

Evaluation Details - AccuStripes

This slide set provides a breakdown of the exact details of the evaluation results.

The evaluation was performed using ARTools by Wobbrock et al. [1] in R with the following measures:

- Repeated-measures ANOVA
- Post-hoc pairwise Bonferroni correction

For Task 1 and Task 2, the results are shown for Binning, Composition, and Binning x Composition.

For Task 3, the results are shown for Binning, Composition, Binning x Composition, Flaw x Binning, Flaw x Composition, and Flaw x Binning x Composition.

The results include the evaluation of the dependent variables accuracy, time, and confidence.

For Task 1 and Task 2 accuracy is measured as error. Error is given through the continuous Earth Mover Distance (EMD) score.

In Task 1 the correct response had a value EMD = 0. In Task 2 the correct response had the smallest EMD value of all responses. Thus, the higher the EMD value, the greater the error.


For Task 3 accuracy is measured as correctness. Correctness is given by the number of correct responses in percent in the interval [0, 1].

For each dependent variable we provide the following:



- The results of the repeated-measures ANOVA
- The results of the post-hoc pairwise Bonferroni correction
- The statistical values as mean, standard deviation (sd), standard error (se), confidence interval (ci), interquartile range (iqr) etc.

For easier interpretation we added visual assistance:

1) Results which are significant are marked (see Table 1).

2) We framed the important outcomes in blue .

We do not just provide the framed results because we want the reader to have a complete picture of the data and be able to make comparisons.

3) We highlighted the best performing technique in green  and the worst performing technique in red .

Significance	p – value
***	[0, 0.001]
**	(0.001, 0.01]
*	(0.01, 0.05]
.	(0.05, 0.1]
	(0.1, 1]

Table 1: Significance Codes

T1 – Identification Task

1. Binning – Accuracy

1. ANOVA on **ACCURACY**

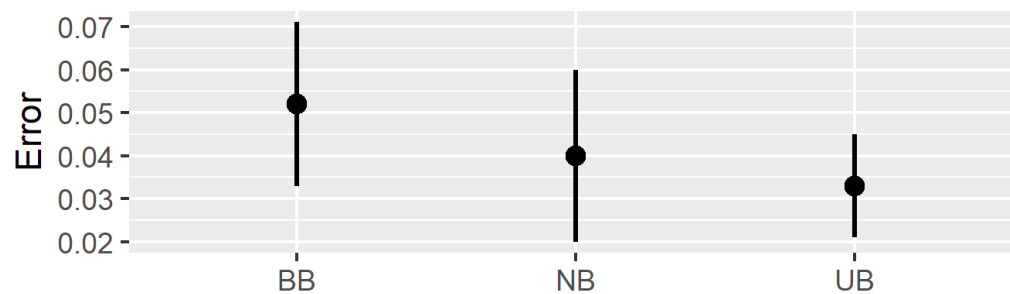
		Error	Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn	2	186	20.2519	1.1033e-08	***
2	binningFactor	usF:F	2	62	7.1699	0.0015807	**
3	compositionFactor:binningFactor	Withn	4	186	6.3842	7.7833e-05	***

2. Post Hoc on **ACCURACY**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	25.989583	9.653989	62	2.6921083	0.027352333	*
2	BB - UB	-9.270833	9.653989	62	-0.9603112	1.000000000	
3	NB - UB	-35.260417	9.653989	62	-3.6524195	0.001607155	**

3. Analysis over all conditions - **ACCURACY**

binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	UB Accuracy	96	0	0.157	0	0	0.025	0.025	0	0.033	0.058	0.006	0.012	0.021	0.045
2	NB Accuracy	96	0	0.456	0	0	0.060	0.060	0	0.040	0.098	0.010	0.020	0.020	0.060
3	BB Accuracy	96	0	0.275	0	0	0.070	0.070	0	0.052	0.093	0.010	0.019	0.033	0.071



1. Binning – Time

1. ANOVA on **TIME**

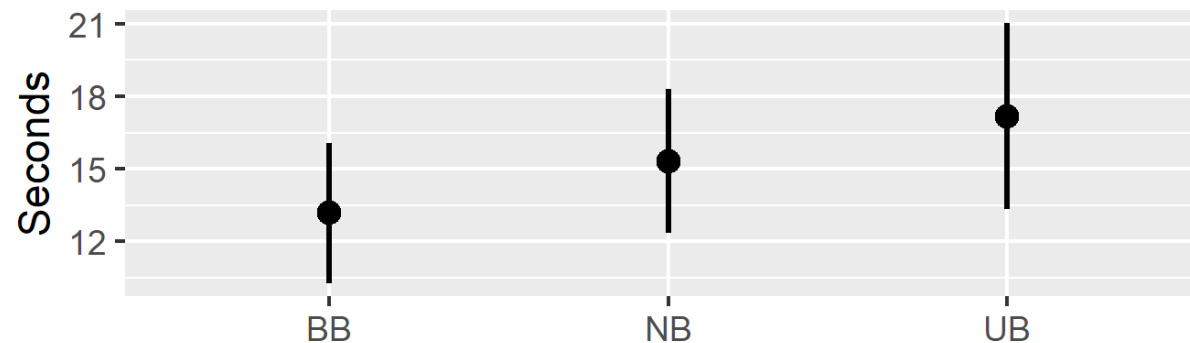
		Error Df	Df.res	F value	Pr(>F)
1	compositionFactor	Withn 2	186	0.84862	0.42966
2	binningFactor	usF:F 2	62	0.31812	0.72870
3	compositionFactor:binningFactor	Withn 4	186	1.95094	0.10381

2. Post Hoc on **TIME**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	-2.885417	8.601365	62	-0.3354603		1
2	BB - UB	-6.833333	8.601365	62	-0.7944476		1
3	NB - UB	-3.947917	8.601365	62	-0.4589872		1

3. Analysis over all conditions - **TIME**

binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	BB	Time 96	2.238	100.406	8.573	6.375	14.235	7.860	4.569	13.179	14.294	1.459	2.896	10.283	16.075
2	NB	Time 96	2.782	87.465	9.245	5.873	18.486	12.613	6.572	15.329	14.728	1.503	2.984	12.345	18.313
3	UB	Time 96	2.186	101.962	8.917	6.332	18.703	12.372	5.999	17.184	18.901	1.929	3.830	13.354	21.014



1. Binning – Confidence

1. ANOVA on **CONFIDENCE**

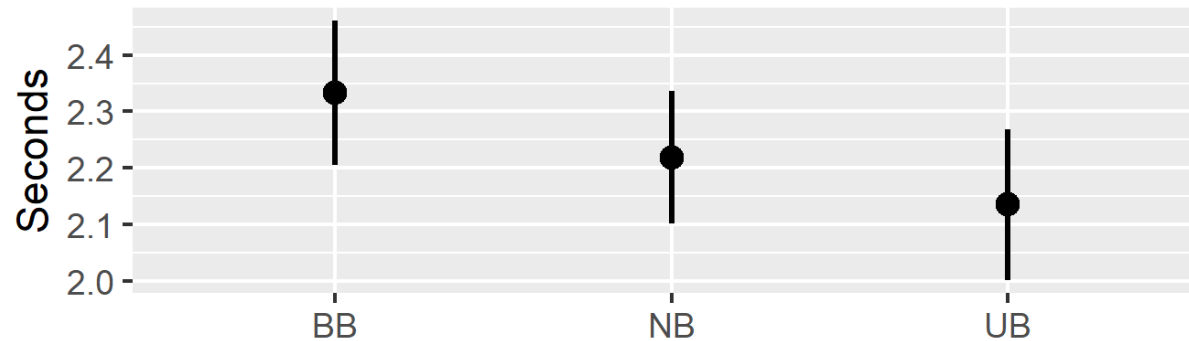
		Error Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn 2	186	11.1491	2.6728e-05	***
2	binningFactor	usF:F 2	62	6.6078	0.0025039	**
3	compositionFactor:binningFactor	Withn 4	186	3.5190	0.0085331	**

2. Post Hoc on **CONFIDENCE**

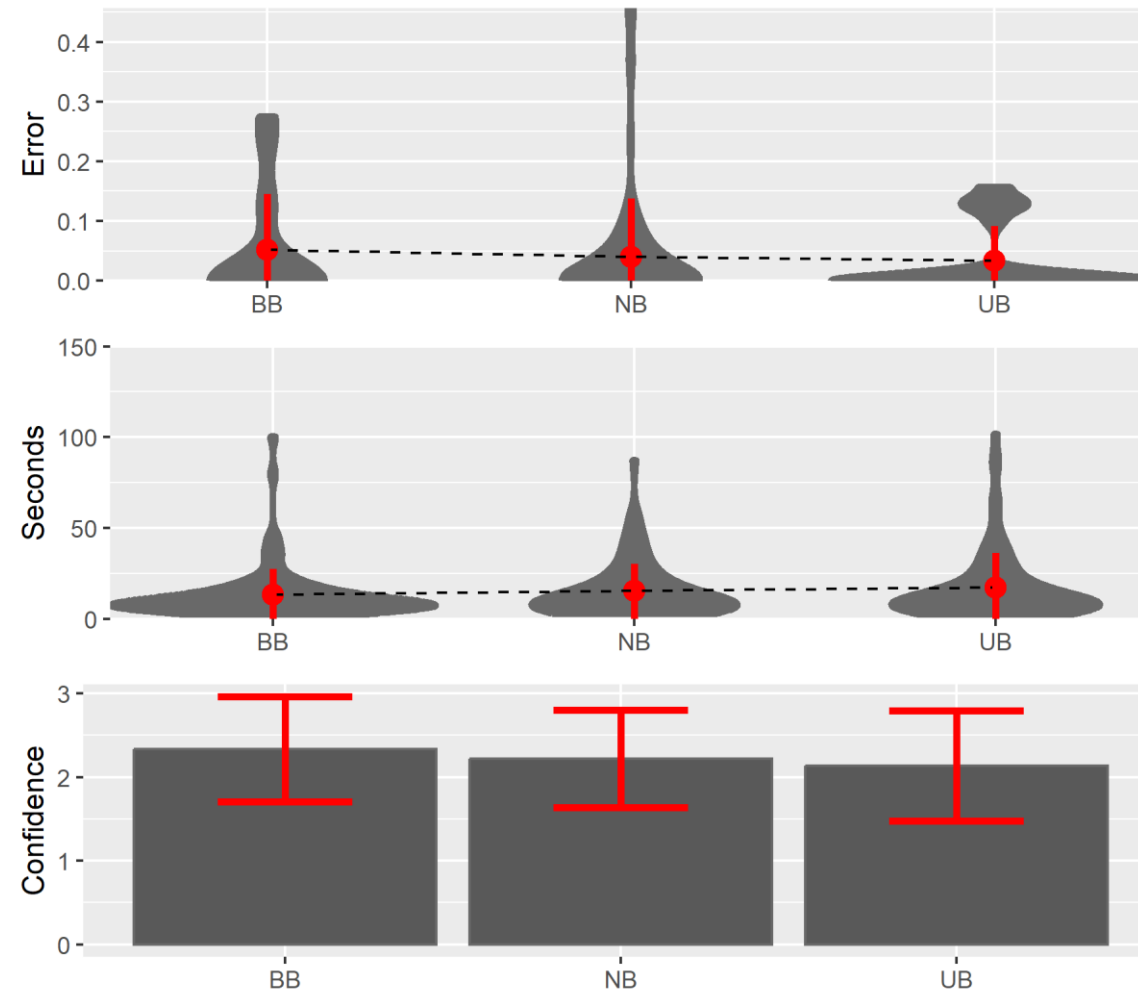
	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	25.822917	10.07288	62	2.5636085	0.038393887	*
2	BB - UB	35.395833	10.07288	62	3.5139740	0.002491862	**
3	NB - UB	9.572917	10.07288	62	0.9503655	1.000000000	

3. Analysis over all conditions - **CONFIDENCE**

binningFactor		variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	BB	Confidence	96	0	3	2	2	3	1	0	2.333	0.627	0.064	0.127	2.206	2.460
2	NB	Confidence	96	0	3	2	2	3	1	0	2.219	0.584	0.060	0.118	2.101	2.337
3	UB	Confidence	96	0	3	2	2	3	1	0	2.135	0.659	0.067	0.133	2.002	2.268



1. Binning – Summary



2. Composition – Accuracy

1. ANOVA on **ACCURACY**

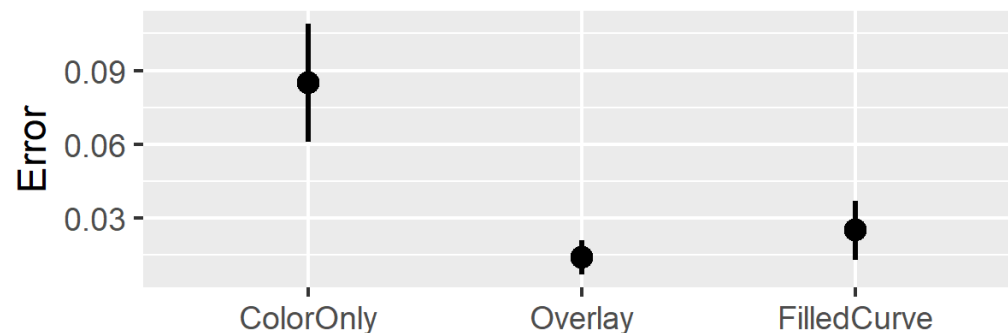
		Error	Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn	2	186	20.2519	1.1033e-08	***
2	binningFactor	usF:F	2	62	7.1699	0.0015807	**
3	compositionFactor:binningFactor	Withn	4	186	6.3842	7.7833e-05	***

2. Post Hoc on **ACCURACY**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	53.302083	10.19246	186	5.2295607	1.363651e-06	***
2	ColorOnly - FilledCurve	58.666667	10.19246	186	5.7558894	1.050065e-07	***
3	Overlay - FilledCurve	5.364583	10.19246	186	0.5263287	1.000000e+00	

3. Analysis over all conditions - **ACCURACY**

	compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	Overlay	Accuracy	96	0	0.275	0	0	0.000	0.000	0	0.014	0.037	0.004	0.007	0.007	0.021
2	FilledCurve	Accuracy	96	0	0.368	0	0	0.000	0.000	0	0.025	0.061	0.006	0.012	0.013	0.037
3	ColorOnly	Accuracy	96	0	0.456	0	0	0.129	0.129	0	0.085	0.118	0.012	0.024	0.061	0.109



2. Composition – Time

1. ANOVA on **TIME**

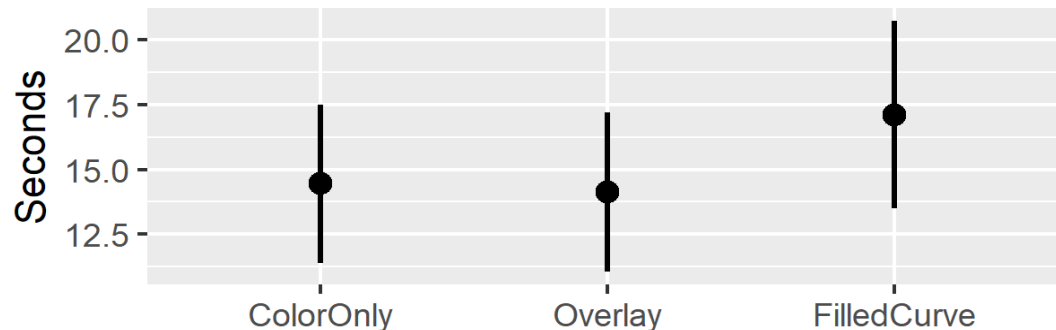
		Error Df	Df.res	F value	Pr(>F)
1	compositionFactor	Withn 2	186	0.84862	0.42966
2	binningFactor	usF:F 2	62	0.31812	0.72870
3	compositionFactor:binningFactor	Withn 4	186	1.95094	0.10381

2. Post Hoc on **TIME**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	-4.614583	10.41224	186	-0.4431884	1.0000000	
2	ColorOnly - FilledCurve	-13.354167	10.41224	186	-1.2825452	0.6037425	
3	Overlay - FilledCurve	-8.739583	10.41224	186	-0.8393568	1.0000000	

3. Analysis over all conditions - **TIME**

	compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	Overlay	Time	96	3.835	101.962	8.731	6.386	15.653	9.266	4.701	14.130	15.218	1.553	3.083	11.047	17.213
2	ColorOnly	Time	96	2.186	85.631	8.659	5.690	16.631	10.941	6.426	14.447	15.127	1.544	3.065	11.382	17.512
3	FilledCurve	Time	96	3.042	100.406	8.977	6.040	21.050	15.010	5.593	17.115	17.910	1.828	3.629	13.486	20.744



2. Composition – Confidence

1. ANOVA on **CONFIDENCE**

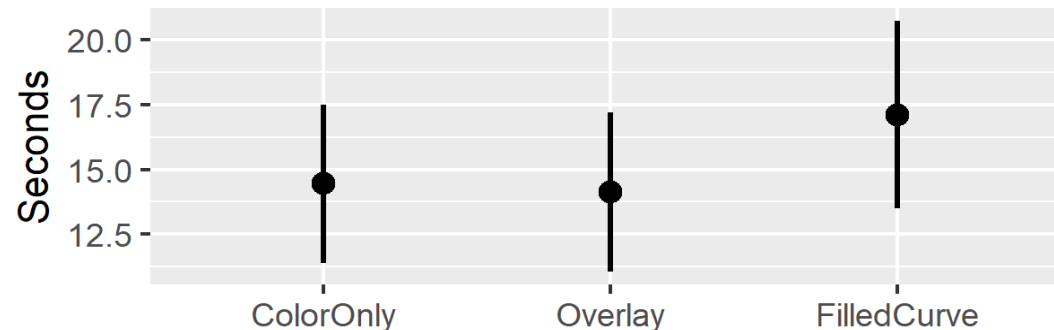
		Error Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn	2	186	11.1491	2.6728e-05 ***
2	binningFactor	usF:F	2	62	6.6078	0.0025039 **
3	compositionFactor:binningFactor	Withn	4	186	3.5190	0.0085331 **

2. Post Hoc on **CONFIDENCE**

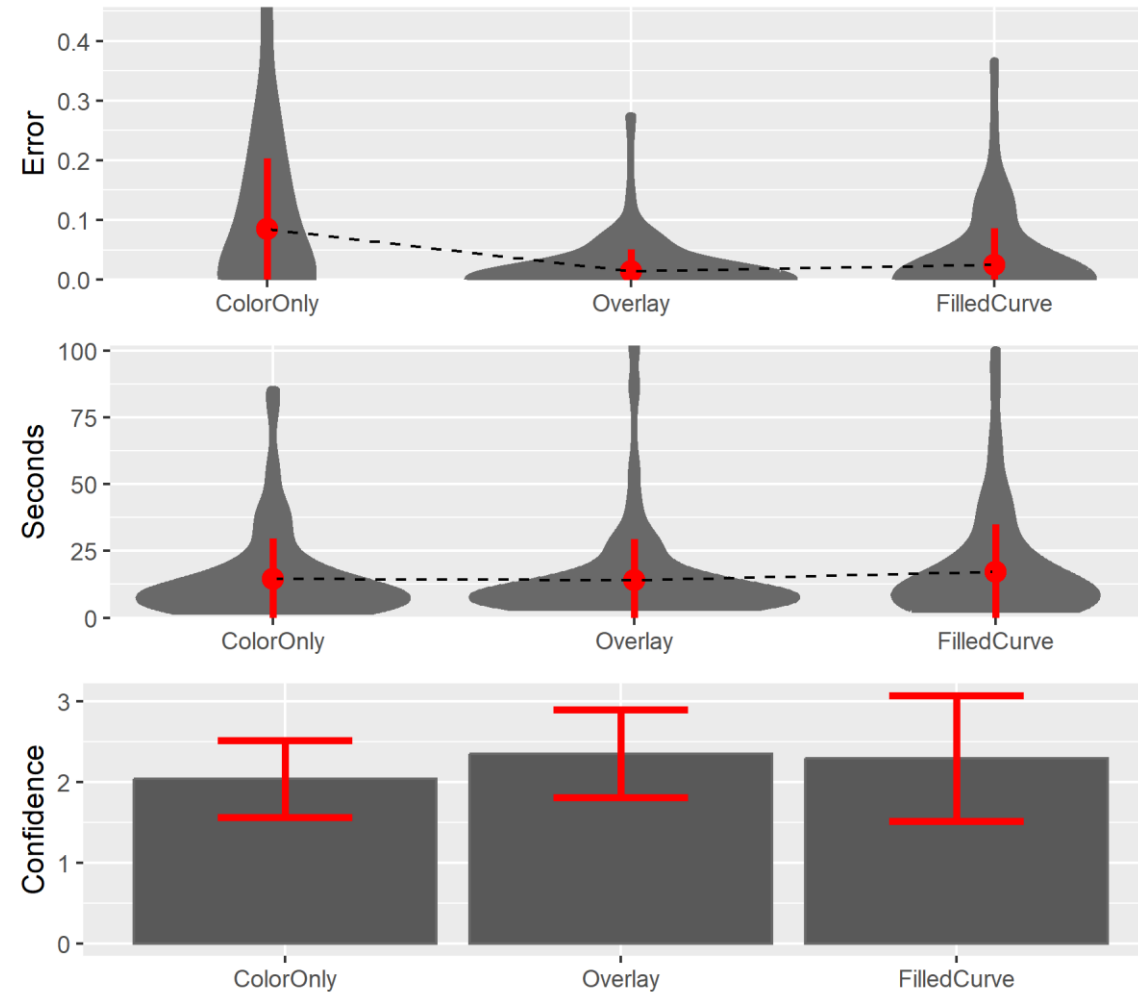
	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	coloronly - overlay	-43.260417	10.79012	186	-4.0092621	0.0002642863	***
2	coloronly - FilledCurve	-44.942708	10.79012	186	-4.1651725	0.0001427210	***
3	overlay - FilledCurve	-1.682292	10.79012	186	-0.1559104	1.0000000000	

3. Analysis over all conditions - **CONFIDENCE**

	compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	Overlay	Confidence	96	1	3	2	2	3	1	0.000	2.354	0.542	0.055	0.110	2.244	2.464
2	FilledCurve	Confidence	96	0	3	2	2	3	1	1.483	2.292	0.780	0.080	0.158	2.134	2.450
3	ColorOnly	Confidence	96	1	3	2	2	2	0	0.000	2.042	0.479	0.049	0.097	1.945	2.139



2. Composition – Summary



3. Composition x Binning – Accuracy

1. ANOVA on **ACCURACY**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	186	20.2519	1.1033e-08	***
2 binningFactor	usF:F	2	62	7.1699	0.0015807	**
3 compositionFactor:binningFactor	Withn	4	186	6.3842	7.7833e-05	***

2. Post Hoc on **ACCURACY**

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	BB - NB	127.21875	26.34086	186	4.8297121	2.562465e-05	***
2	ColorOnly - FilledCurve	BB - NB	43.18750	26.34086	186	1.6395633	9.250760e-01	
3	Overlay - FilledCurve	BB - NB	-84.03125	26.34086	186	-3.1901488	1.502209e-02	*
4	ColorOnly - Overlay	BB - UB	54.40625	26.34086	186	2.0654701	3.623867e-01	
5	ColorOnly - FilledCurve	BB - UB	-5.06250	26.34086	186	-0.1921919	1.000000e+00	
6	Overlay - FilledCurve	BB - UB	-59.46875	26.34086	186	-2.2576620	2.261601e-01	
7	ColorOnly - Overlay	NB - UB	-72.81250	26.34086	186	-2.7642420	5.651788e-02	.
8	ColorOnly - FilledCurve	NB - UB	-48.25000	26.34086	186	-1.8317552	6.172862e-01	
9	Overlay - FilledCurve	NB - UB	24.56250	26.34086	186	0.9324868	1.000000e+00	

3. Analysis over all conditions - **ACCURACY**

compositionF... ¹	binning... ²	varia... ³	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 Overlay	UB	Accura...	32	0	0.129	0	0	0	0	0	0.004	0.023	0.004	0.008	-0.004	0.012
2 Overlay	BB	Accura...	32	0	0.275	0	0	0	0	0	0.011	0.05	0.009	0.018	-0.007	0.029
3 FilledCurve	UB	Accura...	32	0	0.129	0	0	0	0	0	0.014	0.037	0.006	0.013	0.00100	0.027
4 FilledCurve	NB	Accura...	32	0	0.368	0	0	0	0	0	0.022	0.078	0.014	0.028	-0.006	0.05
5 Overlay	NB	Accura...	32	0	0.06	0	0	0.06	0.06	0	0.026	0.03	0.005	0.011	0.015	0.037
6 FilledCurve	BB	Accura...	32	0	0.132	0	0	0.13	0.13	0	0.039	0.06	0.011	0.021	0.018	0.06
7 ColorOnly	NB	Accura...	32	0	0.456	0	0	0.073	0.073	0	0.07	0.145	0.026	0.052	0.0180	0.122
8 ColorOnly	UB	Accura...	32	0	0.157	0.129	0	0.129	0.129	0.041	0.081	0.069	0.012	0.025	0.056	0.106
9 ColorOnly	BB	Accura...	32	0	0.275	0	0	0.227	0.227	0	0.105	0.126	0.022	0.045	0.06	0.15

3. Composition x Binning – Time

1. ANOVA on **TIME**

	Error	Df	Df.res	F value	Pr(>F)
1 compositionFactor	Withn	2	186	0.84862	0.42966
2 binningFactor	usF:F	2	62	0.31812	0.72870
3 compositionFactor:binningFactor	Withn	4	186	1.95094	0.10381

2. Post Hoc on **TIME**

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	BB - NB	29.06250	25.27896	186	1.14967147	1.0000000	
2	ColorOnly - FilledCurve	BB - NB	-34.15625	25.27896	186	-1.35117303	1.0000000	
3	Overlay - FilledCurve	BB - NB	-63.21875	25.27896	186	-2.50084450	0.1192848	
4	ColorOnly - Overlay	BB - UB	3.75000	25.27896	186	0.14834471	1.0000000	
5	ColorOnly - FilledCurve	BB - UB	-0.90625	25.27896	186	-0.03584997	1.0000000	
6	Overlay - FilledCurve	BB - UB	-4.65625	25.27896	186	-0.18419468	1.0000000	
7	ColorOnly - Overlay	NB - UB	-25.31250	25.27896	186	-1.00132676	1.0000000	
8	ColorOnly - FilledCurve	NB - UB	33.25000	25.27896	186	1.31532306	1.0000000	
9	Overlay - FilledCurve	NB - UB	58.56250	25.27896	186	2.31664982	0.1945111	

3. Analysis over all conditions - **TIME**

compositionFac... ¹	binning... ²	variable... ³	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 Overlay	BB	Time	32	4.85	46.0	6.96	5.57	10.9	5.29	2.49	10.1	8.15	1.44	2.94	7.16	13.0
2 ColorOnly	BB	Time	32	2.24	79.6	8.43	6.54	12.9	6.32	3.69	12.2	13.6	2.40	4.90	7.29	17.1
3 FilledCurve	NB	Time	32	4.10	87.5	6.42	5.24	17.6	12.3	3.34	14.8	17.4	3.08	6.28	8.56	21.1
4 ColorOnly	NB	Time	32	2.78	56.6	8.39	5.56	18.7	13.1	5.99	15.3	14.8	2.62	5.34	9.99	20.7
5 Overlay	NB	Time	32	3.84	56.0	11.2	7.73	23.8	16.1	7.01	15.8	11.9	2.10	4.29	11.5	20.1
6 ColorOnly	UB	Time	32	2.19	85.6	10.2	4.55	18.1	13.6	8.66	15.8	17.0	3.00	6.13	9.69	21.9
7 Overlay	UB	Time	32	4.49	102.	7.53	6.37	17.6	11.2	3.02	16.5	21.8	3.86	7.87	8.61	24.3
8 FilledCurve	BB	Time	32	3.04	100.	10.1	6.67	21.1	14.5	7.24	17.2	18.6	3.29	6.71	10.5	24.0
9 FilledCurve	UB	Time	32	5.28	66.8	10.5	6.95	25.8	18.8	6.59	19.3	18.0	3.17	6.47	12.8	25.7

3. Composition x Binning – Confidence

1. ANOVA on **CONFIDENCE**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	186	11.1491	2.6728e-05	***
2 binningFactor	usF:F	2	62	6.6078	0.0025039	**
3 compositionFactor:binningFactor	Withn	4	186	3.5190	0.0085331	**

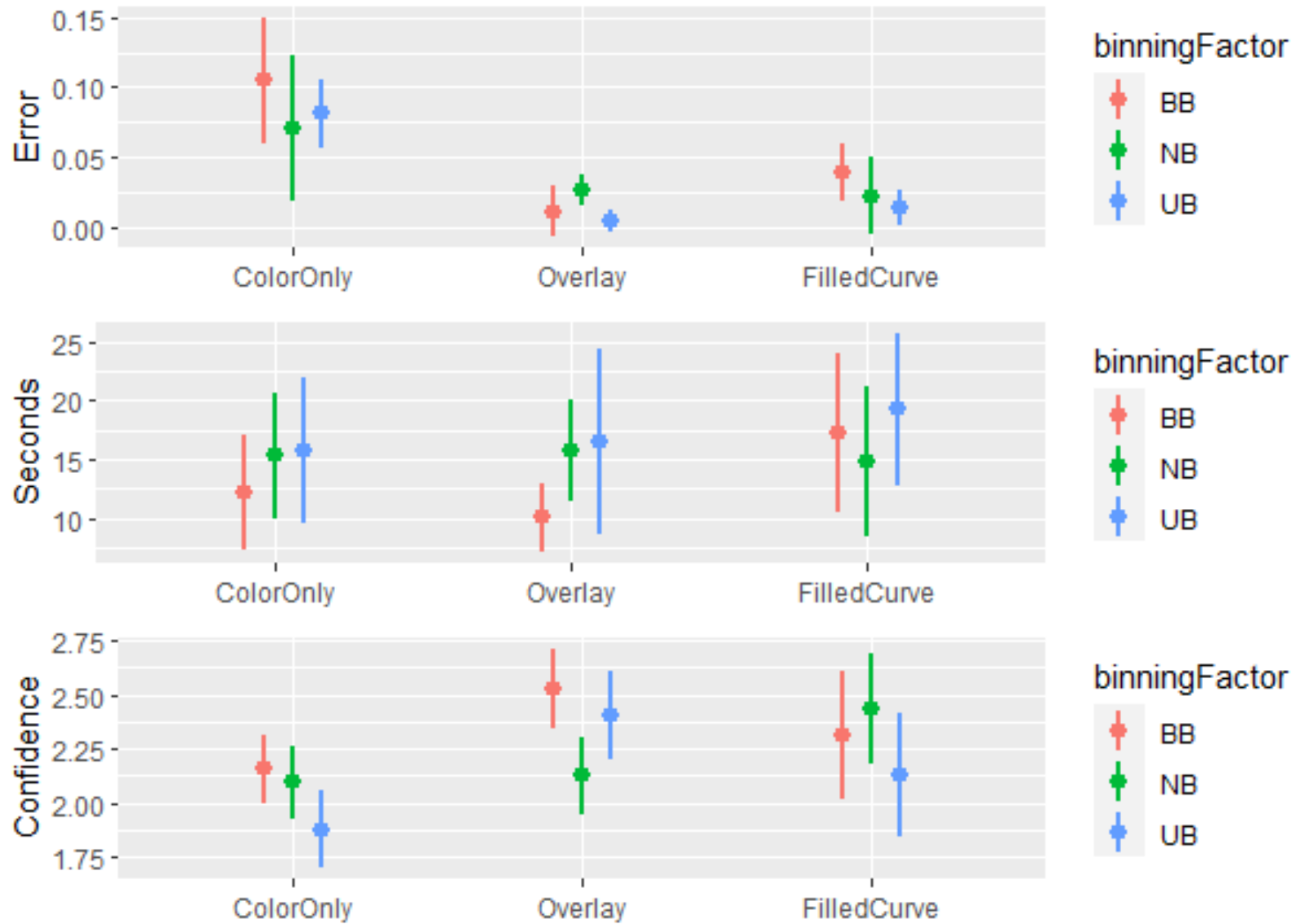
2. Post Hoc on **CONFIDENCE**

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	coloronly - overlay	BB - NB	-44.25000	27.49082	186	-1.6096283	0.98257412	
2	coloronly - FilledCurve	BB - NB	23.65625	27.49082	186	0.8605146	1.00000000	
3	overlay - FilledCurve	BB - NB	67.90625	27.49082	186	2.4701428	0.12966196	
4	coloronly - overlay	BB - UB	38.81250	27.49082	186	1.4118350	1.00000000	
5	coloronly - FilledCurve	BB - UB	19.37500	27.49082	186	0.7047807	1.00000000	
6	overlay - FilledCurve	BB - UB	-19.43750	27.49082	186	-0.7070542	1.00000000	
7	coloronly - overlay	NB - UB	83.06250	27.49082	186	3.0214632	0.02582835	*
8	coloronly - FilledCurve	NB - UB	-4.28125	27.49082	186	-0.1557338	1.00000000	
9	overlay - FilledCurve	NB - UB	-87.34375	27.49082	186	-3.1771971	0.01567274	*

3. Analysis over all conditions - **CONFIDENCE**

	compositionFactor	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	overlay	BB	Confidence	32	2	3	3.0	2	3	1	0.000	2.531	0.507	0.090	0.183	2.348	2.714
2	FilledCurve	NB	Confidence	32	0	3	3.0	2	3	1	0.000	2.438	0.716	0.127	0.258	2.180	2.696
3	overlay	UB	Confidence	32	1	3	2.0	2	3	1	0.000	2.406	0.560	0.099	0.202	2.204	2.608
4	FilledCurve	BB	Confidence	32	0	3	2.5	2	3	1	0.741	2.312	0.821	0.145	0.296	2.016	2.608
5	coloronly	BB	Confidence	32	1	3	2.0	2	2	0	0.000	2.156	0.448	0.079	0.161	1.995	2.317
6	overlay	NB	Confidence	32	1	3	2.0	2	2	0	0.000	2.125	0.492	0.087	0.177	1.948	2.302
7	FilledCurve	UB	Confidence	32	0	3	2.0	2	3	1	1.483	2.125	0.793	0.140	0.286	1.839	2.411
8	coloronly	NB	Confidence	32	1	3	2.0	2	2	0	0.000	2.094	0.466	0.082	0.168	1.926	2.262
9	coloronly	UB	Confidence	32	1	3	2.0	2	2	0	0.000	1.875	0.492	0.087	0.177	1.698	2.052

3. Composition x Binning – Summary



T2 – Comparison Task

1. Binning – Accuracy

1. ANOVA on **ACCURACY**

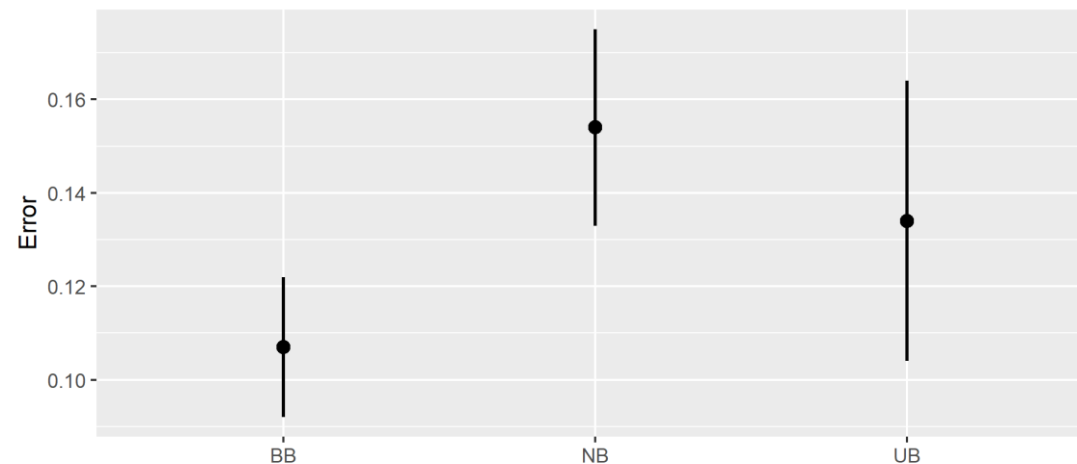
		Error Df	Df.res	F value	Pr(>F)	
1	compositionFactor	within	2	186	31.517	1.6319e-12 ***
2	binningFactor	usF:F	2	62	34.951	6.8616e-11 ***
3	compositionFactor:binningFactor	within	4	186	11.735	1.6077e-08 ***

2. Post Hoc on **ACCURACY**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	-78.6250	9.414018	62	-8.351906	2.916077e-11	***
2	BB - UB	-36.1875	9.414018	62	-3.844001	8.631499e-04	***
3	NB - UB	42.4375	9.414018	62	4.507905	8.901100e-05	***

3. Analysis over all conditions - **ACCURACY**

	binningFactor	variable	n	min	max	median	q1	q3	igr	mad	mean	sd	se	ci	ci_min	ci_max
1	BB	Accuracy	96	0.016	0.280	0.094	0.059	0.101	0.042	0.023	0.107	0.076	0.008	0.015	0.092	0.122
2	UB	Accuracy	96	0.046	0.515	0.063	0.046	0.097	0.051	0.025	0.134	0.146	0.015	0.030	0.104	0.164
3	NB	Accuracy	96	0.054	0.475	0.100	0.054	0.205	0.151	0.068	0.154	0.104	0.011	0.021	0.133	0.175



1. Binning – Time

1. ANOVA on **TIME**

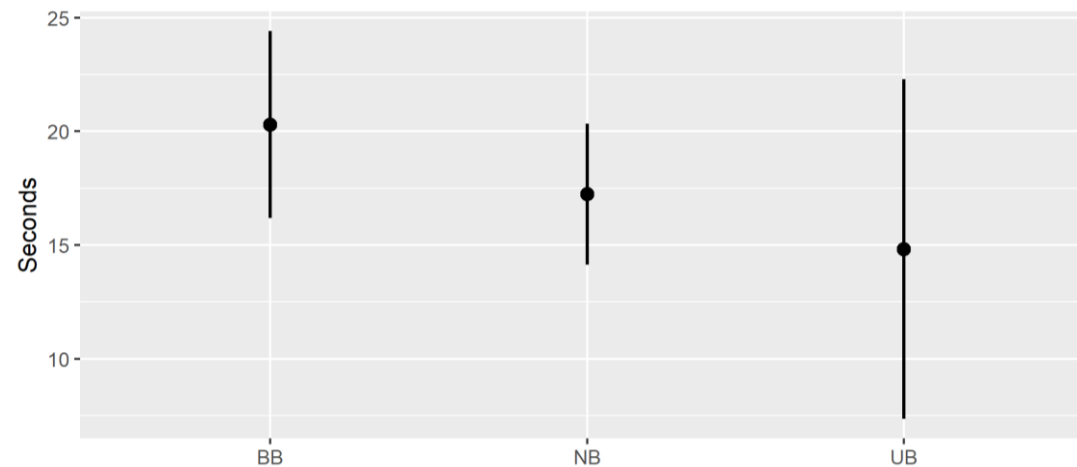
		Error Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn 2	186	5.63030	0.0042262	**
2	binningFactor	usF:F 2	62	10.86911	8.9848e-05	***
3	compositionFactor:binningFactor	Withn 4	186	0.69025	0.5995589	

2. Post Hoc on **TIME**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	12.97917	6.718036	62	1.931988	1.738014e-01	
2	BB - UB	31.17708	6.718036	62	4.640804	5.540982e-05	***
3	NB - UB	18.19792	6.718036	62	2.708815	2.615296e-02	*

3. Analysis over all conditions - **TIME**

binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	UB	Time 96	2.564	365.010	9.540	5.729	13.394	7.666	5.687	14.815	36.837	3.760	7.464	7.351	22.279
2	NB	Time 96	2.254	69.839	11.255	6.828	24.307	17.479	8.708	17.237	15.308	1.562	3.102	14.135	20.339
3	BB	Time 96	2.873	122.711	13.426	7.950	23.369	15.419	9.733	20.293	20.321	2.074	4.118	16.175	24.411



1. Binning – Confidence

1. ANOVA on **CONFIDENCE**

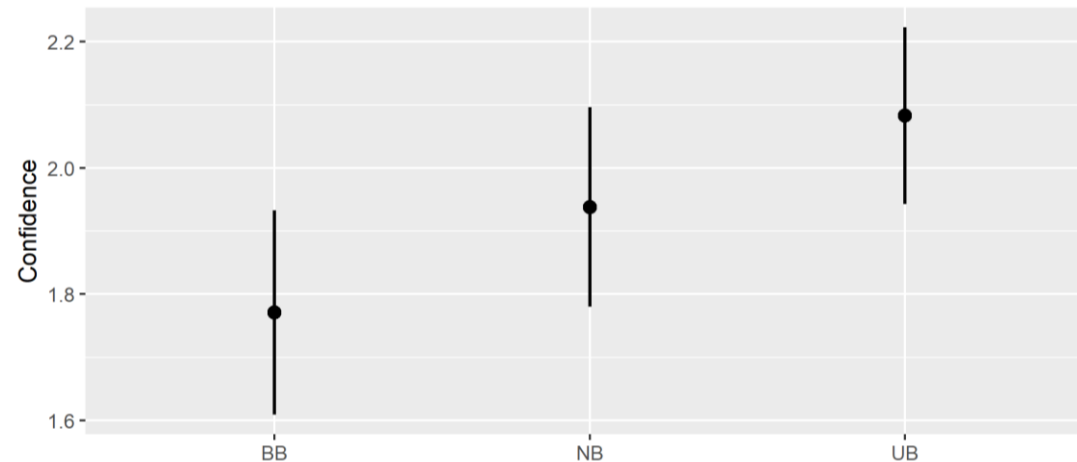
		Error Df	Df.res	F value	Pr(>F)
1	compositionFactor	Within 2	186	2.1746	0.11653775
2	binningFactor	usF:F 2	62	9.5277	0.00024655 ***
3	compositionFactor:binningFactor	Within 4	186	1.9478	0.10431684

2. Post Hoc on **CONFIDENCE**

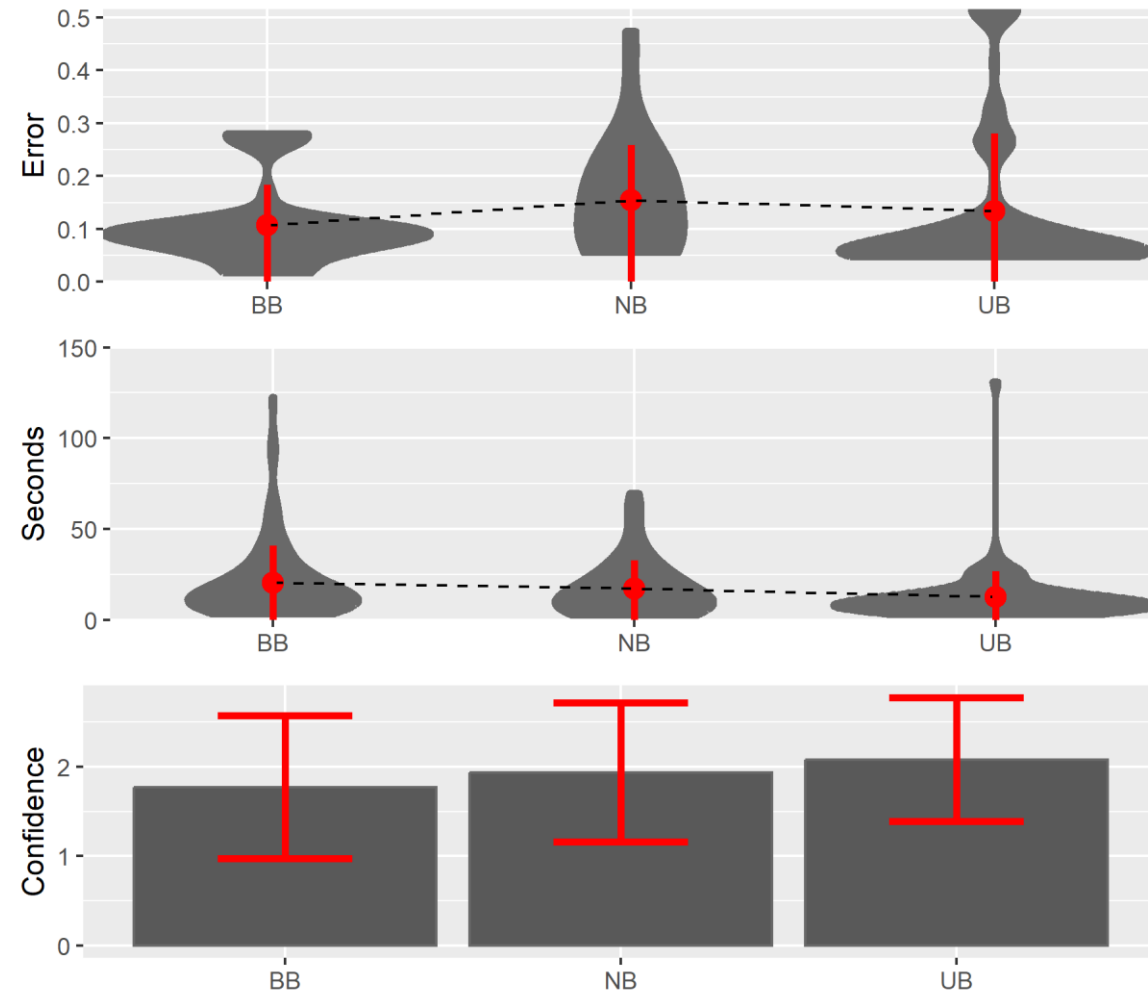
	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	-31.875	9.536246	62	-3.3425103	0.0042337868	**
2	BB - UB	-39.125	9.536246	62	-4.1027676	0.0003634325	***
3	NB - UB	-7.250	9.536246	62	-0.7602573	1.0000000000	

3. Analysis over all conditions - **CONFIDENCE**

binningFactor		variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	UB	Confidence	96	0	3	2	2.00	2.25	0.25	0	2.083	0.691	0.071	0.140	1.943	2.223
2	NB	Confidence	96	0	3	2	2.00	2.00	0.00	0	1.938	0.779	0.079	0.158	1.780	2.096
3	BB	Confidence	96	0	3	2	1.75	2.00	0.25	0	1.771	0.801	0.082	0.162	1.609	1.933



1. Binning – Summary



2. Composition – Accuracy

1. ANOVA on **ACCURACY**

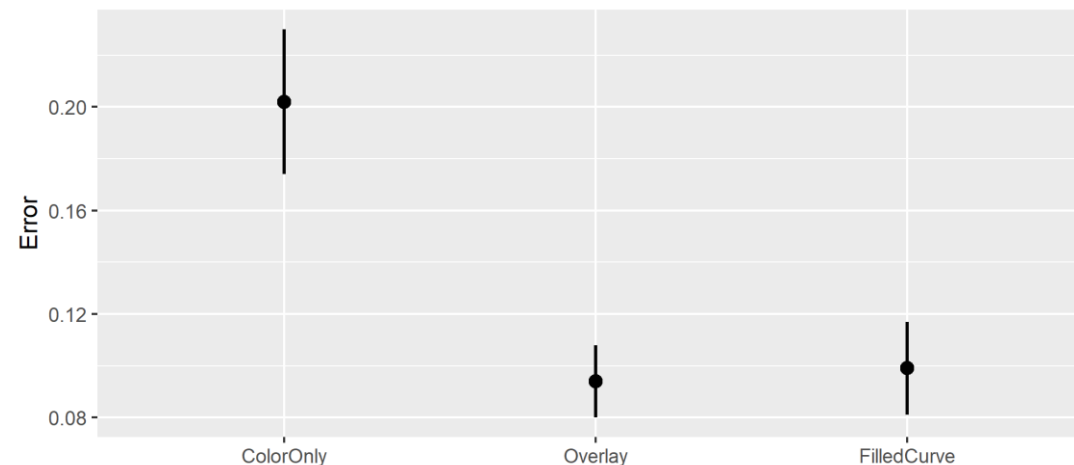
		Error Df	Df.res	F value	Pr(>F)	
1	compositionFactor	withn	2	186	31.517	1.6319e-12 ***
2	binningFactor	usF:F	2	62	34.951	6.8616e-11 ***
3	compositionFactor:binningFactor	withn	4	186	11.735	1.6077e-08 ***

2. Post Hoc on **ACCURACY**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	coloronly - overlay	73.291667	10.96525	186	6.6839914	7.880800e-10	***
2	coloronly - FilledCurve	77.333333	10.96525	186	7.0525799	1.004474e-10	***
3	overlay - FilledCurve	4.041667	10.96525	186	0.3685885	1.000000e+00	

3. Analysis over all conditions - **ACCURACY**

	compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	overlay	Accuracy	96	0.016	0.326	0.059	0.046	0.100	0.054	0.059	0.094	0.070	0.007	0.014	0.080	0.108
2	FilledCurve	Accuracy	96	0.046	0.515	0.063	0.054	0.101	0.047	0.013	0.099	0.087	0.009	0.018	0.081	0.117
3	colorOnly	Accuracy	96	0.016	0.515	0.199	0.096	0.267	0.171	0.151	0.202	0.138	0.014	0.028	0.174	0.230



2. Composition – Time

1. ANOVA on **TIME**

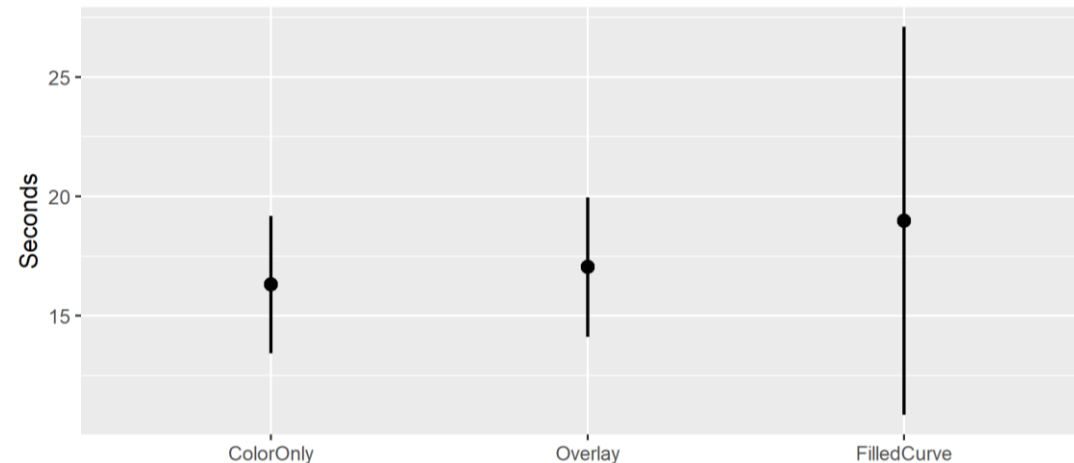
		Error	Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn	2	186	5.63030	0.0042262	**
2	binningFactor	usF:F	2	62	10.86911	8.9848e-05	***
3	compositionFactor:binningFactor	Withn	4	186	0.69025	0.5995589	

2. Post Hoc on **TIME**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	-7.135417	10.53454	186	-0.6773351	1.000000000	
2	ColorOnly - FilledCurve	26.416667	10.53454	186	2.5076230	0.039031968	*
3	Overlay - FilledCurve	33.552083	10.53454	186	3.1849580	0.005093263	**

3. Analysis over all conditions - **TIME**

compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max	
1	ColorOnly	Time	96	2.254	94.321	12.303	7.581	21.029	13.448	9.048	16.318	14.180	1.447	2.873	13.445	19.191
2	Overlay	Time	96	5.077	93.307	11.845	7.971	21.961	13.990	6.912	17.048	14.391	1.469	2.916	14.132	19.964
3	FilledCurve	Time	96	2.564	365.010	7.659	5.387	18.028	12.641	4.505	18.979	40.094	4.092	8.124	10.855	27.103



2. Composition – Confidence

1. ANOVA on **CONFIDENCE**

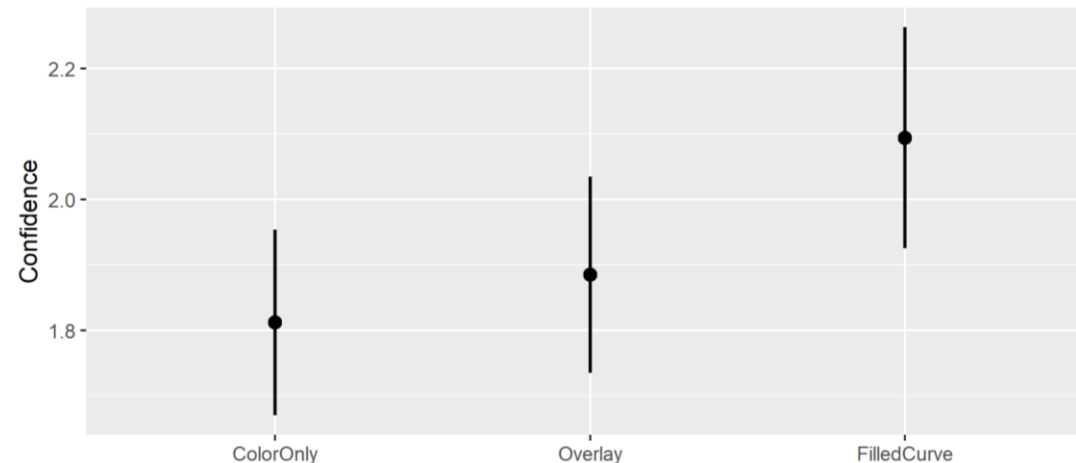
		Error Df	Df.res	F value	Pr(>F)
1	compositionFactor	Withn 2	186	2.1746	0.11653775
2	binningFactor	usF:F 2	62	9.5277	0.00024655 ***
3	compositionFactor:binningFactor	Withn 4	186	1.9478	0.10431684

2. Post Hoc on **CONFIDENCE**

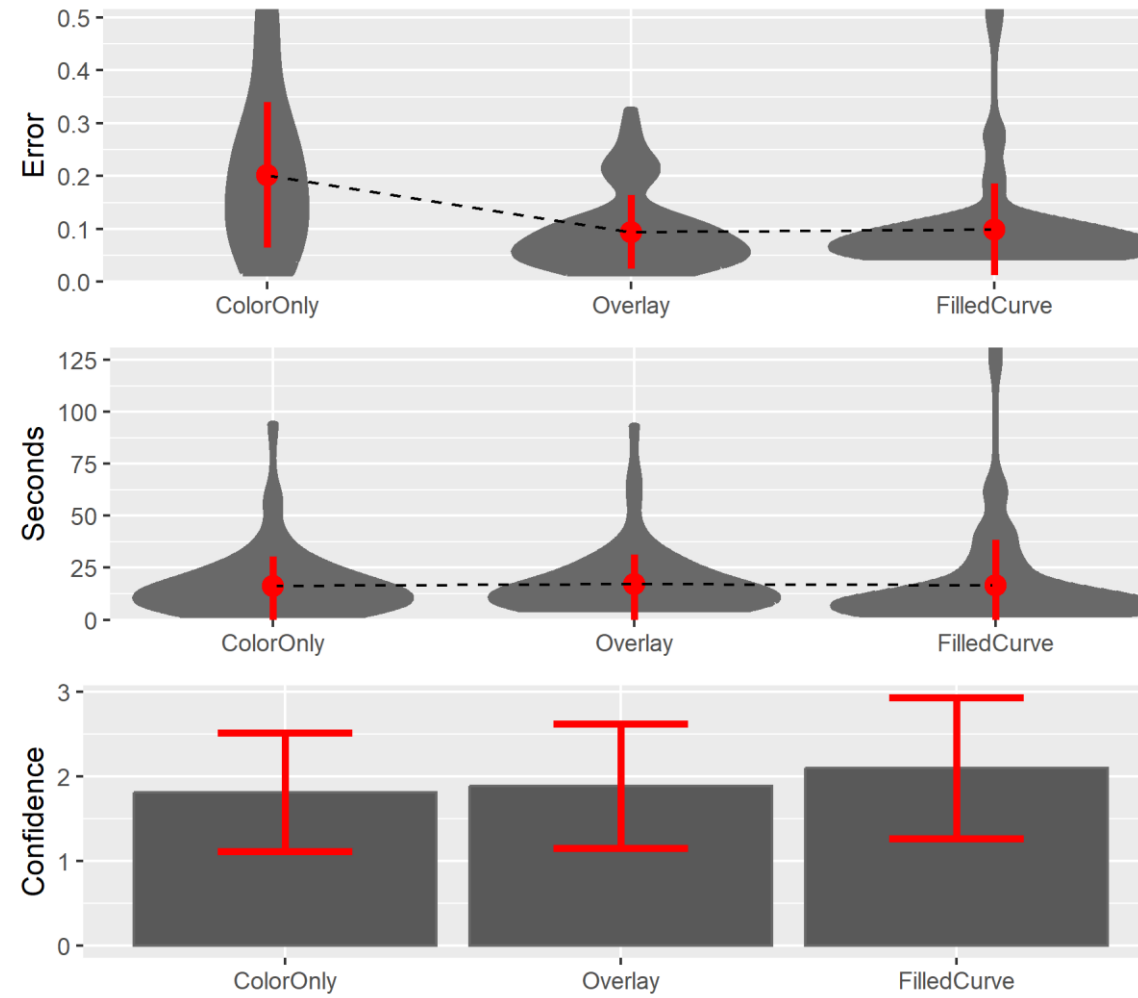
	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	-4.828125	12.27603	186	-0.3932968	1.0000000	
2	ColorOnly - FilledCurve	-24.187500	12.27603	186	-1.9703026	0.1508632	
3	Overlay - FilledCurve	-19.359375	12.27603	186	-1.5770058	0.3494803	

3. Analysis over all conditions - **CONFIDENCE**

compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max	
1	FilledCurve	Confidence	96	0	3	2	2.00	3	1.00	1.483	2.094	0.834	0.085	0.169	1.925	2.263
2	Overlay	Confidence	96	0	3	2	2.00	2	0.00	0.000	1.885	0.738	0.075	0.150	1.735	2.035
3	ColorOnly	Confidence	96	0	3	2	1.75	2	0.25	0.000	1.812	0.701	0.072	0.142	1.670	1.954



2. Composition – Summary



3. Composition x Binning – Accuracy

1. ANOVA on **ACCURACY**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	within	2	186	31.517	1.6319e-12	***
2 binningFactor	usF:F	2	62	34.951	6.8616e-11	***
3 compositionFactor:binningFactor	within	4	186	11.735	1.6077e-08	***

2. Post Hoc on **ACCURACY**

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	colorOnly - overlay	BB - NB	-5.15625	27.82685	186	-0.1852977	1.000000e+00	
2	colorOnly - FilledCurve	BB - NB	-149.84375	27.82685	186	-5.3848623	1.952923e-06	***
3	overlay - FilledCurve	BB - NB	-144.68750	27.82685	186	-5.1995647	4.711017e-06	***
4	colorOnly - overlay	BB - UB	-76.93750	27.82685	186	-2.7648657	5.641427e-02	.
5	colorOnly - FilledCurve	BB - UB	-107.81250	27.82685	186	-3.8744056	1.331970e-03	**
6	overlay - FilledCurve	BB - UB	-30.87500	27.82685	186	-1.1095399	1.000000e+00	
7	colorOnly - overlay	NB - UB	-71.78125	27.82685	186	-2.5795680	9.597911e-02	.
8	colorOnly - FilledCurve	NB - UB	42.03125	27.82685	186	1.5104567	1.000000e+00	
9	overlay - FilledCurve	NB - UB	113.81250	27.82685	186	4.0900247	5.774694e-04	***

3. Analysis over all conditions - **ACCURACY**

compositionFac... ¹	binni... ²	varia... ³	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 Overlay	BB	Accura...	32	0.016	0.28	0.059	0.016	0.095	0.079	0.056	0.065	0.051	0.009	0.018	0.047	0.083
2 Overlay	UB	Accura...	32	0.046	0.326	0.046	0.046	0.046	0	0	0.068	0.063	0.011	0.023	0.045	0.091
3 FilledCurve	NB	Accura...	32	0.054	0.475	0.054	0.054	0.066	0.011	0	0.094	0.091	0.016	0.033	0.061	0.127
4 FilledCurve	UB	Accura...	32	0.046	0.515	0.063	0.063	0.063	0	0	0.095	0.112	0.02	0.041	0.054	0.136
5 FilledCurve	BB	Accura...	32	0.059	0.28	0.101	0.094	0.101	0.007	0.01	0.109	0.047	0.008	0.017	0.092	0.126
6 ColorOnly	BB	Accura...	32	0.016	0.28	0.096	0.079	0.276	0.197	0.025	0.146	0.098	0.017	0.035	0.111	0.181
7 Overlay	NB	Accura...	32	0.054	0.289	0.1	0.1	0.216	0.115	0.031	0.147	0.064	0.011	0.023	0.124	0.17
8 ColorOnly	NB	Accura...	32	0.054	0.475	0.199	0.199	0.235	0.036	0.01	0.222	0.111	0.02	0.04	0.182	0.262
9 ColorOnly	UB	Accura...	32	0.046	0.515	0.193	0.097	0.348	0.251	0.142	0.239	0.177	0.031	0.064	0.175	0.303

3. Composition x Binning – Time

1. ANOVA on **TIME**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	186	5.63030	0.0042262	**
2 binningFactor	usF:F	2	62	10.86911	8.9848e-05	***
3 compositionFactor:binningFactor	Withn	4	186	0.69025	0.5995589	

2. Post Hoc on **TIME**

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	BB - NB	4.65625	25.6529	186	0.1815097	1	
2	ColorOnly - FilledCurve	BB - NB	-31.15625	25.6529	186	-1.2145312	1	
3	Overlay - FilledCurve	BB - NB	-35.81250	25.6529	186	-1.3960408	1	
4	ColorOnly - Overlay	BB - UB	-7.31250	25.6529	186	-0.2850555	1	
5	ColorOnly - FilledCurve	BB - UB	-10.43750	25.6529	186	-0.4068740	1	
6	Overlay - FilledCurve	BB - UB	-3.12500	25.6529	186	-0.1218186	1	
7	ColorOnly - Overlay	NB - UB	-11.96875	25.6529	186	-0.4665651	1	
8	ColorOnly - FilledCurve	NB - UB	20.71875	25.6529	186	0.8076571	1	
9	Overlay - FilledCurve	NB - UB	32.68750	25.6529	186	1.2742223	1	

3. Analysis over all conditions - **TIME**

	compositionFactor	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
	<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1	Overlay	UB	Time	32	5.40	27.8	10.3	7.43	12.8	5.38	4.29	11.5	5.98	1.06	2.16	9.36	13.7
2	ColorOnly	UB	Time	32	2.57	29.9	11.2	6.81	14.3	7.51	4.93	11.6	6.65	1.18	2.40	9.23	14.0
3	FilledCurve	NB	Time	32	3.26	65.2	7.22	5.25	15.1	9.81	3.53	15.1	17.9	3.16	6.44	8.67	21.5
4	ColorOnly	NB	Time	32	2.25	60.3	15.2	7.58	23.6	16.0	11.6	17.5	13.2	2.34	4.77	12.7	22.2
5	Overlay	NB	Time	32	5.69	69.8	13.3	9.69	26.6	16.9	9.11	19.1	14.7	2.60	5.30	13.8	24.4
6	ColorOnly	BB	Time	32	3.79	94.3	14.0	8.52	22.7	14.2	9.89	19.8	19.0	3.35	6.84	13.0	26.7
7	Overlay	BB	Time	32	5.08	93.3	15.5	8.70	23.0	14.3	10.9	20.5	18.3	3.24	6.60	13.9	27.1
8	FilledCurve	BB	Time	32	2.87	123.	10.1	7.15	28.8	21.6	6.09	20.5	23.9	4.22	8.61	11.9	29.1
9	FilledCurve	UB	Time	32	2.56	365.	5.96	4.55	13.0	8.46	2.49	21.3	63.4	11.2	22.8	-1.54	44.1

3. Composition x Binning – Confidence

1. ANOVA on **CONFIDENCE**

		Error	Df	Df.res	F value	Pr(>F)
1	compositionFactor	Withn	2	186	2.1746	0.11653775
2	binningFactor	usF:F	2	62	9.5277	0.00024655 ***
3	compositionFactor:binningFactor	Withn	4	186	1.9478	0.10431684

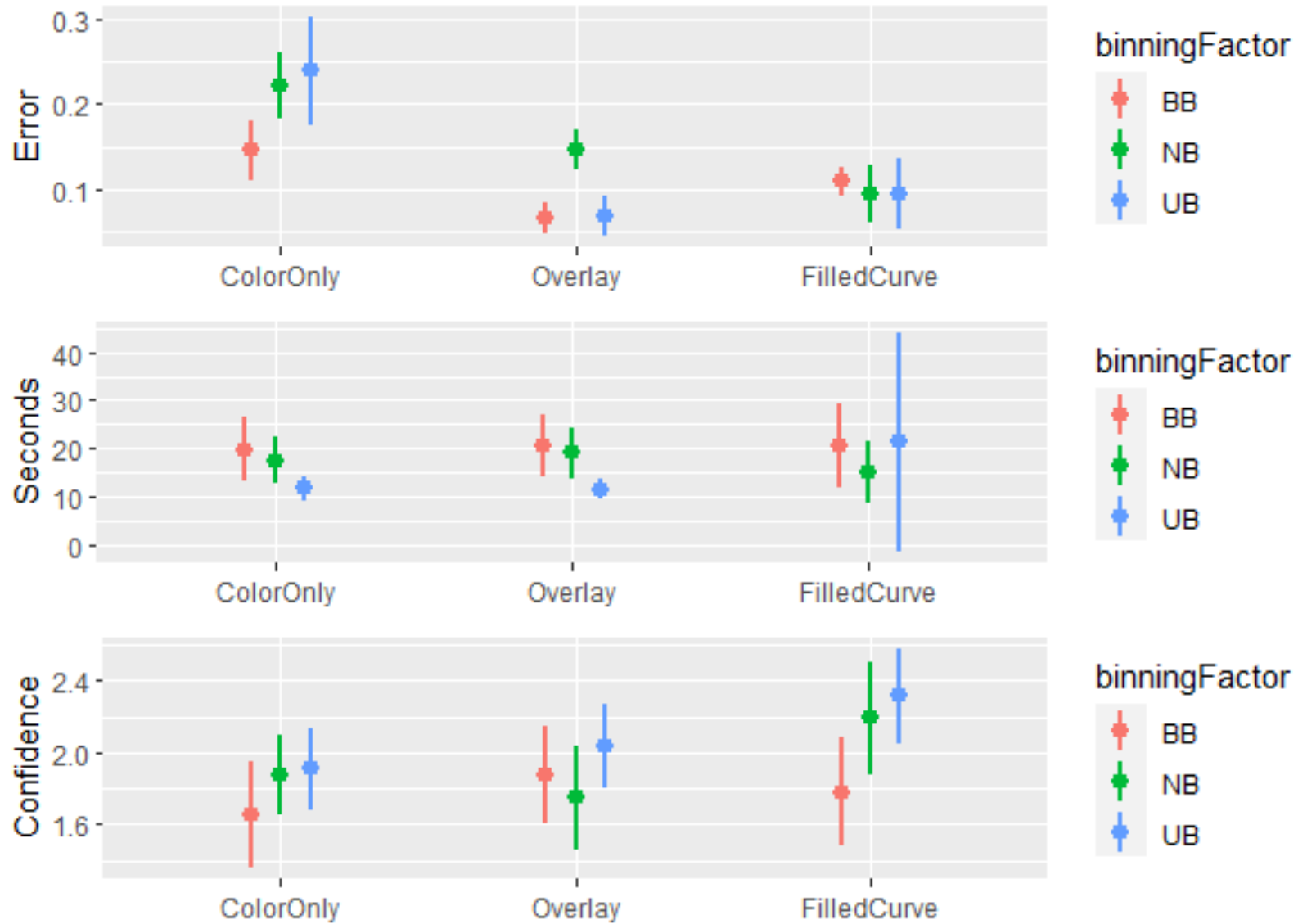
2. Post Hoc on **CONFIDENCE**

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	BB - NB	-31.90625	30.1738	186	-1.0574156	1.0000000	
2	ColorOnly - FilledCurve	BB - NB	24.18750	30.1738	186	0.8016060	1.0000000	
3	Overlay - FilledCurve	BB - NB	56.09375	30.1738	186	1.8590216	0.5814336	
4	ColorOnly - Overlay	BB - UB	-15.00000	30.1738	186	-0.4971200	1.0000000	
5	ColorOnly - FilledCurve	BB - UB	59.56250	30.1738	186	1.9739806	0.4487803	
6	Overlay - FilledCurve	BB - UB	74.56250	30.1738	186	2.4711005	0.1293265	
7	ColorOnly - Overlay	NB - UB	16.90625	30.1738	186	0.5602956	1.0000000	
8	ColorOnly - FilledCurve	NB - UB	35.37500	30.1738	186	1.1723746	1.0000000	
9	Overlay - FilledCurve	NB - UB	18.46875	30.1738	186	0.6120790	1.0000000	

3. Analysis over all conditions - **CONFIDENCE**

	compositionFactor	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	FilledCurve	UB	Confidence	32	0	3	2	2.00	3	1.00	1.483	2.312	0.738	0.130	0.266	2.046	2.578
2	FilledCurve	NB	Confidence	32	0	3	2	2.00	3	1.00	1.483	2.188	0.859	0.152	0.310	1.878	2.498
3	Overlay	UB	Confidence	32	0	3	2	2.00	2	0.00	0.000	2.031	0.647	0.114	0.233	1.798	2.264
4	ColorOnly	UB	Confidence	32	0	3	2	2.00	2	0.00	0.000	1.906	0.641	0.113	0.231	1.675	2.137
5	ColorOnly	NB	Confidence	32	1	3	2	1.75	2	0.25	0.000	1.875	0.609	0.108	0.220	1.655	2.095
6	Overlay	BB	Confidence	32	0	3	2	2.00	2	0.00	0.000	1.875	0.751	0.133	0.271	1.604	2.146
7	FilledCurve	BB	Confidence	32	0	3	2	1.00	2	1.00	0.000	1.781	0.832	0.147	0.300	1.481	2.081
8	Overlay	NB	Confidence	32	0	3	2	2.00	2	0.00	0.000	1.750	0.803	0.142	0.290	1.460	2.040
9	ColorOnly	BB	Confidence	32	0	3	2	1.00	2	1.00	0.000	1.656	0.827	0.146	0.298	1.358	1.954

3. Composition x Binning – Summary



T3 – Flaw Detection Task

1. Binning – Accuracy

1. ANOVA on **ACCURACY**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	44.1379	< 2.22e-16	***
2 dataflawFactor	usrFctr:dF	2	62	22.9062	3.5596e-08	***
3 binningFactor	usrFctr:bF	2	62	10.3394	0.00013333	***
4 compositionFactor:dataflawFactor	Withn	4	682	14.3023	3.2238e-11	***
5 compositionFactor:binningFactor	Withn	4	682	4.7882	0.00081624	***
6 dataflawFactor:binningFactor	Withn	4	682	4.2630	0.00205160	**
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	4.9189	6.2829e-06	***

2. Post Hoc on **ACCURACY**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	-12.02083	17.18844	62	-0.6993557	1.0000000000	
2	BB - UB	60.87500	17.18844	62	3.5416246	0.0022845705	**
3	NB - UB	72.89583	17.18844	62	4.2409803	0.0002264405	***

3. Analysis over all conditions - **ACCURACY**

	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	NB	Accuracy	288	0	1	0.5	0	1	1	0.741	0.500	0.501	0.030	0.058	0.442	0.558
2	BB	Accuracy	288	0	1	0.0	0	1	1	0.000	0.479	0.500	0.029	0.058	0.421	0.537
3	UB	Accuracy	288	0	1	0.0	0	1	1	0.000	0.389	0.488	0.029	0.057	0.332	0.446

1. Binning – Time

1. ANOVA on **TIME**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	15.40645	2.8563e-07	***
2 dataflawFactor	usrFctr:dF	2	62	25.96428	6.4347e-09	***
3 binningFactor	usrFctr:bF	2	62	6.76459	0.00220082	**
4 compositionFactor:dataflawFactor	Withn	4	682	5.30293	0.00032859	***
5 compositionFactor:binningFactor	Withn	4	682	2.89218	0.02158952	*
6 dataflawFactor:binningFactor	Withn	4	682	2.14659	0.07352764	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	0.88312	0.53022593	

2. Post Hoc on **TIME**

1	BB - NB	44.2638889	13.76262	62	3.21624087	0.006195092	**
2	BB - UB	43.4027778	13.76262	62	3.15367202	0.007457539	**
3	NB - UB	-0.8611111	13.76262	62	-0.06256885	1.000000000	

3. Analysis over all conditions - **TIME**

binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max	
1	NB	Time	288	2.239	408.356	10.595	7.013	16.829	9.816	6.132	16.955	27.353	1.612	3.172	13.783	20.127
2	UB	Time	288	2.721	137.468	11.287	7.163	18.525	11.362	6.967	17.272	17.579	1.036	2.039	15.233	19.311
3	BB	Time	288	3.266	949.314	11.000	7.309	18.160	10.851	6.861	20.193	59.990	3.535	6.958	13.235	27.151

1. Binning – Confidence

1. ANOVA on **CONFIDENCE**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	12.2477	5.9457e-06	***
2 dataflawFactor	usrFctr:dF	2	62	15.3503	3.8423e-06	***
3 binningFactor	usrFctr:bF	2	62	4.0103	0.02302175	*
4 compositionFactor:dataflawFactor	Withn	4	682	3.6807	0.00563812	**
5 compositionFactor:binningFactor	Withn	4	682	5.2770	0.00034407	***
6 dataflawFactor:binningFactor	Withn	4	682	2.0460	0.08632723	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	2.9498	0.00299891	**

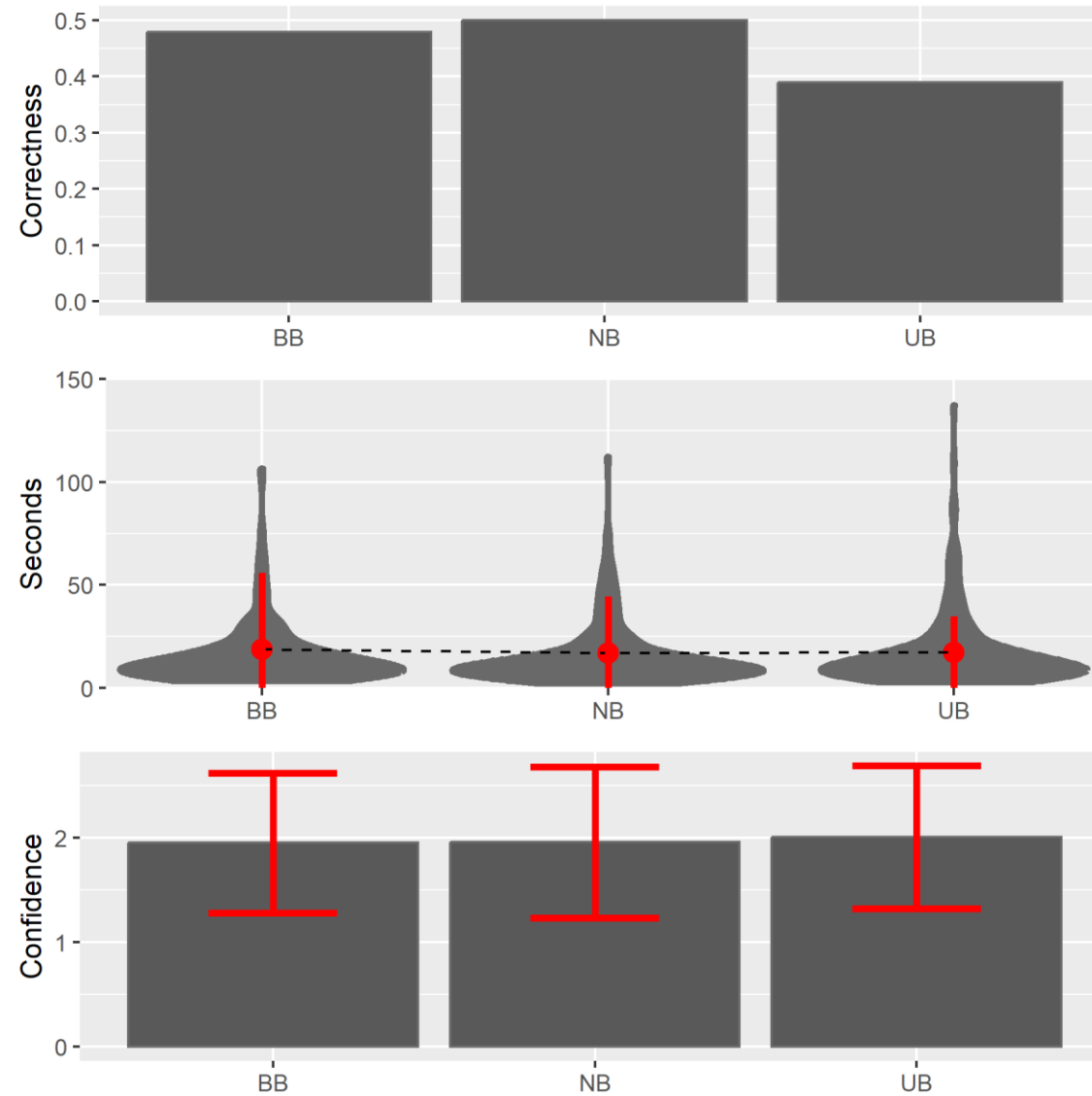
2. Post Hoc on **CONFIDENCE**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	BB - NB	-14.92708	16.54451	62	-0.9022379	1.00000000	
2	BB - UB	-45.92708	16.54451	62	-2.7759713	0.02180204	*
3	NB - UB	-31.00000	16.54451	62	-1.8737334	0.19704527	

3. Analysis over all conditions - **CONFIDENCE**

	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	UB	Confidence	288	0	3	2	2	2	0	0	2.007	0.683	0.040	0.079	1.928	2.086
2	NB	Confidence	288	0	3	2	2	2	0	0	1.958	0.722	0.043	0.084	1.874	2.042
3	BB	Confidence	288	0	3	2	2	2	0	0	1.951	0.671	0.040	0.078	1.873	2.029

1. Binning – Summary



2. Composition – Accuracy

1. ANOVA on **ACCURACY**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	44.1379	< 2.22e-16	***
2 dataflawFactor	usrFctr:dF	2	62	22.9062	3.5596e-08	***
3 binningFactor	usrFctr:bF	2	62	10.3394	0.00013333	***
4 compositionFactor:dataflawFactor	Withn	4	682	14.3023	3.2238e-11	***
5 compositionFactor:binningFactor	Withn	4	682	4.7882	0.00081624	***
6 dataflawFactor:binningFactor	Withn	4	682	4.2630	0.00205160	**
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	4.9189	6.2829e-06	***

2. Post Hoc on **ACCURACY**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	-171.73264	18.86076	682	-9.105289	2.815205e-18	***
2	ColorOnly - FilledCurve	-123.71528	18.86076	682	-6.559402	3.204304e-10	***
3	Overlay - FilledCurve	48.01736	18.86076	682	2.545887	3.335673e-02	*

3. Analysis over all conditions - **ACCURACY**

	compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci min	ci max
1	Overlay	Accuracy	288	0	1	1	0	1	1	0	0.590	0.493	0.029	0.057	0.533	0.647
2	FilledCurve	Accuracy	288	0	1	1	0	1	1	0	0.517	0.501	0.029	0.058	0.459	0.575
3	ColorOnly	Accuracy	288	0	1	0	0	1	1	0	0.260	0.440	0.026	0.051	0.209	0.311

2. Composition – Time

1. ANOVA on **TIME**

		Error Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn	2	682	15.40645	2.8563e-07 ***
2	dataflawFactor	usrFctr:dF	2	62	25.96428	6.4347e-09 ***
3	binningFactor	usrFctr:bF	2	62	6.76459	0.00220082 **
4	compositionFactor:dataflawFactor	Withn	4	682	5.30293	0.00032859 ***
5	compositionFactor:binningFactor	Withn	4	682	2.89218	0.02158952 *
6	dataflawFactor:binningFactor	Withn	4	682	2.14659	0.07352764 .
7	compositionFactor:dataflawFactor:binningFactor	Withn	8	682	0.88312	0.53022593

2. Post Hoc on **TIME**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	-65.44097	17.48706	682	-3.742251	5.932149e-04	***
2	ColorOnly - FilledCurve	29.36806	17.48706	682	1.679416	2.805868e-01	
3	Overlay - FilledCurve	94.80903	17.48706	682	5.421668	2.460772e-07	***

3. Analysis over all conditions - **TIME**

	compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	FilledCurve	Time	288	3.782	340.257	9.043	6.980	15.482	8.502	4.628	15.370	23.636	1.393	2.741	12.629	18.111
2	ColorOnly	Time	288	2.239	112.224	11.158	6.894	18.498	11.604	7.809	16.821	16.888	0.995	1.959	14.862	18.780
3	overlay	Time	288	3.341	949.314	12.601	7.976	21.160	13.185	8.053	22.229	61.582	3.629	7.142	15.087	29.371

2. Composition – Confidence

1. ANOVA on **CONFIDENCE**

		Error	Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn	2	682	12.2477	5.9457e-06	***
2	dataflawFactor	usrFctr:dF	2	62	15.3503	3.8423e-06	***
3	binningFactor	usrFctr:bF	2	62	4.0103	0.02302175	*
4	compositionFactor:dataflawFactor	Withn	4	682	3.6807	0.00563812	**
5	compositionFactor:binningFactor	Withn	4	682	5.2770	0.00034407	***
6	dataflawFactor:binningFactor	Withn	4	682	2.0460	0.08632723	.
7	compositionFactor:dataflawFactor:binningFactor	Withn	8	682	2.9498	0.00299891	**

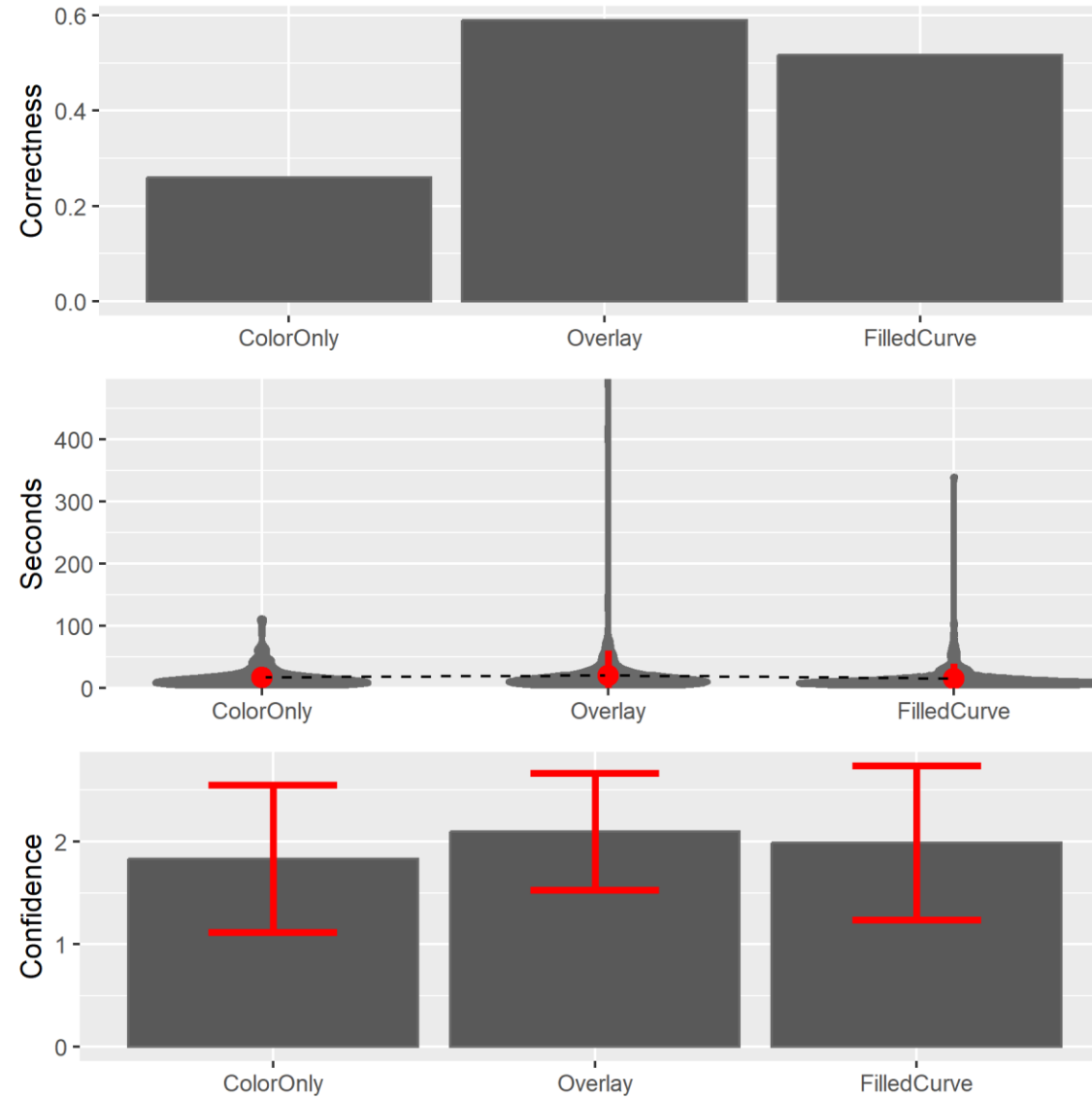
2. Post Hoc on **CONFIDENCE**

	contrast	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	-76.899306	18.49944	682	-4.1568445	1.091327e-04	***
2	ColorOnly - FilledCurve	-81.486111	18.49944	682	-4.4047875	3.687758e-05	***
3	Overlay - FilledCurve	-4.586806	18.49944	682	-0.2479429	1.000000e+00	

3. Analysis over all conditions - **CONFIDENCE**

	compositionFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	Overlay	Confidence	288	0	3	2	2	2	0	0	2.097	0.570	0.034	0.066	2.031	2.163
2	FilledCurve	Confidence	288	0	3	2	2	2	0	0	1.986	0.751	0.044	0.087	1.899	2.073
3	ColorOnly	Confidence	288	0	3	2	2	2	0	0	1.833	0.718	0.042	0.083	1.750	1.916

2. Composition – Summary



3. Composition x Binning – Accuracy

1. ANOVA on **ACCURACY**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	44.1379	< 2.22e-16	***
2 dataflawFactor	usrFctr:dF	2	62	22.9062	3.5596e-08	***
3 binningFactor	usrFctr:bF	2	62	10.3394	0.00013333	***
4 compositionFactor:dataflawFactor	Withn	4	682	14.3023	3.2238e-11	***
5 compositionFactor:binningFactor	Withn	4	682	4.7882	0.00081624	***
6 dataflawFactor:binningFactor	Withn	4	682	4.2630	0.00205160	**
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	4.9189	6.2829e-06	***

2. Post Hoc on **ACCURACY**

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	BB - NB	-99.44792	47.89745	682	-2.0762674	0.344189092	
2	ColorOnly - FilledCurve	BB - NB	-27.33333	47.89745	682	-0.5706636	1.000000000	
3	Overlay - FilledCurve	BB - NB	72.11458	47.89745	682	1.5056037	1.000000000	
4	ColorOnly - Overlay	BB - UB	-183.28125	47.89745	682	-3.8265344	0.001277070	**
5	ColorOnly - FilledCurve	BB - UB	-6.96875	47.89745	682	-0.1454931	1.000000000	
6	Overlay - FilledCurve	BB - UB	176.31250	47.89745	682	3.6810413	0.002255705	**
7	ColorOnly - Overlay	NB - UB	-83.83333	47.89745	682	-1.7502671	0.724697155	
8	ColorOnly - FilledCurve	NB - UB	20.36458	47.89745	682	0.4251705	1.000000000	
9	Overlay - FilledCurve	NB - UB	104.19792	47.89745	682	2.1754376	0.269460649	

3. Analysis over all conditions - **ACCURACY**

compositionFactor	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 Overlay	BB	Accuracy	96	0	1	1	0	1	1	0	0.677	0.47	0.048	0.095	0.582	0.772
2 Overlay	NB	Accuracy	96	0	1	1	0	1	1	0	0.656	0.477	0.049	0.097	0.559	0.753
3 FilledCurve	NB	Accuracy	96	0	1	1	0	1	1	0	0.542	0.501	0.051	0.101	0.441	0.643
4 FilledCurve	UB	Accuracy	96	0	1	1	0	1	1	0	0.521	0.502	0.051	0.102	0.419	0.623
5 FilledCurve	BB	Accuracy	96	0	1	0	0	1	1	0	0.49	0.503	0.051	0.102	0.388	0.592
6 Overlay	UB	Accuracy	96	0	1	0	0	1	1	0	0.438	0.499	0.051	0.101	0.337	0.539
7 ColorOnly	NB	Accuracy	96	0	1	0	0	1	1	0	0.302	0.462	0.047	0.094	0.208	0.396
8 ColorOnly	BB	Accuracy	96	0	1	0	0	1	1	0	0.271	0.447	0.046	0.091	0.18	0.362
9 ColorOnly	UB	Accuracy	96	0	1	0	0	0	0	0	0.208	0.408	0.042	0.083	0.125	0.291

3. Composition x Binning – Time

1. ANOVA on TIME

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	15.40645	2.8563e-07	***
2 dataflawFactor	usrFctr:dF	2	62	25.96428	6.4347e-09	***
3 binningFactor	usrFctr:bF	2	62	6.76459	0.00220082	**
4 compositionFactor:dataflawFactor	Withn	4	682	5.30293	0.00032859	***
5 compositionFactor:binningFactor	Withn	4	682	2.89218	0.02158952	*
6 dataflawFactor:binningFactor	Withn	4	682	2.14659	0.07352764	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	0.88312	0.53022593	

2. Post Hoc on TIME

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	BB - NB	-106.500000	43.00355	682	-2.47653950	0.12156993	
2	ColorOnly - FilledCurve	BB - NB	-93.125000	43.00355	682	-2.16551869	0.27624548	
3	Overlay - FilledCurve	BB - NB	13.375000	43.00355	682	0.31102081	1.00000000	
4	ColorOnly - Overlay	BB - UB	-130.177083	43.00355	682	-3.02712384	0.02305774	*
5	ColorOnly - FilledCurve	BB - UB	-89.854167	43.00355	682	-2.08945909	0.33332764	
6	Overlay - FilledCurve	BB - UB	40.322917	43.00355	682	0.93766475	1.00000000	
7	ColorOnly - Overlay	NB - UB	-23.677083	43.00355	682	-0.55058434	1.00000000	
8	ColorOnly - FilledCurve	NB - UB	3.270833	43.00355	682	0.07605961	1.00000000	
9	Overlay - FilledCurve	NB - UB	26.947917	43.00355	682	0.62664394	1.00000000	

3. Analysis over all conditions - TIME

compositionFactor	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 FilledCurve	NB	Time	96	4.06	58.0	9.13	6.98	13.2	6.23	4.62	12.4	9.71	0.991	1.97	10.5	14.4
2 ColorOnly	BB	Time	96	3.27	106.	10.8	6.98	17.2	10.2	7.54	14.9	13.9	1.42	2.82	12.1	17.7
3 FilledCurve	UB	Time	96	4.77	86.6	8.08	6.66	17.3	10.6	3.66	15.2	15.5	1.58	3.14	12.0	18.3
4 ColorOnly	NB	Time	96	2.24	112.	11.2	6.77	19.6	12.8	7.69	17.7	18.0	1.84	3.66	14.0	21.4
5 ColorOnly	UB	Time	96	2.72	109.	11.9	7.04	18.9	11.9	7.89	17.9	18.4	1.87	3.72	14.1	21.6
6 FilledCurve	BB	Time	96	3.78	340.	9.68	7.37	16.3	8.90	5.32	18.5	36.5	3.73	7.40	11.1	25.9
7 Overlay	UB	Time	96	4.63	137.	13.3	8.93	20.4	11.5	7.74	18.8	18.7	1.91	3.79	15.0	22.6
8 Overlay	NB	Time	96	3.43	408.	12.1	7.52	22.3	14.8	7.99	20.7	42.5	4.34	8.61	12.1	29.4
9 Overlay	BB	Time	96	3.34	949.	12.4	7.73	21.3	13.6	8.53	27.1	96.2	9.82	19.5	7.64	46.6

3. Composition x Binning – Confidence

1. ANOVA on CONFIDENCE

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	12.2477	5.9457e-06	***
2 dataflawFactor	usrFctr:dF	2	62	15.3503	3.8423e-06	***
3 binningFactor	usrFctr:bF	2	62	4.0103	0.02302175	*
4 compositionFactor:dataflawFactor	Withn	4	682	3.6807	0.00563812	**
5 compositionFactor:binningFactor	Withn	4	682	5.2770	0.00034407	***
6 dataflawFactor:binningFactor	Withn	4	682	2.0460	0.08632723	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	2.9498	0.00299891	**

2. Post Hoc on CONFIDENCE

	compositionFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	BB - NB	10.937500	46.35802	682	0.23593546	1.0000000000	
2	ColorOnly - FilledCurve	BB - NB	2.229167	46.35802	682	0.04808589	1.0000000000	
3	Overlay - FilledCurve	BB - NB	-8.708333	46.35802	682	-0.18784957	1.0000000000	
4	ColorOnly - Overlay	BB - UB	-35.531250	46.35802	682	-0.76645319	1.0000000000	
5	ColorOnly - FilledCurve	BB - UB	136.114583	46.35802	682	2.93616062	0.0309141877	*
6	Overlay - FilledCurve	BB - UB	171.645833	46.35802	682	3.70261381	0.0020756988	**
7	ColorOnly - Overlay	NB - UB	-46.468750	46.35802	682	-1.00238865	1.0000000000	
8	ColorOnly - FilledCurve	NB - UB	133.885417	46.35802	682	2.88807472	0.0359901413	*
9	Overlay - FilledCurve	NB - UB	180.354167	46.35802	682	3.89046338	0.0009887265	***

3. Analysis over all conditions - CONFIDENCE

	compositionFactor	binningFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	Overlay	NB	Confidence	96	0	3	2	2	3	1	0	2.146	0.615	0.063	0.125	2.021	2.271
2	FilledCurve	UB	Confidence	96	0	3	2	2	3	1	0	2.115	0.738	0.075	0.150	1.965	2.265
3	Overlay	BB	Confidence	96	0	3	2	2	2	0	0	2.073	0.585	0.060	0.118	1.955	2.191
4	Overlay	UB	Confidence	96	0	3	2	2	2	0	0	2.073	0.508	0.052	0.103	1.970	2.176
5	FilledCurve	NB	Confidence	96	0	3	2	2	2	0	0	1.927	0.757	0.077	0.153	1.774	2.080
6	FilledCurve	BB	Confidence	96	0	3	2	2	2	0	0	1.917	0.749	0.076	0.152	1.765	2.069
7	ColorOnly	BB	Confidence	96	0	3	2	2	2	0	0	1.865	0.659	0.067	0.133	1.732	1.998
8	ColorOnly	UB	Confidence	96	0	3	2	2	2	0	0	1.833	0.749	0.076	0.152	1.681	1.985
9	ColorOnly	NB	Confidence	96	0	3	2	2	2	0	0	1.802	0.749	0.076	0.152	1.650	1.954

4. Flaw x Binning – Accuarcy

1. ANOVA on **ACCURACY**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	44.1379	< 2.22e-16	***
2 dataflawFactor	usrFctr:dF	2	62	22.9062	3.5596e-08	***
3 binningFactor	usrFctr:bF	2	62	10.3394	0.00013333	***
4 compositionFactor:dataflawFactor	Withn	4	682	14.3023	3.2238e-11	***
5 compositionFactor:binningFactor	Withn	4	682	4.7882	0.00081624	***
6 dataflawFactor:binningFactor	Withn	4	682	4.2630	0.00205160	**
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	4.9189	6.2829e-06	***

2. Post Hoc on **ACCURACY**

	dataflawFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	Gap - Outlier	BB - NB	4.760417	47.82052	682	0.09954758	1.00000000	
2	Gap - Spike	BB - NB	160.218750	47.82052	682	3.35041857	0.00766226	**
3	Outlier - Spike	BB - NB	155.458333	47.82052	682	3.25087100	0.01086392	*
4	Gap - Outlier	BB - UB	-57.385417	47.82052	682	-1.20001664	1.00000000	
5	Gap - Spike	BB - UB	73.843750	47.82052	682	1.54418551	1.00000000	
6	Outlier - Spike	BB - UB	131.229167	47.82052	682	2.74420215	0.05602813	.
7	Gap - Outlier	NB - UB	-62.145833	47.82052	682	-1.29956422	1.00000000	
8	Gap - Spike	NB - UB	-86.375000	47.82052	682	-1.80623307	0.64190390	
9	Outlier - Spike	NB - UB	-24.229167	47.82052	682	-0.50666885	1.00000000	

3. Analysis over all conditions - **ACCURACY**

binningFactor	dataflawFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 BB	Gap	Accuracy	96	0	1	0.5	0	1	1	0.741	0.5	0.503	0.051	0.102	0.398	0.602
2 NB	Gap	Accuracy	96	0	1	0	0	1	1	0	0.406	0.494	0.05	0.1	0.306	0.506
3 UB	Gap	Accuracy	96	0	1	0	0	1	1	0	0.406	0.494	0.05	0.1	0.306	0.506
4 BB	Outlier	Accuracy	96	0	1	0	0	1	1	0	0.365	0.484	0.049	0.098	0.267	0.463
5 NB	Outlier	Accuracy	96	0	1	0	0	1	1	0	0.333	0.474	0.048	0.096	0.237	0.429
6 UB	Outlier	Accuracy	96	0	1	0	0	0	0	0	0.219	0.416	0.042	0.084	0.135	0.303
7 NB	Spike	Accuracy	96	0	1	1	1	1	0	0	0.76	0.429	0.044	0.087	0.673	0.847
8 BB	Spike	Accuracy	96	0	1	1	0	1	1	0	0.573	0.497	0.051	0.101	0.472	0.674
9 UB	Spike	Accuracy	96	0	1	1	0	1	1	0	0.542	0.501	0.051	0.101	0.441	0.643

4. Flaw x Binning – Time

1. ANOVA on TIME

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	15.40645	2.8563e-07	***
2 dataflawFactor	usrFctr:dF	2	62	25.96428	6.4347e-09	***
3 binningFactor	usrFctr:bF	2	62	6.76459	0.00220082	**
4 compositionFactor:dataflawFactor	Withn	4	682	5.30293	0.00032859	***
5 compositionFactor:binningFactor	Withn	4	682	2.89218	0.02158952	*
6 dataflawFactor:binningFactor	Withn	4	682	2.14659	0.07352764	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	0.88312	0.53022593	

2. Post Hoc on TIME

	dataflawFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	Gap - Outlier	BB - NB	-53.635417	42.77916	682	-1.2537744	1.00000000	
2	Gap - Spike	BB - NB	36.614583	42.77916	682	0.8558977	1.00000000	
3	Outlier - Spike	BB - NB	90.250000	42.77916	682	2.1096721	0.31725311	
4	Gap - Outlier	BB - UB	-75.989583	42.77916	682	-1.7763225	0.68512970	
5	Gap - Spike	BB - UB	42.604167	42.77916	682	0.9959094	1.00000000	
6	Outlier - Spike	BB - UB	118.593750	42.77916	682	2.7722319	0.05147335	.
7	Gap - Outlier	NB - UB	-22.354167	42.77916	682	-0.5225481	1.00000000	
8	Gap - Spike	NB - UB	5.989583	42.77916	682	0.1400117	1.00000000	
9	Outlier - Spike	NB - UB	28.343750	42.77916	682	0.6625598	1.00000000	

3. Analysis over all conditions - TIME

binningFactor	dataflawFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 NB	Gap	Time	96	2.24	75.0	11.3	6.85	22.2	15.3	7.91	17.4	15.7	1.60	3.18	14.2	20.6
2 BB	Gap	Time	96	3.35	106.	12.6	7.96	22.1	14.2	7.93	17.7	15.5	1.58	3.14	14.5	20.8
3 UB	Gap	Time	96	3.28	109.	12.5	7.64	22.8	15.1	8.73	20.1	20.6	2.10	4.17	15.9	24.2
4 UB	Outlier	Time	96	2.81	86.6	12.1	7.76	19.2	11.5	7.60	17.1	14.9	1.52	3.02	14.1	20.2
5 NB	Outlier	Time	96	3.44	408.	11.6	7.52	22.6	15.0	6.92	21.6	43.4	4.43	8.80	12.8	30.4
6 BB	Outlier	Time	96	3.27	949.	11.9	7.29	19.1	11.8	8.32	29.1	101.	10.4	20.6	8.58	49.7
7 NB	Spike	Time	96	3.43	67.0	9.87	6.70	13.3	6.57	4.99	11.8	8.95	0.914	1.81	10.0	13.6
8 BB	Spike	Time	96	3.34	102.	9.23	6.79	14.1	7.35	5.02	13.8	14.4	1.47	2.92	10.8	16.7
9 UB	Spike	Time	96	2.72	137.	9.13	6.74	16.2	9.46	5.16	14.6	16.5	1.69	3.35	11.3	18.0

4. Flaw x Binning – Confidence

1. ANOVA on **CONFIDENCE**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	12.2477	5.9457e-06	***
2 dataflawFactor	usrFctr:dF	2	62	15.3503	3.8423e-06	***
3 binningFactor	usrFctr:bF	2	62	4.0103	0.02302175	*
4 compositionFactor:dataflawFactor	Withn	4	682	3.6807	0.00563812	**
5 compositionFactor:binningFactor	Withn	4	682	5.2770	0.00034407	***
6 dataflawFactor:binningFactor	Withn	4	682	2.0460	0.08632723	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	2.9498	0.00299891	**

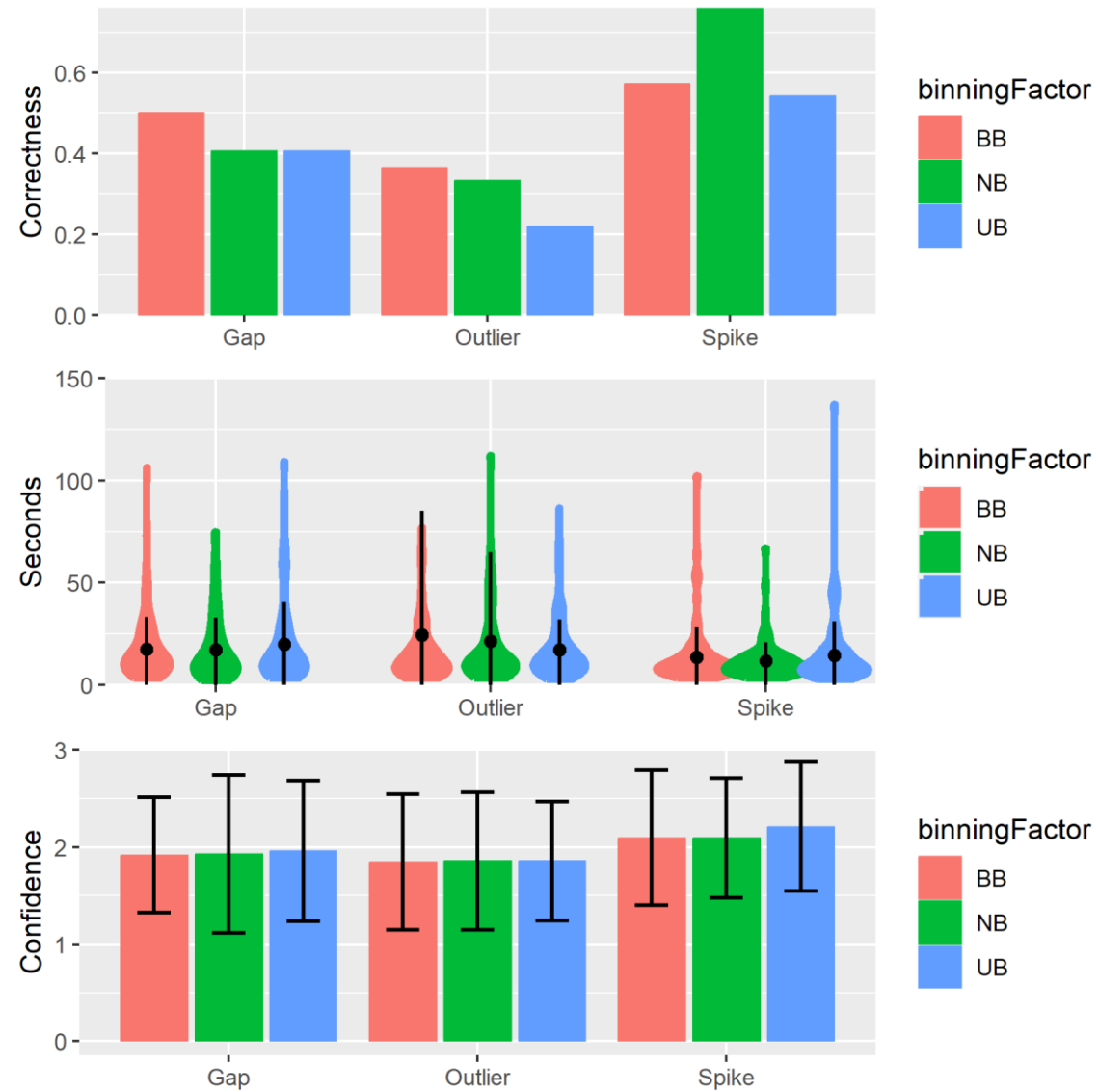
2. Post Hoc on **CONFIDENCE**

	dataflawFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	Gap - Outlier	BB - NB	-24.14583	46.50163	682	-0.5192470	1.0000000	
2	Gap - Spike	BB - NB	-37.78125	46.50163	682	-0.8124715	1.0000000	
3	Outlier - Spike	BB - NB	-13.63542	46.50163	682	-0.2932245	1.0000000	
4	Gap - Outlier	BB - UB	-49.35417	46.50163	682	-1.0613427	1.0000000	
5	Gap - Spike	BB - UB	52.40625	46.50163	682	1.1269766	1.0000000	
6	Outlier - Spike	BB - UB	101.76042	46.50163	682	2.1883193	0.2608638	
7	Gap - Outlier	NB - UB	-25.20833	46.50163	682	-0.5420957	1.0000000	
8	Gap - Spike	NB - UB	90.18750	46.50163	682	1.9394481	0.4757295	
9	Outlier - Spike	NB - UB	115.39583	46.50163	682	2.4815438	0.1198916	

3. Analysis over all conditions - **CONFIDENCE**

	binningFactor	dataflawFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	UB	Gap	Confidence	96	0	3	2	2	2.00	0.00	0	1.958	0.724	0.074	0.147	1.811	2.105
2	NB	Gap	Confidence	96	0	3	2	2	2.00	0.00	0	1.927	0.811	0.083	0.164	1.763	2.091
3	BB	Gap	Confidence	96	0	3	2	2	2.00	0.00	0	1.917	0.592	0.060	0.120	1.797	2.037
4	NB	Outlier	Confidence	96	0	3	2	2	2.00	0.00	0	1.854	0.711	0.073	0.144	1.710	1.998
5	UB	Outlier	Confidence	96	0	3	2	2	2.00	0.00	0	1.854	0.615	0.063	0.125	1.729	1.979
6	BB	Outlier	Confidence	96	0	3	2	2	2.00	0.00	0	1.844	0.701	0.072	0.142	1.702	1.986
7	UB	Spike	Confidence	96	0	3	2	2	3.00	1.00	0	2.208	0.664	0.068	0.134	2.074	2.342
8	BB	Spike	Confidence	96	0	3	2	2	2.25	0.25	0	2.094	0.697	0.071	0.141	1.953	2.235
9	NB	Spike	Confidence	96	0	3	2	2	2.00	0.00	0	2.094	0.617	0.063	0.125	1.969	2.219

4. Flaw x Binning – Summary



5. Flaw x Composition – Accuracy

1. ANOVA on **ACCURACY**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	44.1379	< 2.22e-16	***
2 dataflawFactor	usrFctr:dF	2	62	22.9062	3.5596e-08	***
3 binningFactor	usrFctr:bF	2	62	10.3394	0.00013333	***
4 compositionFactor:dataflawFactor	Withn	4	682	14.3023	3.2238e-11	***
5 compositionFactor:binningFactor	Withn	4	682	4.7882	0.00081624	***
6 dataflawFactor:binningFactor	Withn	4	682	4.2630	0.00205160	**
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	4.9189	6.2829e-06	***

2. Post Hoc on **ACCURACY**

	compositionFactor_pairwise	dataflawFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	Gap - Outlier	101.56250	47.01291	682	2.1603107	2.798664e-01	
2	ColorOnly - FilledCurve	Gap - Outlier	-225.35417	47.01291	682	-4.7934524	1.812178e-05	***
3	Overlay - FilledCurve	Gap - Outlier	-326.91667	47.01291	682	-6.9537631	7.508517e-11	***
4	ColorOnly - Overlay	Gap - Spike	126.48958	47.01291	682	2.6905285	6.577714e-02	.
5	ColorOnly - FilledCurve	Gap - Spike	-12.88542	47.01291	682	-0.2740825	1.000000e+00	
6	Overlay - FilledCurve	Gap - Spike	-139.37500	47.01291	682	-2.9646109	2.822754e-02	*
7	ColorOnly - Overlay	Outlier - Spike	24.92708	47.01291	682	0.5302178	1.000000e+00	
8	ColorOnly - FilledCurve	Outlier - Spike	212.46875	47.01291	682	4.5193699	6.579786e-05	***
9	Overlay - FilledCurve	Outlier - Spike	187.54167	47.01291	682	3.9891521	6.613371e-04	***

3. Analysis over all conditions - **ACCURACY**

compositionFactor	dataflawFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 FilledCurve	Gap	Accuracy	96	0	1	1	0	1	1	0	0.625	0.487	0.05	0.099	0.526	0.724
2 Overlay	Gap	Accuracy	96	0	1	0	0	1	1	0	0.448	0.5	0.051	0.101	0.347	0.549
3 ColorOnly	Gap	Accuracy	96	0	1	0	0	0	0	0	0.24	0.429	0.044	0.087	0.153	0.327
4 Overlay	Outlier	Accuracy	96	0	1	1	0	1	1	0	0.531	0.502	0.051	0.102	0.429	0.633
5 ColorOnly	Outlier	Accuracy	96	0	1	0	0	0	0	0	0.198	0.401	0.041	0.081	0.117	0.279
6 FilledCurve	Outlier	Accuracy	96	0	1	0	0	0	0	0	0.188	0.392	0.04	0.079	0.109	0.267
7 Overlay	Spike	Accuracy	96	0	1	1	1	1	0	0	0.792	0.408	0.042	0.083	0.709	0.875
8 FilledCurve	Spike	Accuracy	96	0	1	1	0	1	1	0	0.74	0.441	0.045	0.089	0.651	0.829
9 ColorOnly	Spike	Accuracy	96	0	1	0	0	1	1	0	0.344	0.477	0.049	0.097	0.247	0.441

5. Flaw x Composition – Time

1. ANOVA on **TIME**

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	15.40645	2.8563e-07	***
2 dataflawFactor	usrFctr:dF	2	62	25.96428	6.4347e-09	***
3 binningFactor	usrFctr:bF	2	62	6.76459	0.00220082	**
4 compositionFactor:dataflawFactor	Withn	4	682	5.30293	0.00032859	***
5 compositionFactor:binningFactor	Withn	4	682	2.89218	0.02158952	*
6 dataflawFactor:binningFactor	Withn	4	682	2.14659	0.07352764	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	0.88312	0.53022593	

2. Post Hoc on **TIME**

	compositionFactor_pairwise	dataflawFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	Gap - Outlier	84.697917	42.78186	682	1.97976251	0.4331864164	
2	ColorOnly - FilledCurve	Gap - Outlier	58.770833	42.78186	682	1.37373264	1.0000000000	
3	Overlay - FilledCurve	Gap - Outlier	-25.927083	42.78186	682	-0.60602987	1.0000000000	
4	ColorOnly - Overlay	Gap - Spike	-103.104167	42.78186	682	-2.40999746	0.1459472951	
5	ColorOnly - FilledCurve	Gap - Spike	-1.708333	42.78186	682	-0.03993126	1.0000000000	
6	Overlay - FilledCurve	Gap - Spike	101.395833	42.78186	682	2.37006620	0.1625594336	
7	ColorOnly - Overlay	Outlier - Spike	-187.802083	42.78186	682	-4.38975997	0.0001183341	***
8	ColorOnly - FilledCurve	Outlier - Spike	-60.479167	42.78186	682	-1.41366390	1.0000000000	
9	Overlay - FilledCurve	Outlier - Spike	127.322917	42.78186	682	2.97609607	0.0272047604	*

3. Analysis over all conditions - **TIME**

compositionFactor	dataflawFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 FilledCurve	Gap	Time	96	4.79	68.3	9.39	7.10	16.6	9.5	4.58	14.8	13.0	1.33	2.64	12.2	17.4
2 ColorOnly	Gap	Time	96	2.24	109.	11.4	6.89	25.5	18.6	8.90	19.9	20.8	2.12	4.21	15.7	24.1
3 Overlay	Gap	Time	96	4.14	83.2	14.3	9.28	25.7	16.4	9.35	20.4	17.1	1.74	3.46	17.0	23.9
4 ColorOnly	Outlier	Time	96	2.81	112.	11.8	7.29	17.0	9.76	7.55	16.2	16.5	1.69	3.35	12.8	19.5
5 FilledCurve	Outlier	Time	96	3.78	340.	9.64	7.20	18.1	10.9	5.49	19.6	36.6	3.73	7.41	12.2	27.0
6 Overlay	Outlier	Time	96	3.44	949.	13.2	8.90	24.5	15.6	9.08	32.1	104.	10.6	21.0	11.1	53.1
7 FilledCurve	Spike	Time	96	4.34	102.	8.11	6.16	12.9	6.72	3.32	11.7	12.1	1.24	2.46	9.24	14.2
8 Overlay	Spike	Time	96	3.34	137.	9.51	6.87	14.1	7.19	5.12	14.2	16.5	1.69	3.35	10.8	17.5
9 ColorOnly	Spike	Time	96	2.72	67.0	10.7	6.79	16.9	10.1	7.20	14.4	11.8	1.21	2.40	12.0	16.7

5. Flaw x Composition – Confidence

1. ANOVA on **CONFIDENCE**

		Error	Df	Df.res	F value	Pr(>F)	
1	compositionFactor	Withn	2	682	12.2477	5.9457e-06	***
2	dataflawFactor	usrFctr:dF	2	62	15.3503	3.8423e-06	***
3	binningFactor	usrFctr:bF	2	62	4.0103	0.02302175	*
4	compositionFactor:dataflawFactor	Withn	4	682	3.6807	0.00563812	**
5	compositionFactor:binningFactor	Withn	4	682	5.2770	0.00034407	***
6	dataflawFactor:binningFactor	Withn	4	682	2.0460	0.08632723	.
7	compositionFactor:dataflawFactor:binningFactor	Withn	8	682	2.9498	0.00299891	**

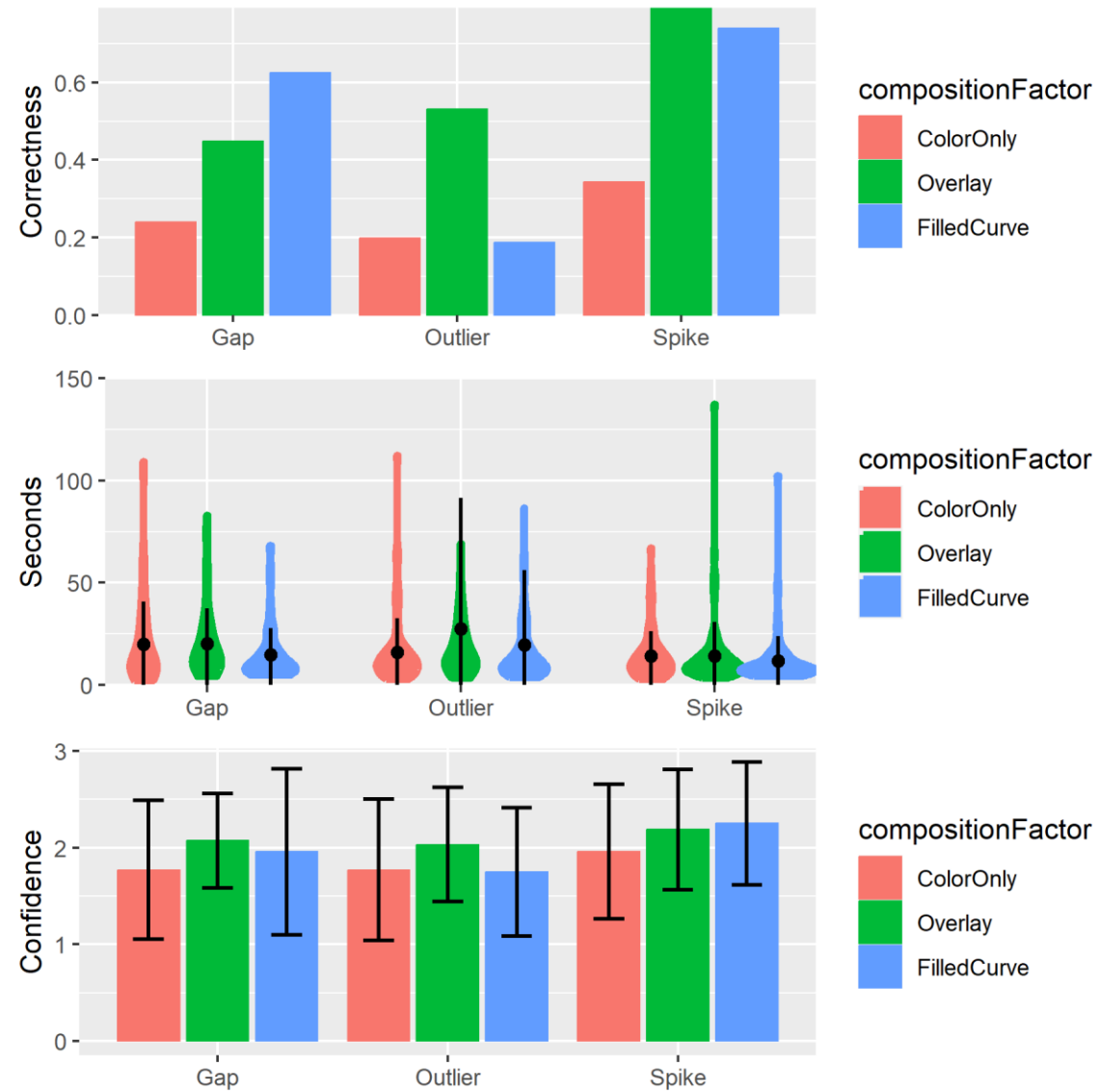
2. Post Hoc on **CONFIDENCE**

	compositionFactor_pairwise	dataflawFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	Gap - Outlier	33.81250	46.32403	682	0.7299127	1.000000000	
2	ColorOnly - FilledCurve	Gap - Outlier	-76.98958	46.32403	682	-1.6619793	0.872788082	
3	Overlay - FilledCurve	Gap - Outlier	-110.80208	46.32403	682	-2.3918920	0.153284668	
4	ColorOnly - Overlay	Gap - Spike	102.20833	46.32403	682	2.2063781	0.249210818	
5	ColorOnly - FilledCurve	Gap - Spike	75.28125	46.32403	682	1.6251014	0.941426628	
6	Overlay - FilledCurve	Gap - Spike	-26.92708	46.32403	682	-0.5812768	1.000000000	
7	ColorOnly - Overlay	Outlier - Spike	68.39583	46.32403	682	1.4764654	1.000000000	
8	ColorOnly - FilledCurve	Outlier - Spike	152.27083	46.32403	682	3.2870807	0.009578019	**
9	Overlay - FilledCurve	Outlier - Spike	83.87500	46.32403	682	1.8106152	0.635763246	

3. Analysis over all conditions - **CONFIDENCE**

	compositionFactor	dataflawFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	Overlay	Gap	Confidence	96	0	3	2	2	2	0	0	2.073	0.487	0.050	0.099	1.974	2.172
2	FilledCurve	Gap	Confidence	96	0	3	2	2	2	0	0	1.958	0.857	0.088	0.174	1.784	2.132
3	ColorOnly	Gap	Confidence	96	0	3	2	1	2	1	0	1.771	0.718	0.073	0.145	1.626	1.916
4	Overlay	Outlier	Confidence	96	0	3	2	2	2	0	0	2.031	0.589	0.060	0.119	1.912	2.150
5	ColorOnly	Outlier	Confidence	96	0	3	2	2	2	0	0	1.771	0.732	0.075	0.148	1.623	1.919
6	FilledCurve	Outlier	Confidence	96	0	3	2	2	2	0	0	1.750	0.665	0.068	0.135	1.615	1.885
7	FilledCurve	Spike	Confidence	96	0	3	2	2	3	1	0	2.250	0.632	0.065	0.128	2.122	2.378
8	Overlay	Spike	Confidence	96	0	3	2	2	3	1	0	2.188	0.621	0.063	0.126	2.062	2.314
9	ColorOnly	Spike	Confidence	96	0	3	2	2	2	0	0	1.958	0.695	0.071	0.141	1.817	2.099

5. Flaw x Composition – Summary



6. Flaw x Composition x Binning – Accuracy

1. ANOVA on ACCURACY

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	44.1379	< 2.22e-16	***
2 dataflawFactor	usrFctr:dF	2	62	22.9062	3.5596e-08	***
3 binningFactor	usrFctr:bF	2	62	10.3394	0.00013333	***
4 compositionFactor:dataflawFactor	Withn	4	682	14.3023	3.2238e-11	***
5 compositionFactor:binningFactor	Withn	4	682	4.7882	0.00081624	***
6 dataflawFactor:binningFactor	Withn	4	682	4.2630	0.00205160	**
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	4.9189	6.2829e-06	***

2. Post Hoc on ACCURACY

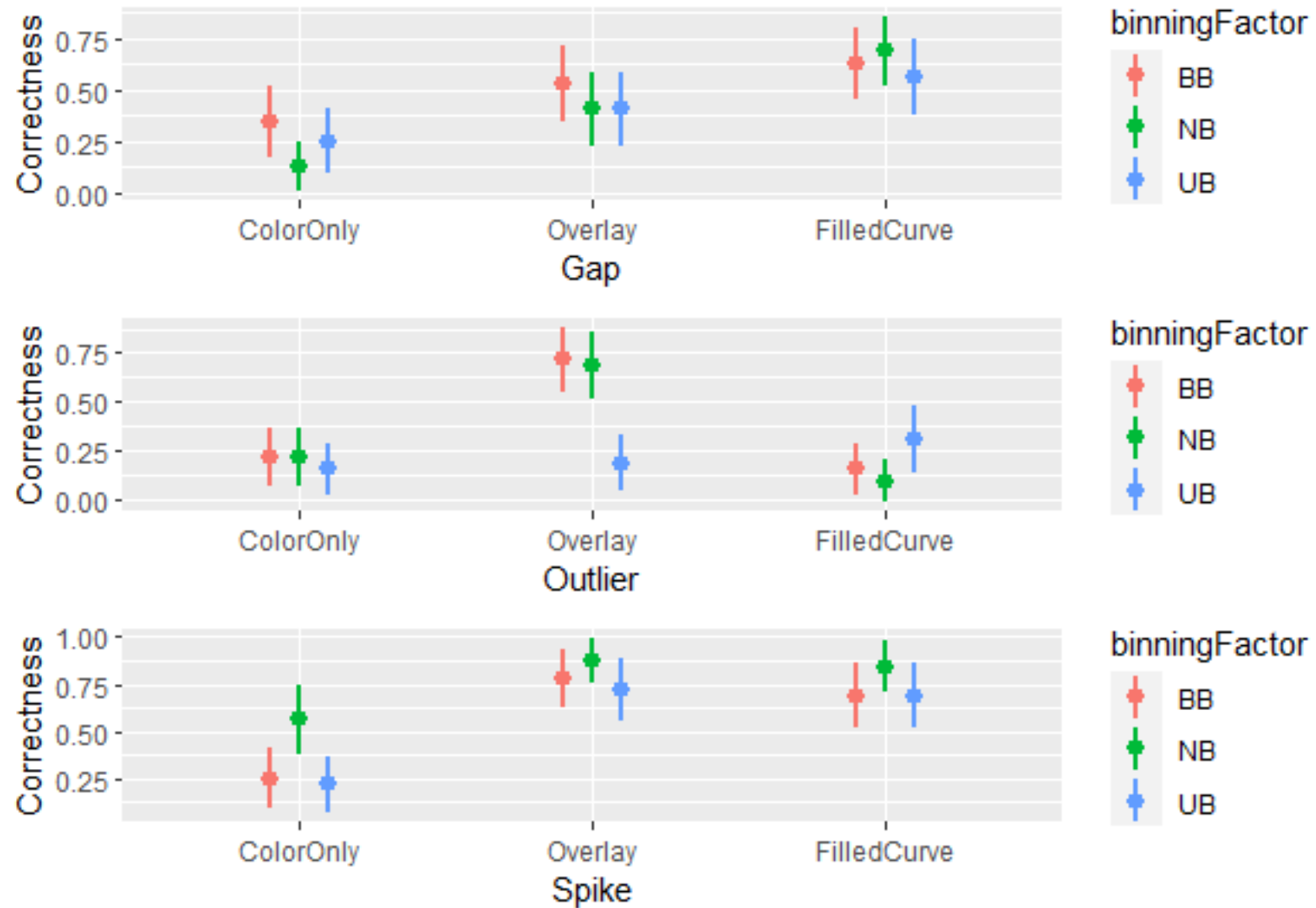
	compositionFactor_pairwise	dataflawFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	Gap - Outlier	BB - NB	-67.31250	116.0004	682	-0.5802784	1.000000e+00	
2	ColorOnly - FilledCurve	Gap - Outlier	BB - NB	162.15625	116.0004	682	1.3978944	1.000000e+00	
3	Overlay - FilledCurve	Gap - Outlier	BB - NB	229.46875	116.0004	682	1.9781727	1.000000e+00	
4	ColorOnly - Overlay	Gap - Spike	BB - NB	59.31250	116.0004	682	0.5113131	1.000000e+00	
5	ColorOnly - FilledCurve	Gap - Spike	BB - NB	228.25000	116.0004	682	1.9676663	1.000000e+00	
6	Overlay - FilledCurve	Gap - Spike	BB - NB	168.93750	116.0004	682	1.4563532	1.000000e+00	
7	ColorOnly - Overlay	Outlier - Spike	BB - NB	126.62500	116.0004	682	1.0915914	1.000000e+00	
8	ColorOnly - FilledCurve	Outlier - Spike	BB - NB	66.09375	116.0004	682	0.5697719	1.000000e+00	
9	Overlay - FilledCurve	Outlier - Spike	BB - NB	-60.53125	116.0004	682	-0.5218195	1.000000e+00	
10	ColorOnly - Overlay	Gap - Outlier	BB - UB	256.06250	116.0004	682	2.2074285	7.456413e-01	
11	ColorOnly - FilledCurve	Gap - Outlier	BB - UB	-87.34375	116.0004	682	-0.7529610	1.000000e+00	
12	Overlay - FilledCurve	Gap - Outlier	BB - UB	-343.40625	116.0004	682	-2.9603895	8.583665e-02	.
13	ColorOnly - Overlay	Gap - Spike	BB - UB	-113.43750	116.0004	682	-0.9779064	1.000000e+00	
14	ColorOnly - FilledCurve	Gap - Spike	BB - UB	-47.50000	116.0004	682	-0.4094815	1.000000e+00	
15	Overlay - FilledCurve	Gap - Spike	BB - UB	65.93750	116.0004	682	0.5684250	1.000000e+00	
16	ColorOnly - Overlay	Outlier - Spike	BB - UB	-369.50000	116.0004	682	-3.1853349	4.081697e-02	*
17	ColorOnly - FilledCurve	Outlier - Spike	BB - UB	39.84375	116.0004	682	0.3434795	1.000000e+00	
18	Overlay - FilledCurve	Outlier - Spike	BB - UB	409.34375	116.0004	682	3.5288145	1.202726e-02	*
19	ColorOnly - Overlay	Gap - Outlier	NB - UB	323.37500	116.0004	682	2.7877069	1.473140e-01	
20	ColorOnly - FilledCurve	Gap - Outlier	NB - UB	-249.50000	116.0004	682	-2.1508554	8.596343e-01	
21	Overlay - FilledCurve	Gap - Outlier	NB - UB	-572.87500	116.0004	682	-4.9385623	2.675174e-05	***
22	ColorOnly - Overlay	Gap - Spike	NB - UB	-172.75000	116.0004	682	-1.4892195	1.000000e+00	
23	ColorOnly - FilledCurve	Gap - Spike	NB - UB	-275.75000	116.0004	682	-2.3771478	4.784927e-01	
24	Overlay - FilledCurve	Gap - Spike	NB - UB	-103.00000	116.0004	682	-0.8879283	1.000000e+00	
25	ColorOnly - Overlay	Outlier - Spike	NB - UB	-496.12500	116.0004	682	-4.2769264	5.846894e-04	***
26	ColorOnly - FilledCurve	Outlier - Spike	NB - UB	-26.25000	116.0004	682	-0.2262924	1.000000e+00	
27	Overlay - FilledCurve	Outlier - Spike	NB - UB	469.87500	116.0004	682	4.0506340	1.537608e-03	**

6. Flaw x Composition x Binning – Accuracy

3. Analysis over all conditions - ACCURACY

	compositionFactor <fct>	binningFactor <fct>	dataflawFactor <fct>	variable <fct>	n <dbl>	min <dbl>	max <dbl>	median <dbl>	q1 <dbl>	q3 <dbl>	iqr <dbl>	mad <dbl>	mean <dbl>	sd <dbl>	se <dbl>	ci <dbl>	ci_min <dbl>	ci_max <dbl>
1	FilledCurve	NB	Gap	Accuracy	32	0	1	1	0	1	1	0	0.688	0.471	0.083	0.17	0.518	0.858
2	FilledCurve	BB	Gap	Accuracy	32	0	1	1	0	1	1	0	0.625	0.492	0.087	0.177	0.448	0.802
3	FilledCurve	UB	Gap	Accuracy	32	0	1	1	0	1	1	0	0.562	0.504	0.089	0.182	0.38	0.744
4	Overlay	BB	Gap	Accuracy	32	0	1	1	0	1	1	0	0.531	0.507	0.09	0.183	0.348	0.714
5	Overlay	NB	Gap	Accuracy	32	0	1	0	0	1	1	0	0.406	0.499	0.088	0.18	0.226	0.586
6	Overlay	UB	Gap	Accuracy	32	0	1	0	0	1	1	0	0.406	0.499	0.088	0.18	0.226	0.586
7	ColorOnly	BB	Gap	Accuracy	32	0	1	0	0	1	1	0	0.344	0.483	0.085	0.174	0.17	0.518
8	ColorOnly	UB	Gap	Accuracy	32	0	1	0	0	0.25	0.25	0	0.25	0.44	0.078	0.159	0.091	0.409
9	ColorOnly	NB	Gap	Accuracy	32	0	1	0	0	0	0	0	0.125	0.336	0.059	0.121	0.00400	0.246
10	Overlay	BB	Outlier	Accuracy	32	0	1	1	0	1	1	0	0.719	0.457	0.081	0.165	0.554	0.884
11	Overlay	NB	Outlier	Accuracy	32	0	1	1	0	1	1	0	0.688	0.471	0.083	0.17	0.518	0.858
12	FilledCurve	UB	Outlier	Accuracy	32	0	1	0	0	1	1	0	0.312	0.471	0.083	0.17	0.142	0.482
13	ColorOnly	BB	Outlier	Accuracy	32	0	1	0	0	0	0	0	0.219	0.42	0.074	0.151	0.068	0.37
14	ColorOnly	NB	Outlier	Accuracy	32	0	1	0	0	0	0	0	0.219	0.42	0.074	0.151	0.068	0.37
15	Overlay	UB	Outlier	Accuracy	32	0	1	0	0	0	0	0	0.188	0.397	0.07	0.143	0.045	0.331
16	ColorOnly	UB	Outlier	Accuracy	32	0	1	0	0	0	0	0	0.156	0.369	0.065	0.133	0.023	0.289
17	FilledCurve	BB	Outlier	Accuracy	32	0	1	0	0	0	0	0	0.156	0.369	0.065	0.133	0.023	0.289
18	FilledCurve	NB	Outlier	Accuracy	32	0	1	0	0	0	0	0	0.094	0.296	0.052	0.107	-0.013	0.201
19	Overlay	NB	Spike	Accuracy	32	0	1	1	1	1	0	0	0.875	0.336	0.059	0.121	0.754	0.996
20	FilledCurve	NB	Spike	Accuracy	32	0	1	1	1	1	0	0	0.844	0.369	0.065	0.133	0.711	0.977
21	Overlay	BB	Spike	Accuracy	32	0	1	1	1	1	0	0	0.781	0.42	0.074	0.151	0.63	0.932
22	Overlay	UB	Spike	Accuracy	32	0	1	1	0	1	1	0	0.719	0.457	0.081	0.165	0.554	0.884
23	FilledCurve	BB	Spike	Accuracy	32	0	1	1	0	1	1	0	0.688	0.471	0.083	0.17	0.518	0.858
24	FilledCurve	UB	Spike	Accuracy	32	0	1	1	0	1	1	0	0.688	0.471	0.083	0.17	0.518	0.858
25	ColorOnly	NB	Spike	Accuracy	32	0	1	1	0	1	1	0	0.562	0.504	0.089	0.182	0.38	0.744
26	ColorOnly	BB	Spike	Accuracy	32	0	1	0	0	0.25	0.25	0	0.25	0.44	0.078	0.159	0.091	0.409
27	ColorOnly	UB	Spike	Accuracy	32	0	1	0	0	0	0	0	0.219	0.42	0.074	0.151	0.068	0.37

6. Flaw x Composition x Binning – Accuracy



6. Flaw x Composition x Binning – Time

1. ANOVA on TIME

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	15.40645	2.8563e-07	***
2 dataflawFactor	usrFctr:dF	2	62	25.96428	6.4347e-09	***
3 binningFactor	usrFctr:bF	2	62	6.76459	0.00220082	**
4 compositionFactor:dataflawFactor	Withn	4	682	5.30293	0.00032859	***
5 compositionFactor:binningFactor	Withn	4	682	2.89218	0.02158952	*
6 dataflawFactor:binningFactor	Withn	4	682	2.14659	0.07352764	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	0.88312	0.53022593	

2. Post Hoc on TIME

	compositionFactor_pairwise	dataflawFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	Gap - Outlier	BB - NB	109.03125	105.6556	682	1.03194963	1	
2	ColorOnly - FilledCurve	Gap - Outlier	BB - NB	97.37500	105.6556	682	0.92162656	1	
3	Overlay - FilledCurve	Gap - Outlier	BB - NB	-11.65625	105.6556	682	-0.11032308	1	
4	ColorOnly - Overlay	Gap - Spike	BB - NB	-65.31250	105.6556	682	-0.61816415	1	
5	ColorOnly - FilledCurve	Gap - Spike	BB - NB	-79.53125	105.6556	682	-0.75274056	1	
6	Overlay - FilledCurve	Gap - Spike	BB - NB	-14.21875	105.6556	682	-0.13457641	1	
7	ColorOnly - Overlay	Outlier - Spike	BB - NB	-174.34375	105.6556	682	-1.65011379	1	
8	ColorOnly - FilledCurve	Outlier - Spike	BB - NB	-176.90625	105.6556	682	-1.67436712	1	
9	Overlay - FilledCurve	Outlier - Spike	BB - NB	-2.56250	105.6556	682	-0.02425333	1	
10	ColorOnly - Overlay	Gap - Outlier	BB - UB	90.50000	105.6556	682	0.85655665	1	
11	ColorOnly - FilledCurve	Gap - Outlier	BB - UB	115.28125	105.6556	682	1.09110410	1	
12	Overlay - FilledCurve	Gap - Outlier	BB - UB	24.78125	105.6556	682	0.23454745	1	
13	ColorOnly - Overlay	Gap - Spike	BB - UB	-110.21875	105.6556	682	-1.04318898	1	
14	ColorOnly - FilledCurve	Gap - Spike	BB - UB	25.12500	105.6556	682	0.23780095	1	
15	Overlay - FilledCurve	Gap - Spike	BB - UB	135.34375	105.6556	682	1.28098993	1	
16	ColorOnly - Overlay	Outlier - Spike	BB - UB	-200.71875	105.6556	682	-1.89974563	1	
17	ColorOnly - FilledCurve	Outlier - Spike	BB - UB	-90.15625	105.6556	682	-0.85330315	1	
18	Overlay - FilledCurve	Outlier - Spike	BB - UB	110.56250	105.6556	682	1.04644248	1	
19	ColorOnly - Overlay	Gap - Outlier	NB - UB	-18.53125	105.6556	682	-0.17539299	1	
20	ColorOnly - FilledCurve	Gap - Outlier	NB - UB	17.90625	105.6556	682	0.16947754	1	
21	Overlay - FilledCurve	Gap - Outlier	NB - UB	36.43750	105.6556	682	0.34487053	1	
22	ColorOnly - Overlay	Gap - Spike	NB - UB	-44.90625	105.6556	682	-0.42502483	1	
23	ColorOnly - FilledCurve	Gap - Spike	NB - UB	104.65625	105.6556	682	0.99054151	1	
24	Overlay - FilledCurve	Gap - Spike	NB - UB	149.56250	105.6556	682	1.41556634	1	
25	ColorOnly - Overlay	Outlier - Spike	NB - UB	-26.37500	105.6556	682	-0.24963184	1	
26	ColorOnly - FilledCurve	Outlier - Spike	NB - UB	86.75000	105.6556	682	0.82106397	1	
27	Overlay - FilledCurve	Outlier - Spike	NB - UB	113.12500	105.6556	682	1.07069581	1	

6. Flaw x Composition x Binning – Time

3. Analysis over all conditions - TIME

	compositionFactor <fct>	binningFactor <fct>	dataflawFactor <fct>	variable <fct>	n <dbl>	min <dbl>	max <dbl>	median <dbl>	q1 <dbl>	q3 <dbl>	iqr <dbl>	mad <dbl>	mean <dbl>	sd <dbl>	se <dbl>	ci <dbl>	ci_min <dbl>	ci_max <dbl>
1	FilledCurve	NB	Gap	Time	32	4.79	58.0	7.89	6.70	13.5	6.78	2.96	12.5	11.0	1.94	3.95	8.51	16.4
2	FilledCurve	BB	Gap	Time	32	6.26	48.2	11.0	7.89	15.1	7.23	5.41	13.8	8.86	1.57	3.20	10.6	17.0
3	ColorOnly	BB	Gap	Time	32	3.35	106.	11.3	7.10	23.4	16.3	8.46	18.0	19.3	3.41	6.95	11.0	25.0
4	FilledCurve	UB	Gap	Time	32	5.00	68.3	10.2	6.95	21.7	14.8	7.56	18.2	17.5	3.08	6.29	11.9	24.5
5	ColorOnly	NB	Gap	Time	32	2.24	58.0	12.7	6.85	27.9	21.0	10.5	18.7	15.8	2.80	5.70	13.0	24.4
6	Overlay	UB	Gap	Time	32	4.63	83.2	13.8	9.28	20.8	11.6	7.80	18.9	17.1	3.02	6.15	12.8	25.1
7	Overlay	NB	Gap	Time	32	4.14	75.0	12.9	8.44	26.2	17.7	10.2	21.0	18.5	3.28	6.69	14.4	27.7
8	Overlay	BB	Gap	Time	32	5.49	73.1	15.9	10.6	27.4	16.8	10.4	21.3	16.0	2.83	5.77	15.5	27.0
9	ColorOnly	UB	Gap	Time	32	3.28	109.	10.9	7.60	25.2	17.6	8.55	23.1	26.2	4.63	9.44	13.6	32.5
10	ColorOnly	BB	Outlier	Time	32	3.27	43.5	11.9	8.22	16.3	8.09	6.17	13.4	8.67	1.53	3.12	10.3	16.5
11	FilledCurve	NB	Outlier	Time	32	4.06	55.3	9.94	7.57	14.2	6.65	4.65	13.9	11.1	1.96	3.99	9.94	17.9
12	ColorOnly	UB	Outlier	Time	32	2.81	63.9	12.2	7.18	17.0	9.84	7.29	14.1	11.8	2.08	4.25	9.87	18.4
13	FilledCurve	UB	Outlier	Time	32	5.06	86.6	8.26	6.74	17.7	10.9	3.82	16.0	17.1	3.02	6.15	9.81	22.1
14	ColorOnly	NB	Outlier	Time	32	3.65	112.	11.2	6.62	25.7	19.1	8.03	21.0	24.2	4.28	8.74	12.3	29.8
15	Overlay	UB	Outlier	Time	32	4.98	69.2	15.2	11.3	28.4	17.1	9.38	21.3	14.9	2.64	5.39	15.9	26.7
16	FilledCurve	BB	Outlier	Time	32	3.78	340.	11.7	7.32	27.1	19.7	8.75	28.9	59.6	10.5	21.5	7.46	50.4
17	Overlay	NB	Outlier	Time	32	3.44	408.	13.3	9.58	23.0	13.5	9.08	29.9	70.2	12.4	25.3	4.61	55.3
18	Overlay	BB	Outlier	Time	32	4.42	949.	12.1	6.89	20.1	13.2	8.71	45.0	166.	29.3	59.7	-14.6	105.
19	FilledCurve	NB	Spike	Time	32	4.38	34.7	8.72	6.83	12.9	6.04	3.93	10.9	6.47	1.14	2.33	8.55	13.2
20	Overlay	NB	Spike	Time	32	3.43	48.3	9.05	6.56	13.3	6.74	4.55	11.3	8.42	1.49	3.04	8.22	14.3
21	FilledCurve	UB	Spike	Time	32	4.77	49.3	7.52	6.10	9.58	3.47	2.33	11.3	10.6	1.88	3.83	7.51	15.2
22	FilledCurve	BB	Spike	Time	32	4.34	102.	8.41	6.58	13.8	7.23	3.96	12.9	17.2	3.03	6.19	6.68	19.1
23	ColorOnly	BB	Spike	Time	32	3.40	54.3	10.0	6.5	14.9	8.39	6.45	13.3	11.4	2.02	4.13	9.19	17.4
24	ColorOnly	NB	Spike	Time	32	3.82	67.0	11.1	7.82	14.9	7.10	5.91	13.4	11.4	2.01	4.10	9.27	17.5
25	Overlay	BB	Spike	Time	32	3.34	63.7	9.51	7.75	15.0	7.23	4.04	15.1	14.4	2.55	5.20	9.91	20.3
26	Overlay	UB	Spike	Time	32	4.86	137.	11.5	7.24	15.6	8.38	6.36	16.2	23.4	4.13	8.42	7.75	24.6
27	ColorOnly	UB	Spike	Time	32	2.72	49.1	12.4	7.03	20.4	13.4	8.63	16.4	12.7	2.25	4.59	11.8	21.0

6. Flaw x Composition x Binning – Confidence

1. ANOVA on CONFIDENCE

	Error	Df	Df.res	F value	Pr(>F)	
1 compositionFactor	Withn	2	682	12.2477	5.9457e-06	***
2 dataflawFactor	usrFctr:dF	2	62	15.3503	3.8423e-06	***
3 binningFactor	usrFctr:bF	2	62	4.0103	0.02302175	*
4 compositionFactor:dataflawFactor	Withn	4	682	3.6807	0.00563812	**
5 compositionFactor:binningFactor	Withn	4	682	5.2770	0.00034407	***
6 dataflawFactor:binningFactor	Withn	4	682	2.0460	0.08632723	.
7 compositionFactor:dataflawFactor:binningFactor	Withn	8	682	2.9498	0.00299891	**

2. Post Hoc on CONFIDENCE

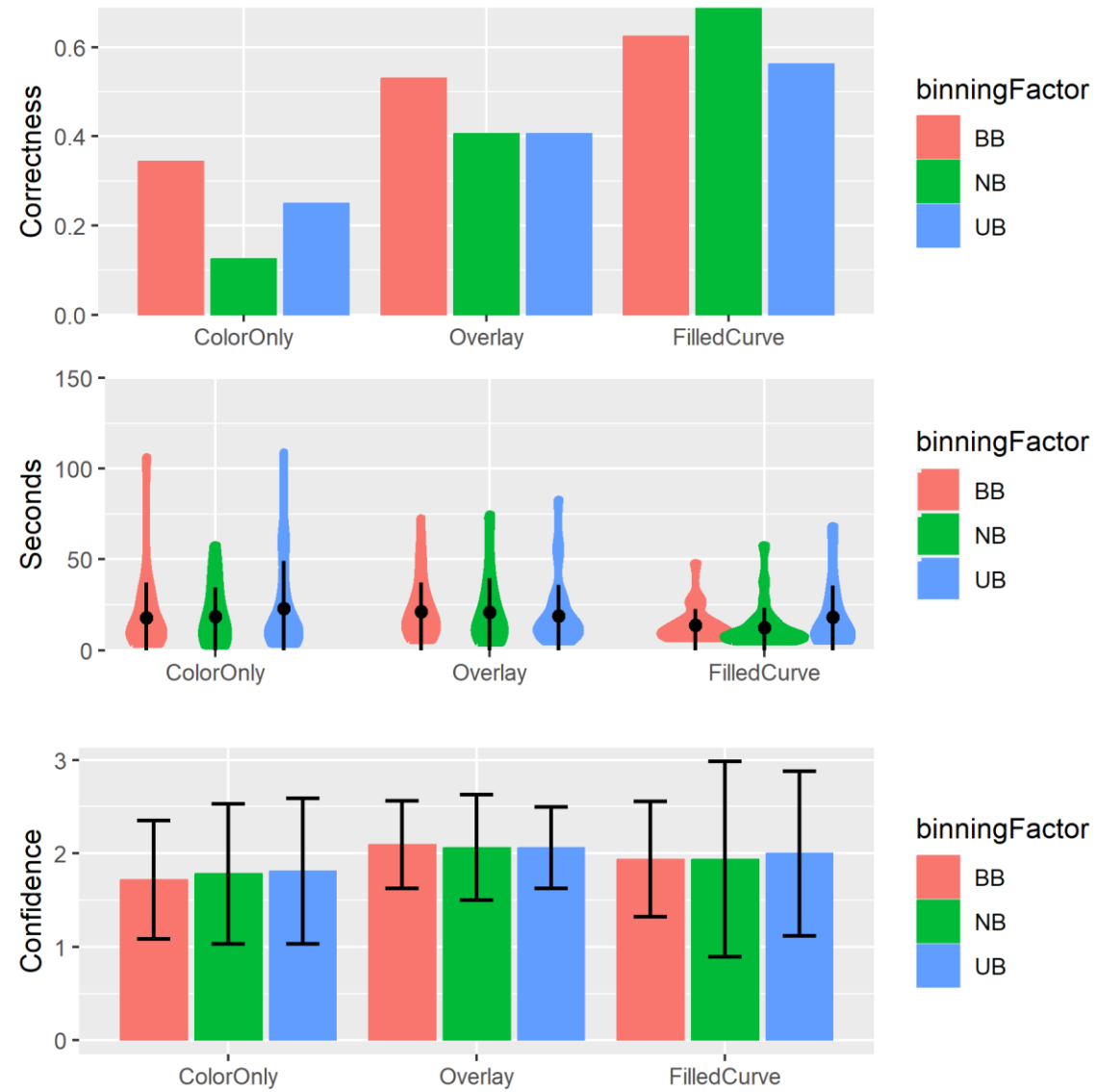
	compositionFactor_pairwise	dataflawFactor_pairwise	binningFactor_pairwise	estimate	SE	df	t.ratio	p.value	sig.
1	ColorOnly - Overlay	Gap - Outlier	BB - NB	-83.56250	113.6955	682	-0.73496750	1.000000000	
2	ColorOnly - FilledCurve	Gap - Outlier	BB - NB	-2.06250	113.6955	682	-0.01814056	1.000000000	
3	Overlay - FilledCurve	Gap - Outlier	BB - NB	81.50000	113.6955	682	0.71682694	1.000000000	
4	ColorOnly - Overlay	Gap - Spike	BB - NB	-122.56250	113.6955	682	-1.07798898	1.000000000	
5	ColorOnly - FilledCurve	Gap - Spike	BB - NB	2.53125	113.6955	682	0.02226341	1.000000000	
6	Overlay - FilledCurve	Gap - Spike	BB - NB	125.09375	113.6955	682	1.10025240	1.000000000	
7	ColorOnly - Overlay	Outlier - Spike	BB - NB	-39.00000	113.6955	682	-0.34302148	1.000000000	
8	ColorOnly - FilledCurve	Outlier - Spike	BB - NB	4.59375	113.6955	682	0.04040397	1.000000000	
9	Overlay - FilledCurve	Outlier - Spike	BB - NB	43.59375	113.6955	682	0.38342545	1.000000000	
10	ColorOnly - Overlay	Gap - Outlier	BB - UB	-80.18750	113.6955	682	-0.70528295	1.000000000	
11	ColorOnly - FilledCurve	Gap - Outlier	BB - UB	-20.78125	113.6955	682	-0.18277988	1.000000000	
12	Overlay - FilledCurve	Gap - Outlier	BB - UB	59.40625	113.6955	682	0.52250307	1.000000000	
13	ColorOnly - Overlay	Gap - Spike	BB - UB	-42.87500	113.6955	682	-0.37710374	1.000000000	
14	ColorOnly - FilledCurve	Gap - Spike	BB - UB	-333.09375	113.6955	682	-2.92970030	0.094667632	.
15	Overlay - FilledCurve	Gap - Spike	BB - UB	-290.21875	113.6955	682	-2.55259655	0.294544543	
16	ColorOnly - Overlay	Outlier - Spike	BB - UB	37.31250	113.6955	682	0.32817921	1.000000000	
17	ColorOnly - FilledCurve	Outlier - Spike	BB - UB	-312.31250	113.6955	682	-2.74692042	0.166713040	
18	Overlay - FilledCurve	Outlier - Spike	BB - UB	-349.62500	113.6955	682	-3.07509963	0.059086539	.
19	ColorOnly - Overlay	Gap - Outlier	NB - UB	3.37500	113.6955	682	0.02968455	1.000000000	
20	ColorOnly - FilledCurve	Gap - Outlier	NB - UB	-18.71875	113.6955	682	-0.16463932	1.000000000	
21	Overlay - FilledCurve	Gap - Outlier	NB - UB	-22.09375	113.6955	682	-0.19432387	1.000000000	
22	ColorOnly - Overlay	Gap - Spike	NB - UB	79.68750	113.6955	682	0.70088524	1.000000000	
23	ColorOnly - FilledCurve	Gap - Spike	NB - UB	-335.62500	113.6955	682	-2.95196371	0.088183100	.
24	Overlay - FilledCurve	Gap - Spike	NB - UB	-415.31250	113.6955	682	-3.65284895	0.007539357	**
25	ColorOnly - Overlay	Outlier - Spike	NB - UB	76.31250	113.6955	682	0.67120069	1.000000000	
26	ColorOnly - FilledCurve	Outlier - Spike	NB - UB	-316.90625	113.6955	682	-2.78732439	0.147485983	
27	Overlay - FilledCurve	Outlier - Spike	NB - UB	-393.21875	113.6955	682	-3.45852508	0.015576633	*

6. Flaw x Composition x Binning – Confidence

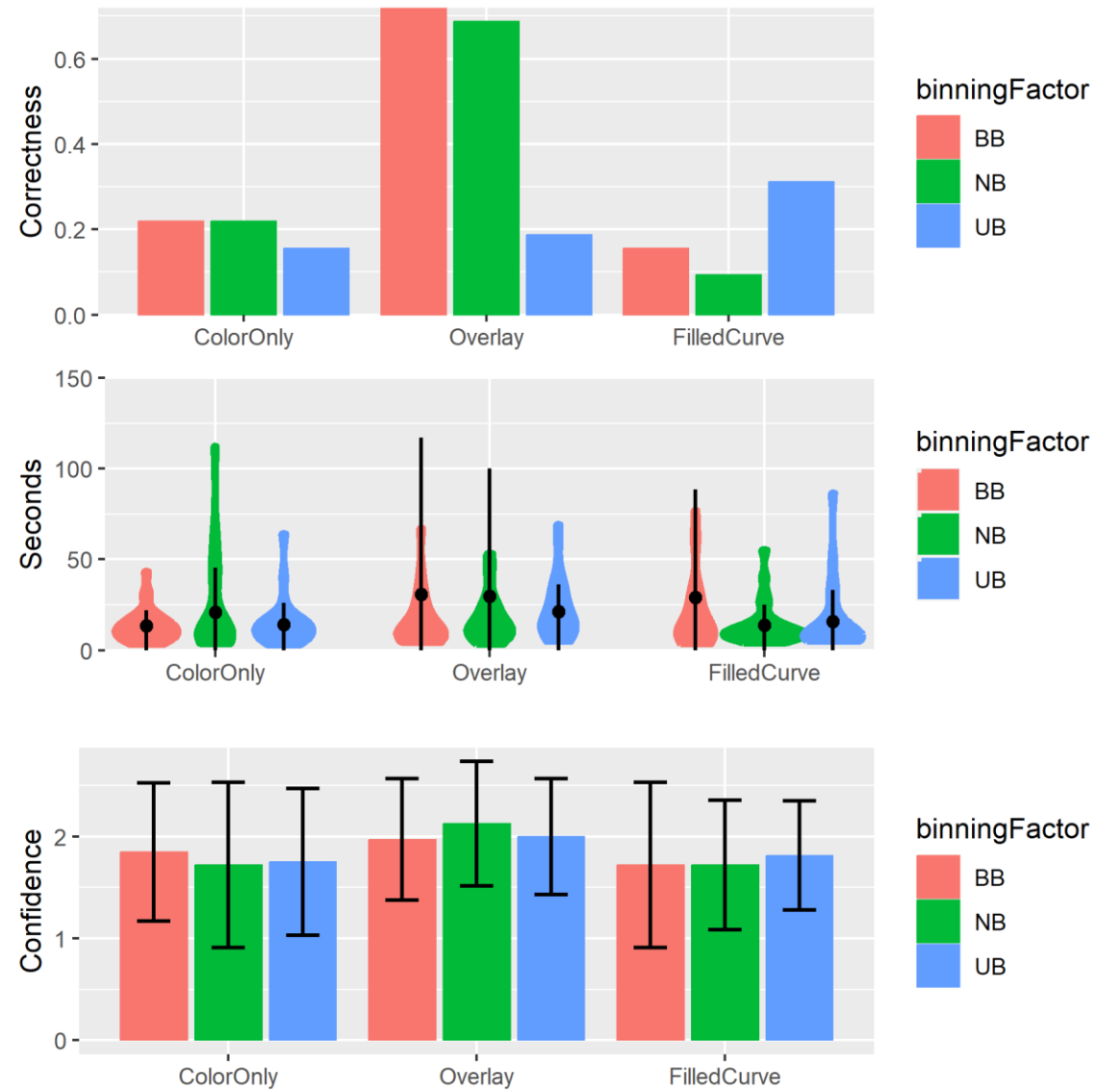
3. Analysis over all conditions - CONFIDENCE

	compositionFactor	binningFactor	dataflawFactor	variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci	ci_min	ci_max
1	Overlay	BB	Gap	Confidence	32	1	3	2	2.00	2.00	0.00	0.000	2.094	0.466	0.082	0.168	1.926	2.262
2	Overlay	NB	Gap	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	2.062	0.564	0.100	0.203	1.859	2.265
3	Overlay	UB	Gap	Confidence	32	1	3	2	2.00	2.00	0.00	0.000	2.062	0.435	0.077	0.157	1.905	2.219
4	FilledCurve	UB	Gap	Confidence	32	0	3	2	2.00	3.00	1.00	0.000	2.000	0.880	0.156	0.317	1.683	2.317
5	FilledCurve	BB	Gap	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.938	0.619	0.109	0.223	1.715	2.161
6	FilledCurve	NB	Gap	Confidence	32	0	3	2	2.00	3.00	1.00	0.741	1.938	1.045	0.185	0.377	1.561	2.315
7	ColorOnly	UB	Gap	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.812	0.780	0.138	0.281	1.531	2.093
8	ColorOnly	NB	Gap	Confidence	32	0	3	2	1.00	2.00	1.00	0.000	1.781	0.751	0.133	0.271	1.510	2.052
9	ColorOnly	BB	Gap	Confidence	32	0	3	2	1.00	2.00	1.00	0.000	1.719	0.634	0.112	0.229	1.490	1.948
10	Overlay	NB	Outlier	Confidence	32	1	3	2	2.00	2.25	0.25	0.000	2.125	0.609	0.108	0.220	1.905	2.345
11	Overlay	UB	Outlier	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	2.000	0.568	0.100	0.205	1.795	2.205
12	Overlay	BB	Outlier	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.969	0.595	0.105	0.214	1.755	2.183
13	ColorOnly	BB	Outlier	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.844	0.677	0.120	0.244	1.600	2.088
14	FilledCurve	UB	Outlier	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.812	0.535	0.095	0.193	1.619	2.005
15	ColorOnly	UB	Outlier	Confidence	32	0	3	2	1.00	2.00	1.00	0.000	1.750	0.718	0.127	0.259	1.491	2.009
16	ColorOnly	NB	Outlier	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.719	0.813	0.144	0.293	1.426	2.012
17	FilledCurve	BB	Outlier	Confidence	32	0	3	2	1.75	2.00	0.25	0.000	1.719	0.813	0.144	0.293	1.426	2.012
18	FilledCurve	NB	Outlier	Confidence	32	0	3	2	1.75	2.00	0.25	0.000	1.719	0.634	0.112	0.229	1.490	1.948
19	FilledCurve	UB	Spike	Confidence	32	1	3	3	2.00	3.00	1.00	0.000	2.531	0.567	0.100	0.204	2.327	2.735
20	Overlay	NB	Spike	Confidence	32	1	3	2	2.00	3.00	1.00	0.741	2.250	0.672	0.119	0.242	2.008	2.492
21	Overlay	BB	Spike	Confidence	32	0	3	2	2.00	3.00	1.00	0.000	2.156	0.677	0.120	0.244	1.912	2.400
22	Overlay	UB	Spike	Confidence	32	1	3	2	2.00	2.00	0.00	0.000	2.156	0.515	0.091	0.186	1.970	2.342
23	FilledCurve	NB	Spike	Confidence	32	1	3	2	2.00	2.00	0.00	0.000	2.125	0.421	0.074	0.152	1.973	2.277
24	FilledCurve	BB	Spike	Confidence	32	0	3	2	2.00	3.00	1.00	0.000	2.094	0.777	0.137	0.280	1.814	2.374
25	ColorOnly	BB	Spike	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	2.031	0.647	0.114	0.233	1.798	2.264
26	ColorOnly	UB	Spike	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.938	0.759	0.134	0.274	1.664	2.212
27	ColorOnly	NB	Spike	Confidence	32	0	3	2	2.00	2.00	0.00	0.000	1.906	0.689	0.122	0.248	1.658	2.154

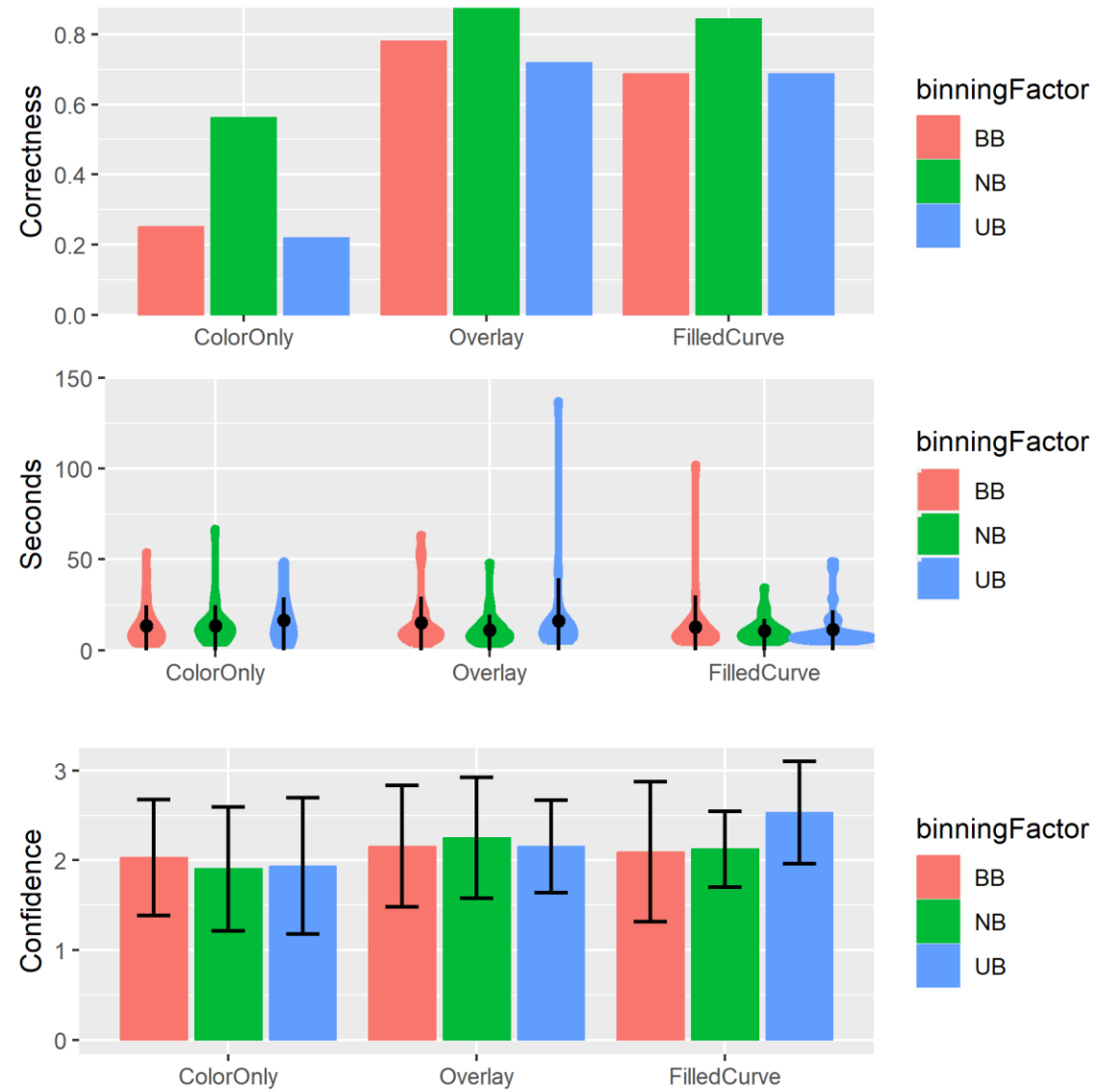
6. Gaps: Composition x Binning – Summary



6. Outlier: Composition x Binning – Summary



6. Spikes: Composition x Binning – Summary



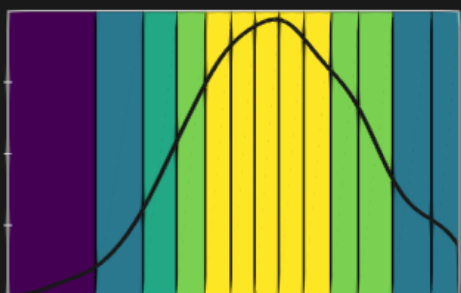
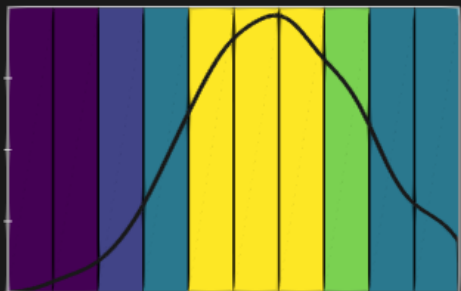
Experiments for Overlaid Curve Design

UB

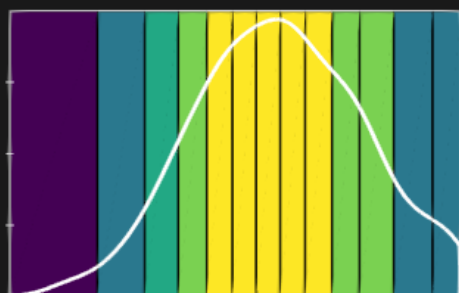
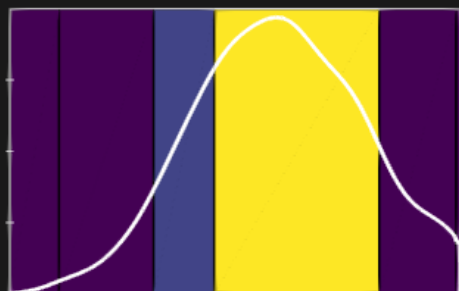
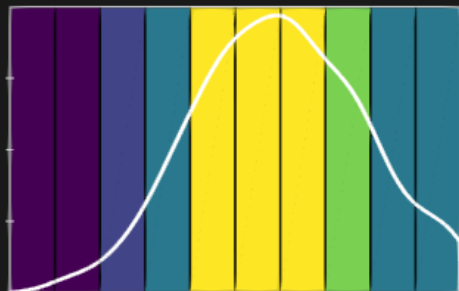
BB

NB

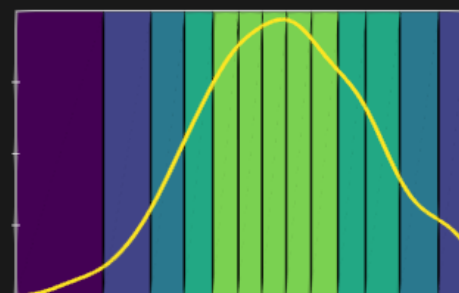
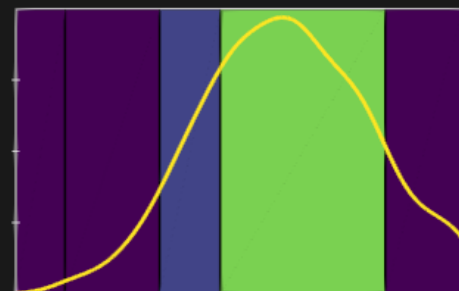
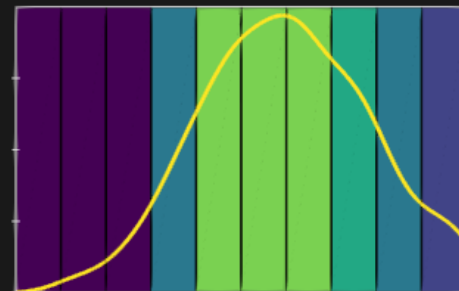
Color scheme:
6 colors ranging from
yellow to purple
Line: black



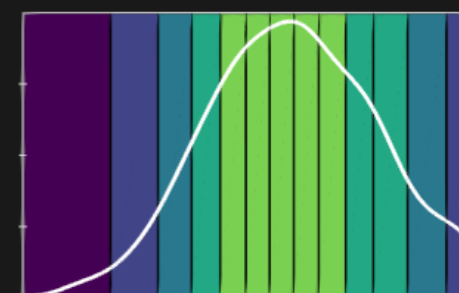
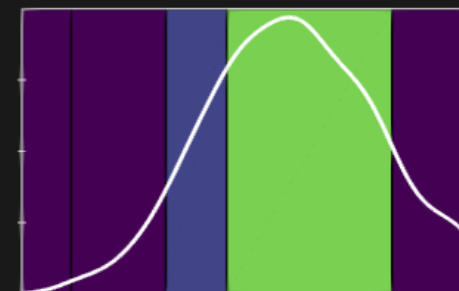
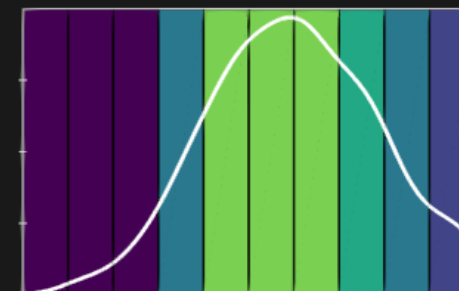
Color scheme:
6 colors ranging from
yellow to purple
Line: white



Color scheme:
5 colors ranging from
green to purple
Line: yellow

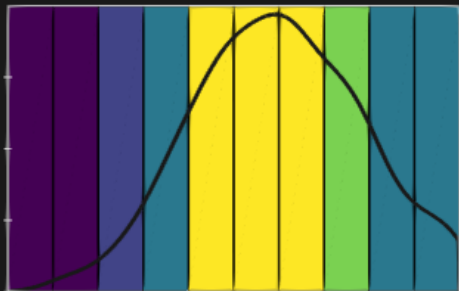


Color scheme:
5 colors ranging from
green to purple
Line: white

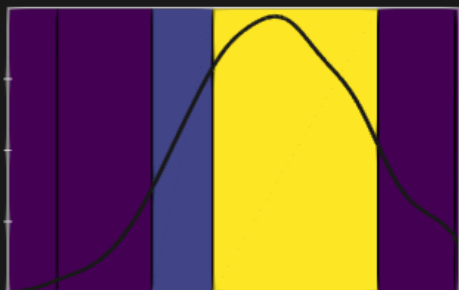


UB

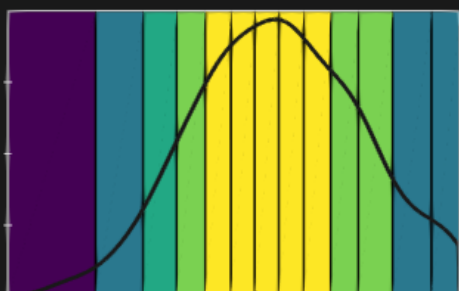
Color scheme:
6 colors ranging from
yellow to purple
Line: black



BB

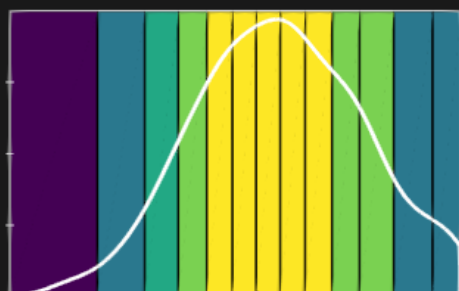
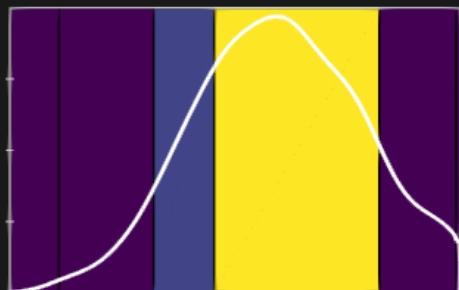
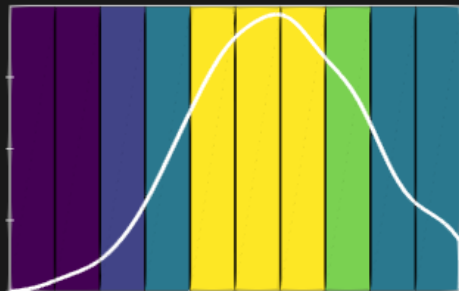


NB



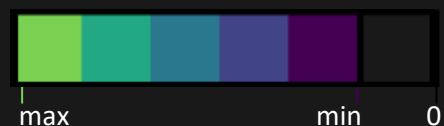
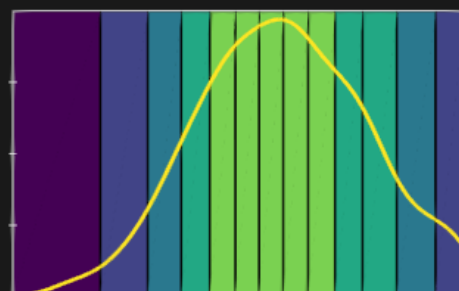
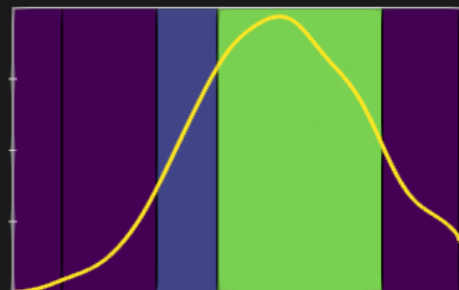
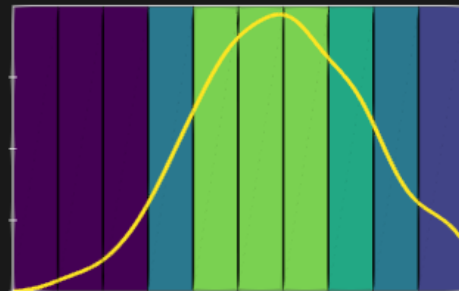
The black line does not provide a good contrast to the dark background.

Color scheme:
6 colors ranging from
yellow to purple
Line: white



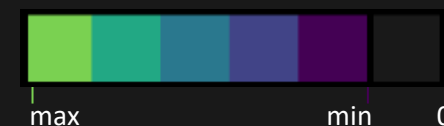
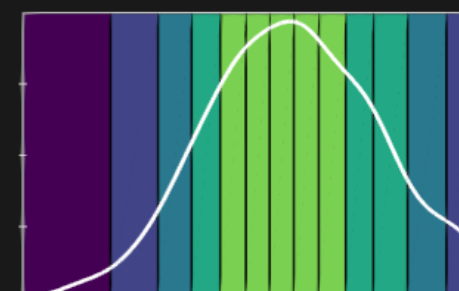
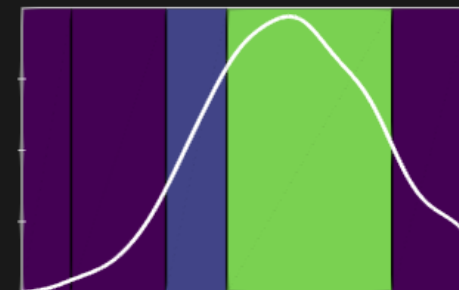
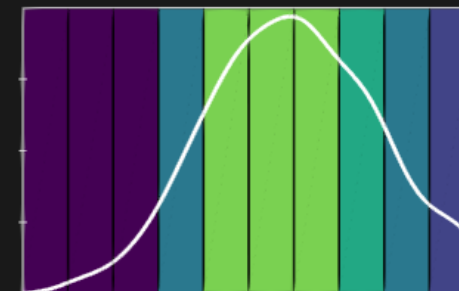
The white line does not provide a good contrast to the yellow of the bins.

Color scheme:
5 colors ranging from
green to purple
Line: yellow



The yellow line does not provide a good contrast to the green of the bins.

Color scheme:
5 colors ranging from
green to purple
Line: white



Final Design

Using AccuStripes to visualize Result Data of T2

T2 - Comparison Task: Error Results visualized with AccuStripes

Here we visualize the error rate of the comparison task according to all composition and binning strategies.

We visualize these results using our AccuStripes design with all three binning methods and the overlay layout.

Explanation of abbreviations in the figures:

- O ... Overlay Layout
- F ... Filled Curve Layout
- C ... Color Only Layout
- UB ... Uniform Binning
- NB ... Jenks' Natural Breaks Binning
- BB ... Bayesian Blocks Binning

Example:

Error_O+UB ... Error results for the overlay layout combined with uniform binning

Visualization Interpretation:

The more right-skewed the distribution, i.e., the farther to the left the mode is and the longer the tail is on the right, the lower the response error of T2.

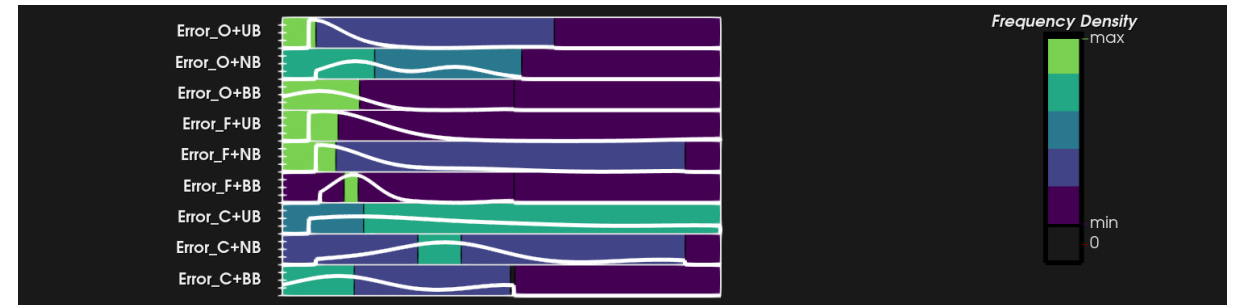


Figure 1: AccuStripes with overlay layout and BB

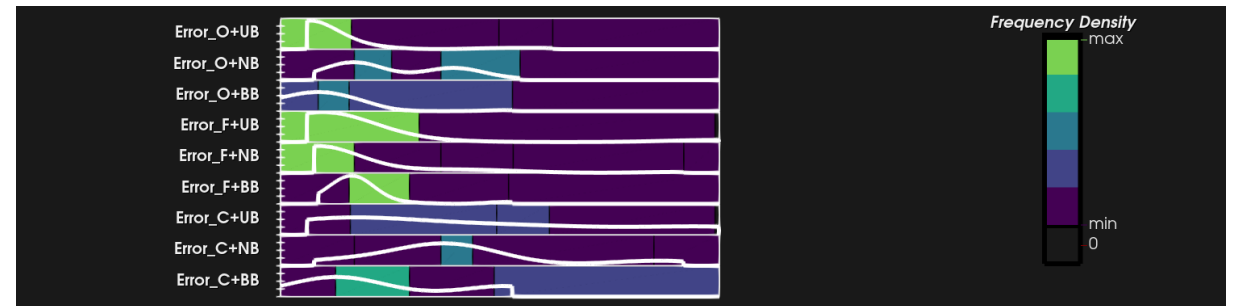


Figure 2: AccuStripes with overlay layout and NB

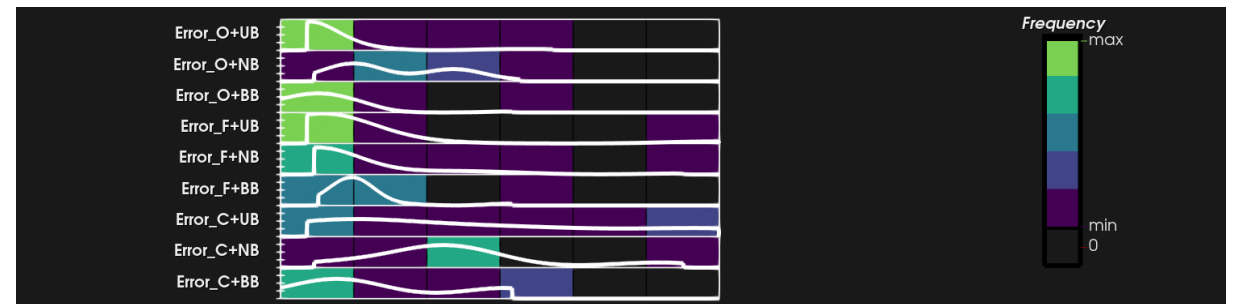


Figure 3: AccuStripes with overlay layout and UB

References

- [1] Wobbrock, JO, Findlater, L, Gergle, D, Higgins, JJ. The aligned rank66 transform for nonparametric factorial analyses using only anova procedures. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM; 2011,doi:10.1145/1978942.1978963.