bros_u	2015-09-15	Easy	Yoshi	30209	347705	551054	331668	0.6018793
1216	C362-0000-0024-A8A7	The Modern Gooma Glide	mario_bros	2015-09-12	Easy	Yoshi	32020	395603	517565	387371	0.7484490
944	9728-0000-00A3-CF28	Yoshi Rescue!	mario_world	2015-10-12	Easy	Yoshi	788	10297	11636	10091	0.8672224

We calculate and report the average clear_rate for each level tag.

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Var1	Freq
Automatic	0.5408731
Autoscroll	0.0721203
Costume	0.5434313
Dash	0.1662244
Gimmick	0.3565828
Music	0.6844426
NULL	0.3699192
Puzzle	0.2553382
Remix	0.2660491
Shoot-'em-up	0.5485716
Speedrun	0.1596468
Theme	0.2594731
Thumbnail	0.3452642
Track	0.1068005
Traditional	0.1638373
Yoshi	0.2277203

We calculate and report the average level clear_rate paired by tag and difficulty.

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| | Easy | Super Expert |
|------|------|------|
| Automatic | 0.5668736 | 0.0013633 |
| Autoscroll | 0.4532364 | 0.0086010 |
| Costume | 0.5708320 | 0.0228183 |
| Dash | 0.4655439 | 0.0050524 |
| Gimmick | 0.6061457 | 0.0085082 |
| Music | 0.7236425 | 0.0089973 |
| NULL | 0.6711002 | 0.0066705 |
| Puzzle | 0.4863800 | 0.0083624 |
| Remix | 0.5247910 | 0.0073071 |
| Shoot-'em-up | 0.7140606 | 0.0107324 |
| Speedrun | 0.5241836 | 0.0061576 |
| Theme | 0.5203332 | 0.0110350 |
| Thumbnail | 0.4168803 | 0.0110556 |
| Track | 0.5090177 | 0.0062462 |
| Traditional | 0.5054020 | 0.0085805 |
| Yoshi | 0.5953118 | 0.0071655 |

We are going to examine the clear rate over time by constructing a figure.
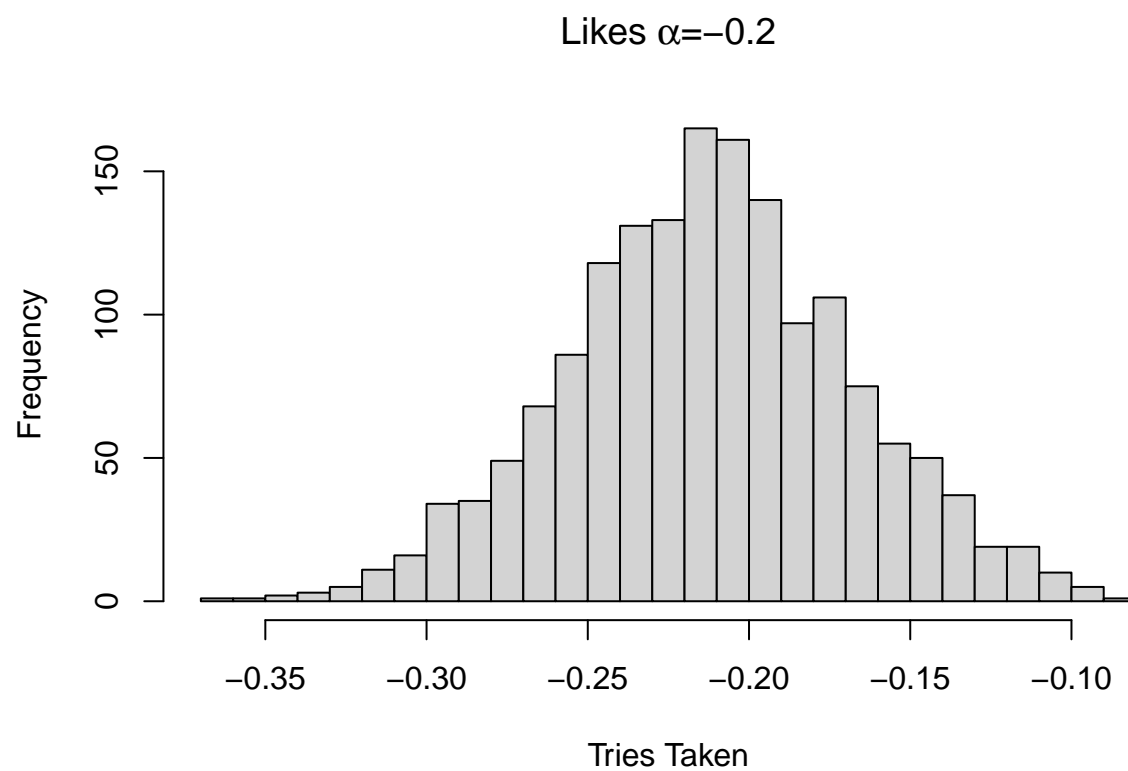
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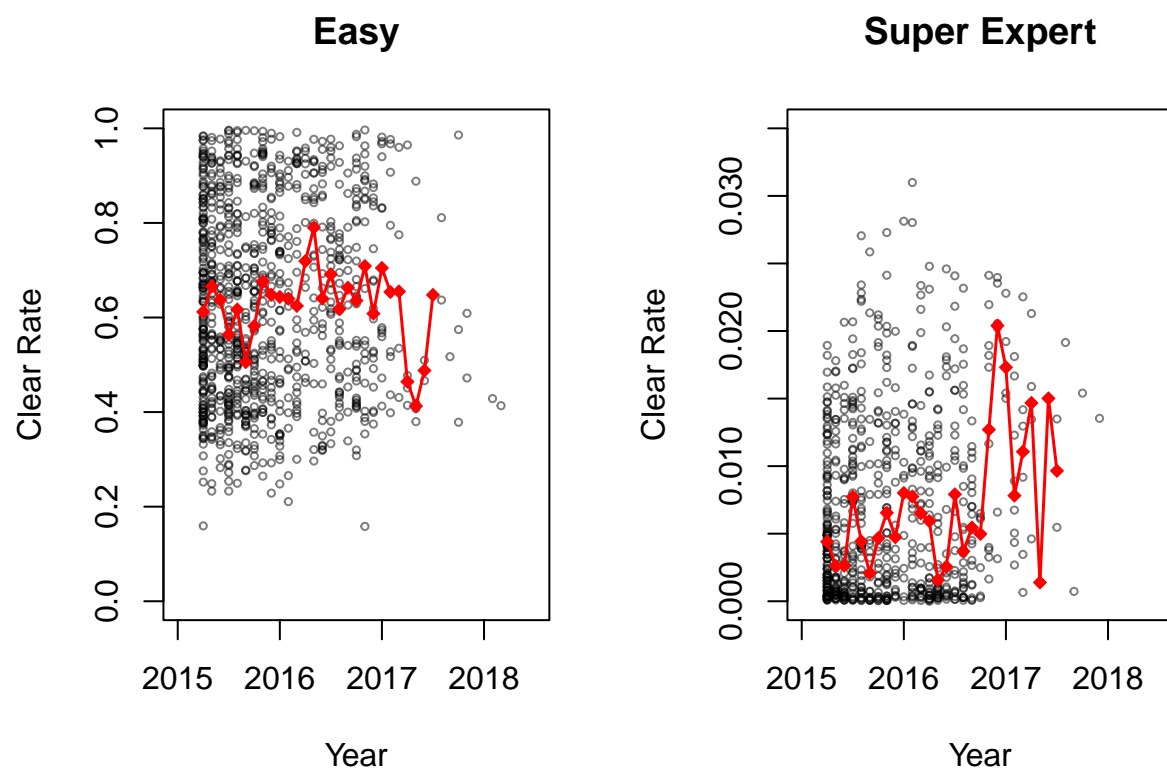
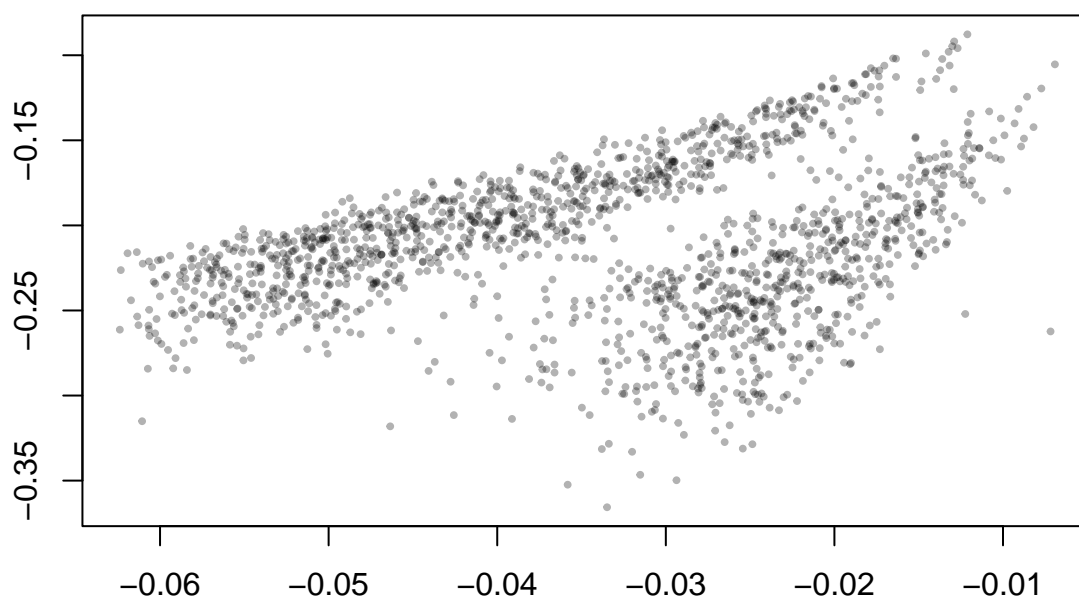We construct a figure containing the individual histograms and a scatter-plot.
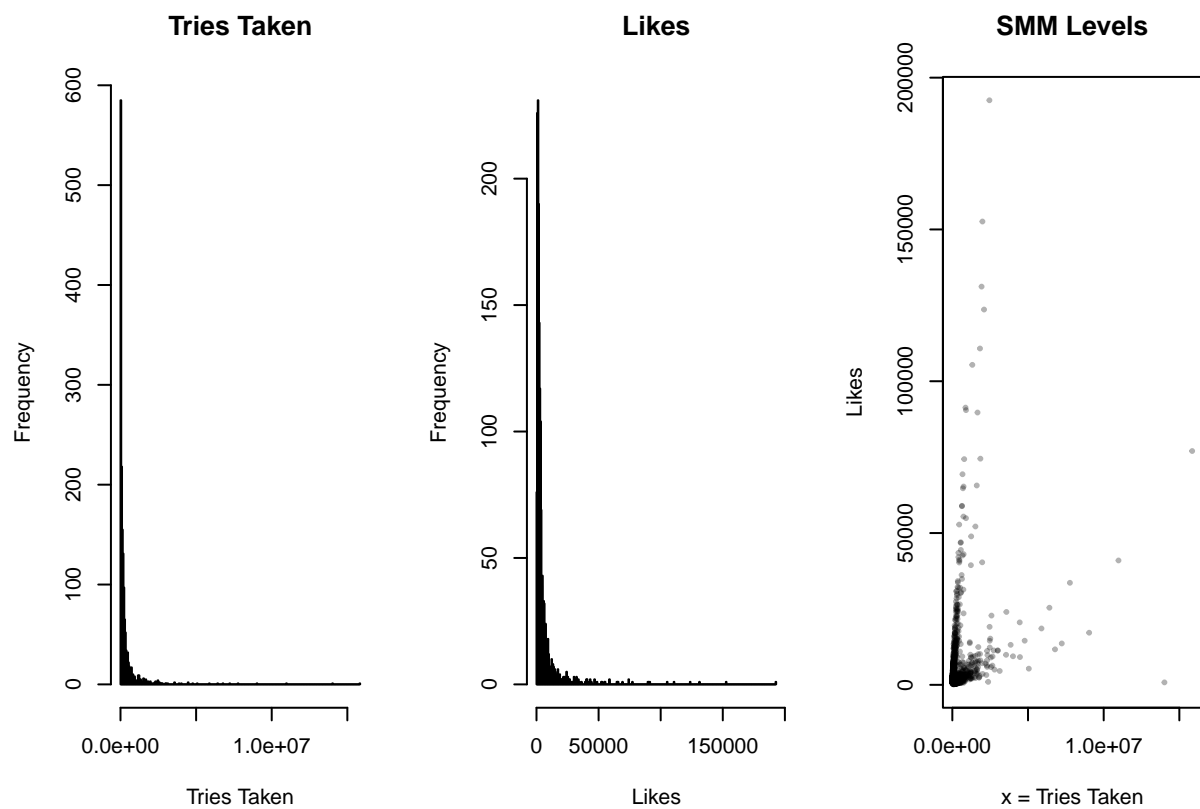
An alpha value of -0.2 makes the distribution approximately symmetric.

Likes α=−0.2

The pair (-0.3, -0.2) make the scatter plot approximately linear.

$\alpha_x = -0.3, \alpha_y = -0.2$

We create a scatterplot of log(tries_taken) and log(liked) while colouring the points by the level difficulty.

**SMM Levels**