

Nested Banner, Weight by Any Variable

Top: Nested Banner													
Side: Household Size													
Weight: WghtAgeGenRegRim (All)													
Frequencies Column Percents		Gender			Peer Group				Under 26				
					Management				Would Definitely Buy				
		Cases	Males	Females	Cases	NE	SE	SW					NW
Respondent Location													
Household Size	Cases	10,000	4,000	6,000	347	92	82	85	88	1,911	733	564	555
	Unweighted	10,000	4,985	5,015	343	90	77	96	80	3,684	1,413	1,094	1,065
		100.0%	124.6%	83.6%	99.0%	98.2%	93.8%	112.4%	91.4%	192.8%	192.8%	194.0%	192.0%
	1	2,577	1,049	1,528	1		1			262	180	155	136
		25.8%	26.2%	25.5%	0.2%		0.7%			13.7%	24.6%	27.5%	24.6%
	2	1,194	472	722	20	7	5	1	7	130	99	78	75
		11.9%	11.8%	12.0%	5.7%	7.3%	6.4%	1.4%	7.5%	6.8%	13.5%	13.8%	13.4%
	3	1,672	655	1,017	94	26	21	24	23	172	116	96	100
		16.7%	16.4%	16.9%	27.1%	28.9%	25.6%	27.8%	26.0%	9.0%	15.9%	17.1%	18.0%
	4	2,524	977	1,546	135	28	39	35	33	230	177	124	127
		25.2%	24.4%	25.8%	38.9%	30.8%	47.0%	41.6%	37.3%	12.0%	24.1%	22.0%	22.9%
	5	1,612	657	955	79	26	15	20	18	166	132	88	95
		16.1%	16.4%	15.9%	22.7%	27.9%	18.8%	23.1%	20.6%	8.7%	18.0%	15.5%	17.1%
6	366	165	201	17	5	1	5	6	35	25	21	19	
	3.7%	4.1%	3.4%	5.0%	5.1%	1.5%	6.1%	7.2%	1.9%	3.4%	3.7%	3.4%	
7	35	21	14	1				1	4	2	1	3	
	0.4%	0.5%	0.2%	0.4%				1.4%	0.2%	0.3%	0.2%	0.5%	
8 or more	20	3	16						1	1	1	1	
	0.2%	0.1%	0.3%						0.1%	0.1%	0.2%	0.1%	
Mean Number	3.07	3.08	3.07	3.95	3.95	3.81	4.05	3.98	3.03	3.10	2.97	3.07	
Weighted by Size	Cases	30,737	12,319	18,419	1,368	362	313	346	348	5,822	2,269	1,675	1,703
	1	2,577	1,049	1,528	1		1			262	180	155	136
		8.4%	8.5%	8.3%	0.0%		0.2%			4.5%	7.9%	9.3%	8.0%
	2	2,388	944	1,444	40	13	11	2	13	261	198	155	149
		7.8%	7.7%	7.8%	2.9%	3.7%	3.4%	0.7%	3.8%	4.5%	8.7%	9.3%	8.8%
	3	5,016	1,966	3,050	282	79	63	71	68	515	349	289	300
		16.3%	16.0%	16.6%	20.6%	22.0%	20.1%	20.6%	19.6%	8.8%	15.4%	17.3%	17.6%
	4	10,095	3,909	6,186	540	113	154	142	131	918	708	497	509
		32.8%	31.7%	33.6%	39.4%	31.2%	49.4%	41.1%	37.5%	15.8%	31.2%	29.6%	29.9%
	5	8,059	3,286	4,773	394	128	77	99	90	830	660	438	474
	26.2%	26.7%	25.9%	28.8%	35.3%	24.7%	28.6%	25.8%	14.3%	29.1%	26.1%	27.8%	
6	2,198	992	1,206	104	28	7	31	38	212	149	127	113	
	7.2%	8.1%	6.6%	7.6%	7.8%	2.3%	9.0%	10.9%	3.6%	6.6%	7.6%	6.6%	
7	247	147	100	9				9	28	16	6	18	
	0.8%	1.2%	0.5%	0.6%				2.5%	0.5%	0.7%	0.4%	1.0%	
8 or more	157	26	131						8	8	8	5	
	0.5%	0.2%	0.7%						0.1%	0.4%	0.5%	0.3%	

Fig1. Weight by any variable. The overall table is weighted by Age, Gender and Region. The lower part of the table shows Household Size weighted by itself, giving the total number of weighted occupants across all respondent households.

Double Indexed

Top: Brand Bought Last
Side: Education

Row Percents Arith Over Stats		Brand Bought Last										
		Brand1 N=3032	Brand2 N=1057	Brand3 N=954	Brand4 N=910	Brand5 N=899	Brand6 N=839	Brand7 N=1036	Brand8 N=978	Brand9 N=129	Brand10 N=166	Average N=1000
Education	Index: LT HIGH SCHOOL	88.15	103.89	110.76	92.59	96.02	107.83	123.32	98.86	123.13	95.69	100.00
	Index: HIGH SCHOOL	102.65	97.91	100.65	96.69	97.87	99.97	96.11	101.62	99.92	105.78	100.00
	Index: JUNIOR COLLEGE	95.00	98.98	96.85	104.52	113.35	102.02	111.48	101.42	63.20	57.29	100.00
	Index: BACHELOR	105.28	93.78	94.10	107.56	101.94	95.11	101.10	91.16	96.66	97.65	100.00
	Index: GRADUATE	99.85	117.27	92.45	115.26	104.74	95.18	72.48	102.37	92.39	114.88	100.00
	Index: No answer	16.49	189.21	52.41	109.89	111.23	59.59	96.53	306.75	387.60		100.00

Fig2. Double indexed table. The column labels carry the base counts to keep the cells as indices only. The rightmost Average column shows that each row is as much above as below 100.

Local Filters and Weights and Single Cell Significance

Top: Gender Side: Buy Regularly											
Column Percents Corner Net Respondents Single cell Z test 99% 95% 90%		Gender			WghtAgeGenRegCell (All)			WghtAgeGenRegCellPop (All)			
		Gender			Gender			Gender			
		Total	Males	Females	Total	Males	Females	Total	Males	Females	
Buy Regularly	Cases	10,000	4,985	5,015	10,000	4,000	6,000	1,000,000	400,000	600,000	
	Unweighted	10,000	4,985	5,015	10,000	4,985	5,015	10,000	4,985	5,015	
	BrandX	92%	93%	92%	93%	93%	92%	93%	93%	92%	
	BrandY	57%	56%	57%	57%	56%	58%	57%	56%	58%	
	BrandZ	65%	66%	64%	65%	66%	64%	65%	66%	64%	
Low Income	Buy Regularly	Cases	3,437	1,721	1,716	3,387	1,368	2,019	338,692	136,801	201,891
		Unweighted	3,437	1,721	1,716	3,437	1,721	1,716	3,437	1,721	1,716
		BrandX	92%	93%	92%	93%	94%	92%	93%	94%	92%
		BrandY	58%	56%	59%	58%	56%	60%	58%	56%	60%
		BrandZ	66%	67%	64%	66%	67%	65%	66%	67%	65%
High Income	Buy Regularly	Cases	2,996	1,474	1,522	3,035	1,202	1,833	303,460	120,174	183,286
		Unweighted	2,996	1,474	1,522	2,996	1,474	1,522	2,996	1,474	1,522
		BrandX	92%	92%	92%	92%	92%	92%	92%	92%	92%
		BrandY	55%	54%	56%	55%	53%	56%	55%	53%	56%
		BrandZ	65%	65%	65%	65%	65%	65%	65%	65%	65%

Fig3. The first three columns are unweighted, the middle three are weighted to Census age, gender and region, and the three rightmost columns weight up to 1,000,000. The side axis breaks out Buy Regularly by low and high income. The single-cell significance test colour codes for three significance levels. Insignificant cells are shown as grey.

Column T-Test on Overlapping Groups

Top: Gender

Side: Purchase Intention Intention

Filter: Valid Responses

Weight: WghtGenRegRim (All) Groups: bc,ef,hi,kl,no,qr,adgjmp

Column Percents Column groups test: 95% A 90% a	Brand1			Brand2			Brand3			Brand4			Brand5			Brand6		
	Gender			Gender			Gender			Gender			Gender			Gender		
	Total	Males	Female	Total	Males	Female	Total	Males	Female	Total	Males	Female	Total	Males	Female	Total	Males	Female
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Weighted	2,265.1	1,127	1,138	2,255.2	1,126	1,129	1,299.8	606	694	1,084.9	559	526	1,185.1	604	581	1,909.9	978	932
Unweighted	2,263.0	1,119	1,144	2,241.0	1,118	1,123	1,320.0	617	703	1,079.0	556	523	1,196.0	606	590	1,901.0	969	932
Unweighted %	100%	99%	101%	99%	99%	99%	102%	102%	101%	99%	99%	99%	101%	100%	101%	100%	99%	100%
Definitely Would Buy	16%	15%	16%	26%	27%	25%	24%	22%	26%	14%	15%	14%	29%	28%	30%	14%	15%	12%
Probably Would Buy	17%	17%	17%	18%	16%	19%	29%	30%	28%	14%	14%	14%	15%	17%	13%	24%	25%	24%
Might/Might Not Buy	21%	23%	20%	17%	16%	17%	14%	14%	14%	14%	13%	16%	25%	21%	28%	27%	25%	28%
Probably Would Not Buy	23%	24%	22%	25%	24%	26%	22%	23%	21%	14%	14%	15%	15%	16%	15%	21%	22%	20%
Definitely Would Never Buy	23%	22%	25%	14%	15%	14%	10%	10%	10%	43%	44%	42%	16%	18%	14%	14%	12%	15%
Top 2 Box	33%	32%	34%	44%	44%	44%	54%	52%	54%	28%	29%	28%	44%	45%	43%	38%	40%	37%
Bottom 2 Box	46%	45%	46%	40%	40%	40%	32%	33%	32%	57%	58%	56%	31%	34%	29%	35%	35%	35%
Mean	6.4	3.2	3.2	5.7	2.8	2.8	5.3	2.7	2.6	7.1	3.6	3.6	5.5	2.8	2.7	5.9	2.9	3.0
Standard Deviation	2.8	1.4	1.4	2.8	1.4	1.4	2.7	1.3	1.3	3.0	1.5	1.5	2.9	1.5	1.4	2.5	1.3	1.2
Standard Error	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0

Fig4. Each column brand is compared in gender groups, and then all Total columns against each other. Upper and lower case indicate the two significance levels. The lower part of the table shows top box, bottom box, and the mean rating, all with significance indicators, and the standard deviation and standard error of the rating scores. The table is overall filtered to valid responses, and overall weighted to Census gender and region, using the Rim algorithm.

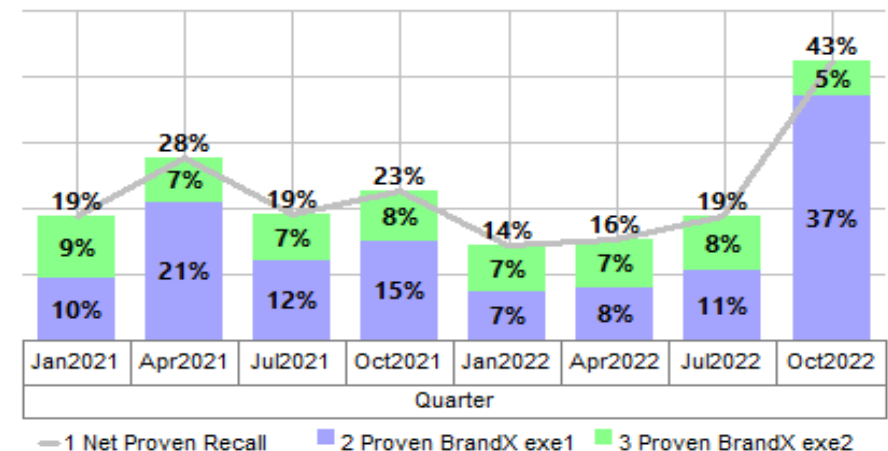
Top: Quarter		Side: BrandX Claimed Recall, BrandX Proven Recall								
Frequencies Column Percents		Quarter								
		Total	Jan2021	Apr2021	Jul2021	Oct2021	Jan2022	Apr2022	Jul2022	Oct2022
BrandX Claimed Recall	[cwf] Cases	10,000.00	650	650	650	610	640	650	660	610
	[1] Claimed Recall	6,575.00 65.8%	341 52.5%	399 61.4%	399 61.4%	394 64.6%	417 65.2%	425 65.4%	411 62.3%	427 70.0%
	[2] Total Asked Detail	3,607.00 36.1%	195 30.0%	221 34.0%	213 32.8%	212 34.8%	194 30.3%	202 31.1%	201 30.5%	255 41.8%
	[#c2/c1*cwf] Ratio	5,462.90 54.6%	371.70 57.2%	360.03 55.4%	346.99 53.4%	328.22 53.8%	297.75 46.5%	308.94 47.5%	322.77 48.9%	364.29 59.7%
BrandX Proven Recall	[get#BrXClaimed(#c2/c1*cwf)] Ratio as Base	5,462.90	371.70	360.03	346.99	328.22	297.75	308.94	322.77	364.29
	[1] Net Proven Recall	1,321.00 24.2%	71 19.1%	100 27.8%	67 19.3%	75 22.9%	43 14.4%	48 15.5%	61 18.9%	155 42.5%
	[2] Proven BrandX exe1	942.00 17.2%	36 9.7%	76 21.1%	42 12.1%	50 15.2%	22 7.4%	25 8.1%	35 10.8%	136 37.3%
	[3] Proven BrandX exe2	379.00 6.9%	35 9.4%	24 6.7%	25 7.2%	25 7.6%	21 7.1%	23 7.4%	26 8.1%	19 5.2%

Fig5. The top half shows the overall base counts in each month, those who claimed advertising recall, and the subset of Claimed who were asked for details. The ratio of total:claimed as a proportion of all cases is then used as the base for Proven, in order to scale up the subset. A different banner automatically recalculates the base for Proven. The lower Proven rows can exist without the upper Claimed.

Top: Quarter		Side: BrandX Proven Recall							
Column Percents		Quarter							
		Jan2021	Apr2021	Jul2021	Oct2021	Jan2022	Apr2022	Jul2022	Oct2022
BrandX Proven Recall	Net Proven Recall	19.1%	27.8%	19.3%	22.9%	14.4%	15.5%	18.9%	42.5%
	Proven BrandX exe1	9.7%	21.1%	12.1%	15.2%	7.4%	8.1%	10.8%	37.3%
	Proven BrandX exe2	9.4%	6.7%	7.2%	7.6%	7.1%	7.4%	8.1%	5.2%

As above, but as percents only with Claimed and base vectors removed for charting. Ruby runs ancestor tables (here, Quarter by BrXClaimed) seamlessly as required.

Quarter by BrandX Proven Recall



Big Data

Top: Q2 Side: Q4 TopSort: by row 1 First decreasing SideSort: by column 1 First decreasing													
Frequencies		Q2											
		Cases	code 62	code 33	code 23	code 32	code 77	code 4	code 86	code 29	code 44	code 56	code 6
Q4	Cases	1,000,000	10,277	10,237	10,202	10,164	10,159	10,150	10,149	10,129	10,126	10,124	10,118
	code 39	53,891	598	537	585	559	541	511	520	559	549	562	568
	code 13	53,831	618	539	522	567	552	604	535	557	565	562	550
	code 46	53,803	574	557	596	552	593	549	576	522	505	578	542
	code 18	53,790	563	526	575	534	572	550	574	519	572	572	588
	code 58	53,744	605	578	568	568	602	549	531	562	522	547	588
	code 75	53,695	619	547	569	546	562	549	584	573	573	606	528
	code 3	53,671	570	535	589	517	561	577	582	590	546	572	491
	code 55	53,657	620	613	559	610	525	541	564	608	538	519	579
	code 20	53,643	549	571	523	589	548	571	574	547	587	542	528
	code 33	53,642	571	564	565	541	601	575	580	549	557	539	572
	code 80	53,609	552	552	542	559	551	569	528	581	573	572	522
	code 5	53,608	576	533	585	613	552	596	574	525	576	566	538
	code 29	53,606	572	560	557	567	593	569	560	582	555	584	551
	code 43	53,603	566	580	500	544	593	548	635	584	546	548	551
	code 76	53,602	551	577	549	564	599	549	559	575	565	579	541
	code 22	53,591	604	585	558	577	588	537	577	568	567	571	571
	code 66	53,588	584	581	585	555	571	600	594	528	599	542	538
	code 67	53,586	540	554	539	542	531	545	554	574	560	555	561
	code 37	53,585	599	552	563	517	566	538	553	583	586	560	588
code 17	53,578	540	555	585	554	585	545	588	588	584	540	544	

Fig6. A million cases, with Q4 as multi-response (up to ten codes per case), 100 rows by 100 columns. Generates in a little over two seconds. The table is sorted both ways on the base vectors.

A count of values on Q4 shows an average of 5.5 mentions per respondent, evenly distributed above/below code 50.

Top: Q2 Side: Q4 Count of Values		
Row Proportions	Q2	
	Cases	Average
Average # mentions	1,000,000.0	5.5
Average # 1 to 50	899,971.0	3.1
Average # 51 to 100	899,782.0	3.1

Consideration Share

Top: Share												
Side: Consideration Share Brand												
Filter: Share (Definitely Will Buy)												
Column Percents			Share		North				South			
					Male		Female		Male		Female	
			Share		Share		Share		Share			
			Cases	Share	Cases	Share	Cases	Share	Cases	Share	Cases	Share
Net Brand Bought Last (Brand X)	Consideration Share Brand X	Cases	4,793	4,793	1,209	1,209	1,267	1,267	1,155	1,155	1,162	1,162
		BrandX	76.9%	42.5%	77.3%	41.8%	78.1%	43.5%	75.3%	42.0%	76.8%	42.6%
		BrandY	59.2%	29.5%	60.0%	29.3%	58.2%	28.9%	60.3%	30.6%	58.5%	29.3%
		BrandZ	57.4%	28.0%	59.5%	28.9%	57.4%	27.6%	56.0%	27.4%	56.5%	28.1%
		Total	193.5%	100.0%	196.7%	100.0%	193.6%	100.0%	191.7%	100.0%	191.8%	100.0%
Net Brand Bought Last (Brand Y)	Consideration Share Brand Y	Cases	2,512	2,512	655	655	607	607	631	631	619	619
		BrandX	76.8%	41.6%	76.9%	41.7%	76.9%	40.9%	78.3%	42.3%	75.0%	41.4%
		BrandY	59.5%	29.1%	60.2%	29.3%	60.1%	29.3%	60.7%	29.5%	56.9%	28.5%
		BrandZ	59.5%	29.3%	58.8%	29.1%	60.6%	29.8%	59.3%	28.2%	59.3%	30.1%
		Total	195.7%	100.0%	195.9%	100.0%	197.7%	100.0%	198.3%	100.0%	191.1%	100.0%
Net Brand Bought Last (Brand Z)	Consideration Share Brand Z	Cases	2,191	2,191	558	558	537	537	513	513	583	583
		BrandX	77.6%	42.3%	76.0%	41.7%	78.2%	42.1%	77.0%	43.1%	79.2%	42.4%
		BrandY	59.7%	29.8%	60.4%	30.7%	59.8%	29.8%	59.5%	30.0%	59.3%	28.6%
		BrandZ	57.1%	27.9%	56.3%	27.6%	58.3%	28.1%	54.2%	26.9%	59.5%	29.0%
		Total	194.5%	100.0%	192.7%	100.0%	196.3%	100.0%	190.6%	100.0%	198.1%	100.0%

Fig7. Also known as Attitudinal or Stochastic Share. Respondents can definitely consider more than one brand, so the cells are incremented by the reciprocal of the number of considers. If two brands, then 1/2, and if 3, then 1/3, etc. This ensures that the Share columns sum to 100%.

The Total/Cases cells are all nearly 200%, indicating that on average, each respondent considers up to two brands.

Reference Column T-Test with Probabilities

Top: Custom Banner						
Side: Buy Regularly, Buy Most Often						
Frequencies Column Percents Reference Column test: Proportions T, 90% 80% 70%		Count				
		Count	Under 50 Males	Over 50 Females	Under 50 Married	Over 50 Unmarried
Buy Regularly	All Respondents	10,000	2,878	2,037	3,269	1,759
	BrandX	9,233	2,682	1,855	3,025	1,615
		92%	93%	91%	93%	92%
		p=0.00	p=0.88	p=0.95	p=0.30	p=0.55
	BrandY	5,659	1,631	1,130	1,887	975
		57%	57%	55%	58%	55%
		p=0.00	p=0.06	p=0.65	p=0.74	p=0.63
BrandZ	6,521	1,904	1,269	2,161	1,135	
	65%	66%	62%	66%	65%	
	p=0.00	p=0.65	p=0.99	p=0.65	p=0.42	
Buy Most Often	All Respondents	10,000	2,878	2,037	3,269	1,759
	BrandX	6,200	1,789	1,267	1,986	1,115
		62%	62%	62%	61%	63%
		p=0.00	p=0.12	p=0.13	p=0.80	p=0.73
	BrandY	1,805	520	364	622	293
		18%	18%	18%	19%	17%
		p=0.00	p=0.02	p=0.15	p=0.79	p=0.84
BrandZ	1,995	569	406	661	351	
	20%	20%	20%	20%	20%	
	p=0.00	p=0.17	p=0.02	p=0.26	p=0.00	

- ☐ ● Count (base: cwf)
- 1=Count
- Age(1/3)&GEN(1) = Under 50 Males
- Age(4/5)&GEN(2) = Over 50 Females
- Age(1/3)&Married(1) = Under 50 Married
- Age(4/5)&Married(2) = Over 50 Unmarried

Fig8. The four rightmost columns are each compared to the Count column, where p=0. The banner points are dynamic expressions which can be edited, extended or removed.

Base on Vectors from Ancestor Tables

Top: Net Brand Bought Last Side: Brand Preferred		Net Brand Bought Last			
Frequencies Column Percents Corner Net Respondents		Total	BrandX	BrandY	BrandZ
Brand Preferred	Base: Total	10,000	5,043	2,648	2,309
	Brand1	2,334 23.3%	1,179 23.4%	603 22.8%	552 23.9%
Brand Preferred	Base: Males NE	1,255.0	624.0	342.0	289.0
	Brand1	2,334 186.0%	1,179 188.9%	603 176.3%	552 191.0%
Brand Preferred	Base: Total	10,000	5,043	2,648	2,309
	Brand2	1,925 19.2%	990 19.6%	496 18.7%	439 19.0%
Brand Preferred	Base: Females	5,015.0	2,541.0	1,295.0	1,179.0
	Brand2	1,925 38.4%	990 39.0%	496 38.3%	439 37.2%
Brand Preferred	Base: Total	10,000	5,043	2,648	2,309
	Brand3	1,005 10.0%	517 10.3%	269 10.2%	219 9.5%
Brand Preferred	Base: North East	2,522.0	1,283.0	675.0	564.0
	Brand3	1,005 39.8%	517 40.3%	269 39.9%	219 38.8%

Fig9. Any row or column can be based on any expression. The second row is Brand 1 based on Total. The fourth row is Brand 1 based on Males in the NE. Similarly, the middle section shows Brand 2 based on females, and lower section shows Brand 3 based on North East. The base vectors are obtained by first generating Net BBL by Gender and Region.

- ☐ ● BPRF (base: cwf)
 - ⊗ cwf = Base: Total
 - ⊗ 1=Brand1
- ☐ ● BPRF (base: @Gen(1)&Region(1))
 - ☐ --
- ☐ ● BPRF (base: cwf)
- ☐ ● BPRF (base: @GEN(2))
 - ☐ --
- ☐ ● BPRF (base: cwf)
- ☐ ● BPRF (base: @Region(1))

NPS with Spread Statistics and Row Groups T-Test

Top: NPS Details

Side: Year

Groups: bcde,ghij,lmno

Row Percents
Row groups test: Proportions T,
Means T

99.9% A 99% a

			NPS Details							
			Cases	Detractors	Passives	Promoters	Net Promoter Score	Mean	StdDev	StdErr
Brand X	Year	Cases	10,000	40%	28%	32%	-8%	6.6	2.7	0.0
		2001	2,560	29%	40%	31%	3%	7.3	2.1	0.0
		2002	2,560	43%	16%	41%	-2%	6.5	3.0	0.1
		2003	2,560	45%	27%	27%	-18%	6.3	2.7	0.1
		2004	2,320	43%	28%	29%	-14%	6.3	2.8	0.1
Brand Y	Year	Cases	10,000	42%	26%	32%	-11%	6.5	2.8	0.0
		2001	2,560	26%	44%	30%	4%	7.5	1.9	0.0
		2002	2,560	41%	19%	40%	-0%	6.7	2.7	0.1
		2003	2,560	52%	18%	30%	-22%	5.9	3.1	0.1
		2004	2,320	51%	24%	25%	-26%	6.0	2.8	0.1
Brand Z	Year	Cases	10,000	39%	28%	33%	-7%	6.6	2.6	0.0
		2001	2,560	35%	27%	38%	2%	7.0	2.5	0.0
		2002	2,560	36%	34%	30%	-6%	6.5	2.7	0.1
		2003	2,560	40%	34%	25%	-15%	6.4	2.6	0.1
		2004	2,320	46%	15%	38%	-8%	6.6	2.6	0.1

- ☐ ● NPS_Year.Score (base: cwf) = NPS Details
- cwf = Cases
- sum#(1/6)=Detractors
- sum#(7/8)=Passives
- sum#(9/10)=Promoters
- sum#(9/10)-sum#(1/6)=Net Promoter Score
- cmn=Mean
- csd=StdDev
- cse=StdErr

Fig10. Net Promoter Score as row percents, summary statistics and significance testing on the side groups. The case data is packaged as a cube of Score within Year within Brand, displayed with two dimensions on the side nested as a single axis, and the third dimension, the score and expressions, as the banner.

Grid Variable with T2B, B2B, Spread Stats, Mean Significance and some Styling

Top: Purchase Intention Brand

Side: Purchase Intention

Frequencies Column Percents 99.99% A 99.9% a		Purchase Intention Brand							
		Cases	Brand1	Brand2	Brand3	Brand4	Brand5	Brand6	
		A	B	C	D	E	F	G	
Purchase Intention	Cases	10,000	2,263	2,241	1,320	1,079	1,196	1,901	
	Top 2 Box	3,991.0	740.0	975.0	709.0	312.0	526.0	729.0	
		39.91%	32.70%	43.51%	53.71%	28.92%	43.98%	38.35%	
			BEg		ABCEFG		BE	BE	
	Definitely Would Buy	2,044	361	583	327	156	344	273	
		20.44%	15.95%	26.02%	24.77%	14.46%	28.76%	14.36%	
			ABEG		aBEG		ABEG		
	Probably Would Buy	1,947	379	392	382	156	182	456	
		19.47%	16.75%	17.49%	28.94%	14.46%	15.22%	23.99%	
			ABCEF					ABCEF	
	Might/Might Not Buy	2,025	493	374	194	154	296	514	
		20.25%	21.79%	16.69%	14.70%	14.27%	24.75%	27.04%	
			CDE				aCDE		ABCDE
	Bottom 2 Box	3,984.0	1,030.0	892.0	417.0	613.0	374.0	658.0	
39.84%		45.51%	39.80%	31.59%	56.81%	31.27%	34.61%		
		ACDFG		DFg	ABCDG				
Probably Would Not Buy	2,096	514	565	281	154	182	400		
	20.96%	22.71%	25.21%	21.29%	14.27%	15.22%	21.04%		
		EF		AEF		EF			
Definitely Would Never Buy	1,888	516	327	136	459	192	258		
	18.88%	22.80%	14.59%	10.30%	42.54%	16.05%	13.57%		
		ACDFG		d	ABCDG		D		
Mean	3.0	3.2	2.8	2.6	3.6	2.7	3.0		
		ACDFG		D		ABCDG		DF	
Standard Deviation	1.4	1.4	1.4	1.3	1.5	1.4	1.3		
Standard Error	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Fig11. Many different colour schemes – change all/any fonts, colours, borders, text alignment and justification, cell backgrounds, grid size, etc. The table itself is from the grid variable PurchInt, which has two axes, Brand and Intention.

Multi-dimensional Tables and a Different Approach to Styling

Top: Brand Bought Last

Side: Count, Brand Consideration

Frequencies Column Percents 99% A 98% a		Brand Bought Last											
		Cases	Brand1	Brand2	Brand3	Brand4	Brand5	Brand6	Brand7	Brand8	Brand9	Brand10	
		A	B	C	D	E	F	G	H	I	J	K	
Count	Cases	10,000	3,032	1,057	954	910	899	839	1,036	978	129	166	
Brand Consideration	Brand X	Definitely Will Buy	7,315 73.2%	2,213 73.0%	775 73.3%	697 73.1%	671 73.7%	662 73.6%	596 71.0%	791 76.4% GI	691 70.7%	99 76.7%	120 72.3%
		Might Buy	2,375 23.8%	726 23.9%	249 23.6%	229 24.0%	222 24.4%	202 22.5%	214 25.5% h	214 20.7%	253 25.9% H	24 18.6%	42 25.3%
		Definitely Won't Buy	310 3.1%	93 3.1%	33 3.1%	28 2.9%	17 1.9%	35 3.9% E	29 3.5%	31 3.0%	34 3.5%	6 4.7%	4 2.4%
		Mean	1.3	1.3	1.3	1.3	1.3	1.3	1.3 h	1.3	1.3 H	1.3	1.3
	Brand Y	Definitely Will Buy	5,642 56.4%	1,688 55.7%	621 58.8%	530 55.6%	499 54.8%	512 57.0%	483 57.6%	609 58.8%	532 54.4%	76 58.9%	92 55.4%
		Might Buy	1,276 12.8%	375 12.4%	152 14.4%	130 13.6%	121 13.3%	120 13.3%	106 12.6%	124 12.0%	112 11.5%	11 8.5%	25 15.1%
		Definitely Won't Buy	3,082 30.8%	969 32.0% C	284 26.9%	294 30.8%	290 31.9% c	267 29.7%	250 29.8%	303 29.2%	334 34.2% Ch	42 32.6%	49 29.5%
		Mean	1.7	1.8 C	1.7	1.8	1.8	1.7	1.7	1.7	1.7	1.8 C	1.7
	Brand Z	Definitely Will Buy	5,496 55.0%	1,660 54.7%	586 55.4%	504 52.8%	498 54.7%	507 56.4%	489 58.3% i	583 56.3%	513 52.5%	69 53.5%	87 52.4%
		Might Buy	764 7.6%	249 8.2%	72 6.8%	65 6.8%	76 8.4%	62 6.9%	59 7.0%	74 7.1%	80 8.2%	9 7.0%	18 10.8%
		Definitely Won't Buy	3,740 37.4%	1,123 37.0%	399 37.7%	385 40.4% g	336 36.9%	330 36.7%	291 34.7%	379 36.6%	385 39.4%	51 39.5%	61 36.7%
		Mean	1.8	1.8	1.8	1.9 g	1.8	1.8	1.8	1.8	1.8	1.9 g	1.9

Fig12. The Brand Consideration grid variable is displayed as a single axis of two (nested) dimensions on the side. Significance letters are appended (instead of in a dedicated row) to reduce vertical extent.

Auto Arrangement and Sorting of Nets

Top: Count
Side: Unaided Other Brand Aware

Column Per cents	Count	
	Cases	Count
Cases WF	10,000	10,000
Brand1	2,335	23%
Brand2	3,989	40%
Brand3	5,136	51%
Brand4	4,335	43%
Brand5	3,088	31%
Brand6	2,201	22%
Brand7	1,398	14%
Brand8	737	7%
Brand9	373	4%
Brand10	435	4%
BrandX Net	8,494	85%
BrandY Net	7,355	74%
BrandZ Net	2,739	27%

Top: Count
Side: Unaided Other Brand Aware

Column Per cents	Count	
	Cases	Count
Cases WF	10,000	10,000
BrandX Net	8,494	85%
Brand1	2,335	23%
Brand2	3,989	40%
Brand3	5,136	51%
BrandY Net	7,355	74%
Brand4	4,335	43%
Brand5	3,088	31%
Brand6	2,201	22%
BrandZ Net	2,739	27%
Brand7	1,398	14%
Brand8	737	7%
Brand9	373	4%
Brand10	435	4%

Top: Count
Side: Unaided Other Brand Aware
SideSort: by column 1 First decreasing

Column Per cents	Count	
	Cases	Count
Cases WF	10,000	10,000
BrandX Net	8,494	85%
Brand3	5,136	51%
Brand2	3,989	40%
Brand1	2,335	23%
BrandY Net	7,355	74%
Brand4	4,335	43%
Brand5	3,088	31%
Brand6	2,201	22%
BrandZ Net	2,739	27%
Brand7	1,398	14%
Brand8	737	7%
Brand10	435	4%
Brand9	373	4%

Top: Count
Side: Region
SideSort: by column 1 First decreasing

Column Percents	Count	
	Cases	Count
Cases WF	10,000	10,000
NorthEast and West	7,541	75%
North	5,066	51%
West	5,019	50%
NW	2,544	25%
East and SouthWest	7,456	75%
East	4,981	50%
NE	2,522	25%
SE	2,459	25%
South	4,934	49%
SW	2,475	25%

Fig13a. Nets as summary rows

Fig13b. Nets as parents, indented children

Fig13c. Sorted children within sorted parents

Fig13d. Overlapping nets sort intelligently

Fig13. Net expressions can be arranged as parent/child/grandchild/... to any depth. Sorting is performed recursively until all netted items are accounted for. Sorting can be either ascending or descending, and any column can be selected as the key.

Uncoded Axes - Weighting Variable Diagnostics

Top: Month
Side: WghtAgeGenRegRimPer, Count

Column Percents		All Months	Jan2021	Feb2021	Mar2021	Apr2021	May2021	Jun2021	Jul2021	
WghtAgeGenRegRimPer	Unweighted Cases	10,000	230	200	220	210	230	210	220	
	Factor Mean	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	Factor Median	0.88	0.74	0.82	0.83	1.06	0.93	0.67	0.82	
	Factor StdDev	0.56	0.58	0.58	0.58	0.44	0.45	0.70	0.56	
	Factor StdErr	0.01	0.04	0.04	0.04	0.03	0.03	0.05	0.03	
	Lowest Factor (Min)	0.23	0.33	0.24	0.26	0.34	0.45	0.27	0.23	
	Highest Factor (Max)	3.36	2.48	2.39	2.39	1.78	1.89	2.51	2.48	
	Max - Min	3.13	2.14	2.15	2.13	1.44	1.45	2.24	2.25	
	Total	10,000.00	230.00	200.00	220.00	210.00	230.00	210.00	220.00	
WghtAgeGenRegRimPer (All)	Count	Weighted Cases	10,000	230	200	220	210	230	210	220
		Unweighted Case Ratio	100%	100%	100%	100%	100%	100%	100%	100%
		Effective Base	7,638	172	149	164	176	192	142	164
		Efficiency Score	76.38	74.83	74.75	74.67	83.71	83.38	67.50	73.64
		Count	100%	100%	100%	100%	100%	100%	100%	100%

Fig14a. Weight Variable Analysis. This table shows the spread statistics on a weight variable (top) and some useful diagnostics on the weighted and unweighted counts (bottom).

Ruby seamlessly cross tabulates uncoded variables by self-coding the values on the fly. The mean should always be 1 or very close to it. If < 1 then the quotas could not be fulfilled. You can sort any row (by right mouse menu) to discover which month had the overall max or min values. The Efficiency Score is the Effective Base as a percentage of Weighted Cases (for Jan2021, $100 \times 172 / 230 = 74.83$), but since a score, is not displayed with a % sign. The leftmost column shows the all-months values.

Statistics such as code mean, standard deviation, max/min etc are always available for any variable.

Fig14b. A bad weight value in Jan21 is immediately apparent.

		All Months	Jan2021	Feb2021	
WghtAgeGenRegRimPer	Unweighted Cases	10,000	230	200	
	Factor Mean	1.10	5.30	1.00	
	Factor Median	0.88	0.74	0.82	
	Factor StdDev	9.92	65.34	0.58	
	Factor StdErr	0.10	4.31	0.04	
	Lowest Factor (Min)	0.23	0.33	0.24	
	Highest Factor (Max)	991.82	991.82	2.39	
	Max - Min	991.60	991.49	2.15	
	Total	10,000.00	230.00	200.00	
WghtAgeGenRegRimPer (All)	Count	Weighted Cases	10,990	1,220	200
		Unweighted Case Ratio	91%	19%	100%
		Effective Base	7,467	2	149
		Efficiency Score	74.67	0.66	74.75
		Count	100%	100%	100%

LOGITs: Brand Health

Top: Brand Attribute Ratings Attribute
Side: Brand Attribute Ratings Rating, avg#(2;4), v2/v5, v4/v5, avg#(6/7), lgn#(6), lgn#(7), v9+v10

Frequencies			Brand Attribute Ratings		
			Attribute1	Attribute2	
Brand Attribute Ratings Brand (BrandX)	Brand Attribute Ratings Rating	Cases WF	10,000	10,000	v1
		Code Mean	2.64	2.76	v2
Brand Attribute Ratings Brand (BrandY)	Brand Attribute Ratings Rating	Cases WF	10,000	10,000	v3
		Code Mean	3.13	3.02	v4
Average of Means			2.88	2.89	v5
Index Brand 1			0.92	0.95	v6
Index Brand 2			1.08	1.05	v7
Indices should average to 1			1.00	1.00	v8
lgn(row 6) LOGIT Brand 1			-0.09	-0.05	v9
lgn(row 7) LOGIT Brand 2			0.08	0.04	v10
Logs should sum to zero			-0.01	-0.00	

- ☐ ▾ BratRats.Brand(1)
 - ☐ ● BratRats.Rating (base: cwf) Rating
 - cwf=Cases WF
 - cmn=Code Mean
- ☐ ▾ BratRats.Brand(2)
 - ☐ ● BratRats.Rating (base: cwf) Rating
 - cwf=Cases WF
 - cmn=Code Mean
 - avg#(2;4) = Average of Means
 - v2/v5 = Index Brand 1
 - v4/v5 = Index Brand 2
 - avg#(6/7) = Indices should average to 1
 - lgn#(6) = lgn(row 6) LOGIT Brand 1
 - lgn#(7) = lgn(row 7) LOGIT Brand 2
 - v9+v10 = Logs should sum to zero

Fig15. Table functions and vector arithmetic. The LOGITs analysis is designed to measure brand health on attribute ratings without the large versus small (market share) bias. The table functions avg# and lgn# (natural log) do not cite a variable, so the operands must be the table rows. The 'v' for 'vector' operator returns the table row.

Functions are at the case, variable or table levels.

sum_<varname>(<codes>) returns the sum of codes per case

sum#<varname>(<codes>) returns the sum of vectors for the codes (first generating if needed)

<parent>|sum#(<codes>) returns the sum of parent codes

sum#(<vector indices>) (as an orphan) returns the sum of vectors

v1 is shorthand for sum#(1).

There are 17 case functions (net, sum, avg, count values etc) and 31 table functions (code mean, sum, avg, normalize, stddev etc)

Nested X Axis, Overlap Cluster Bars, Data Labels



Gender, Married by Net Brand Bought Ever

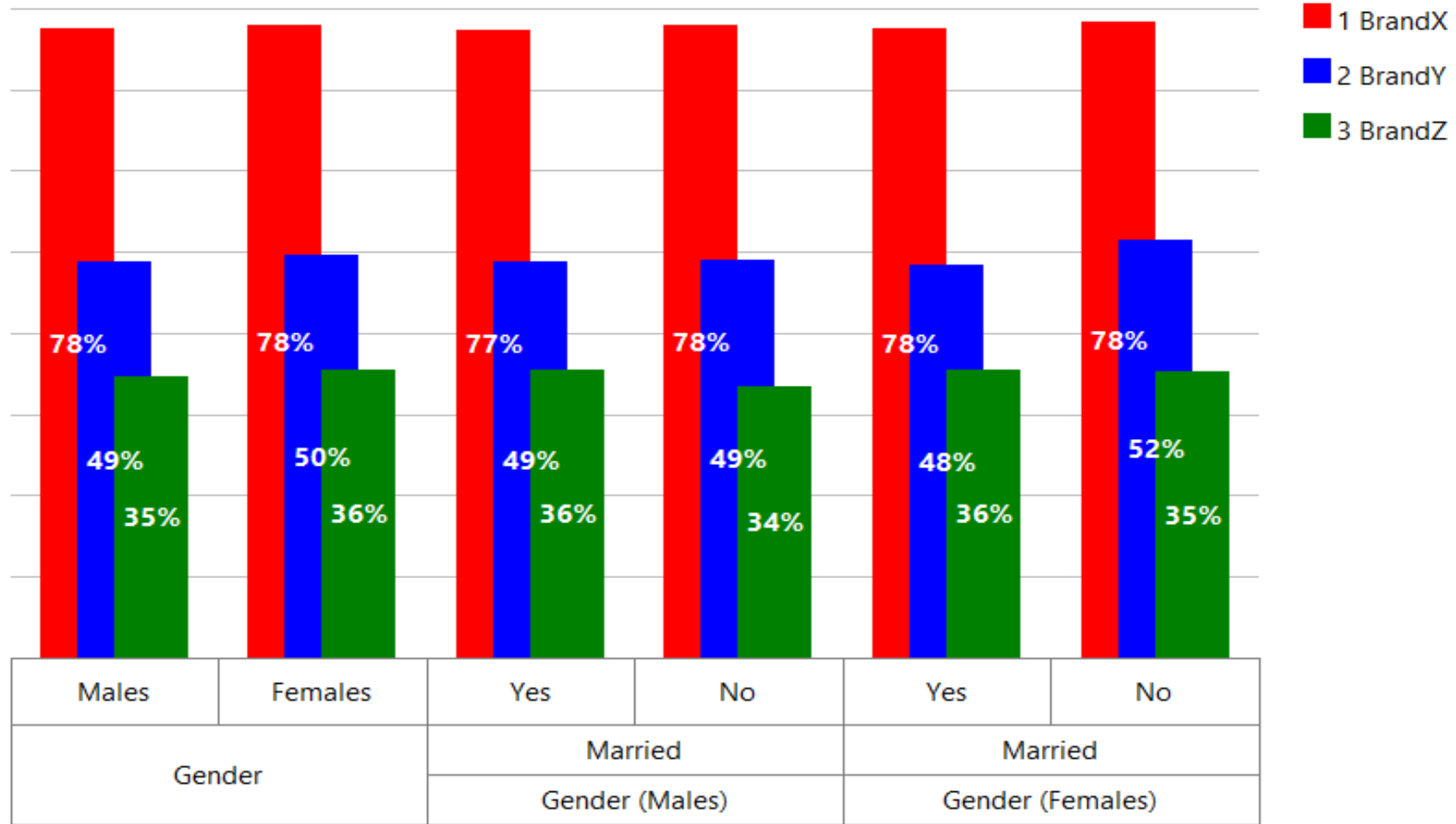


Fig16. All standard charting features are built in.

Time Series Smoothing

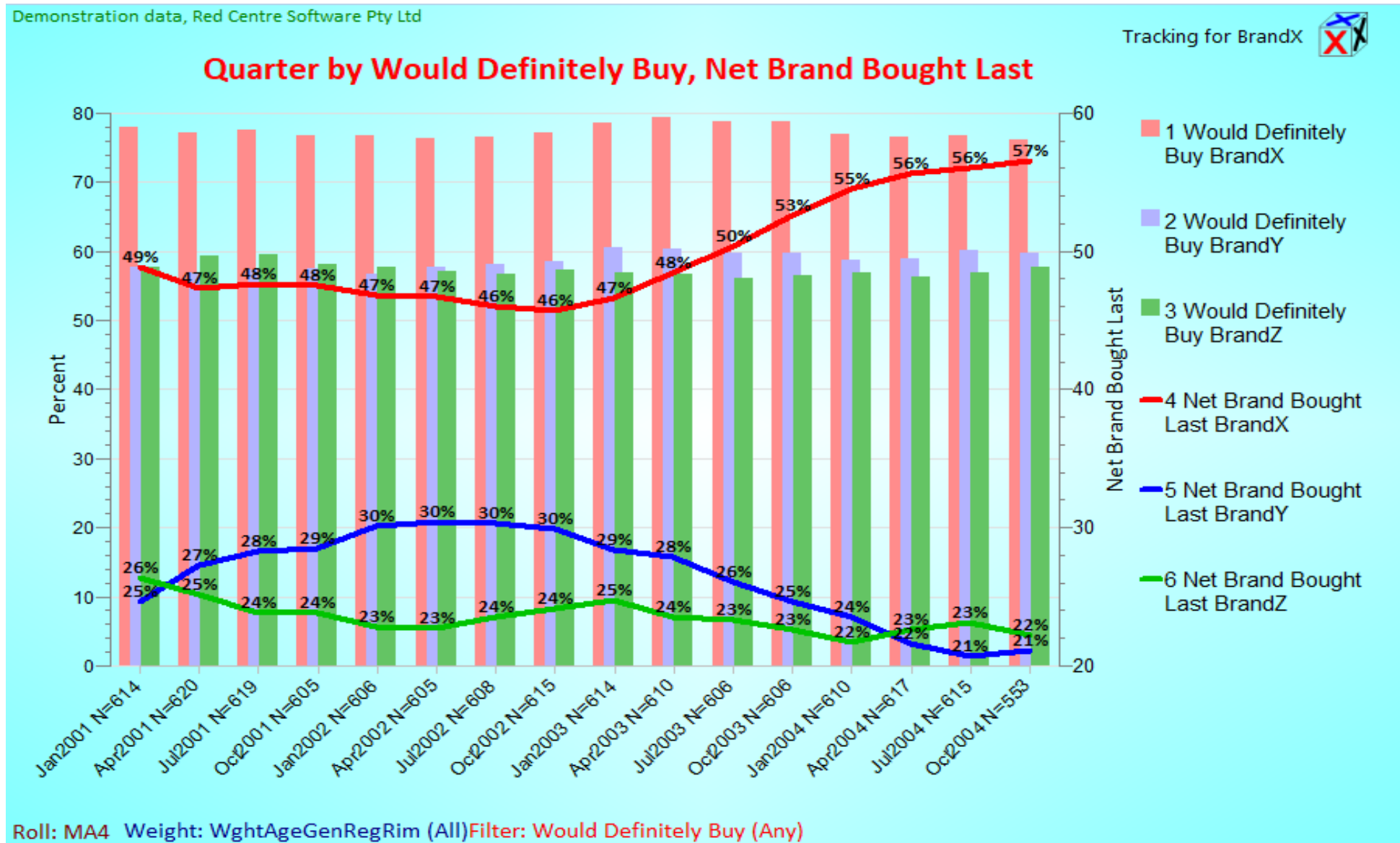


Fig17. A basic chart, with mixed stacked bars and line series, angled X axis labels, data labels on selected series, free text and logos, and the base counts wrapped into the X axis labels. Note the dynamic place-holders for roll (moving average), weight and filter (if any).

All Ruby reports can be viewed as either tables or charts, or as both in the same window.

Graphics Enhanced

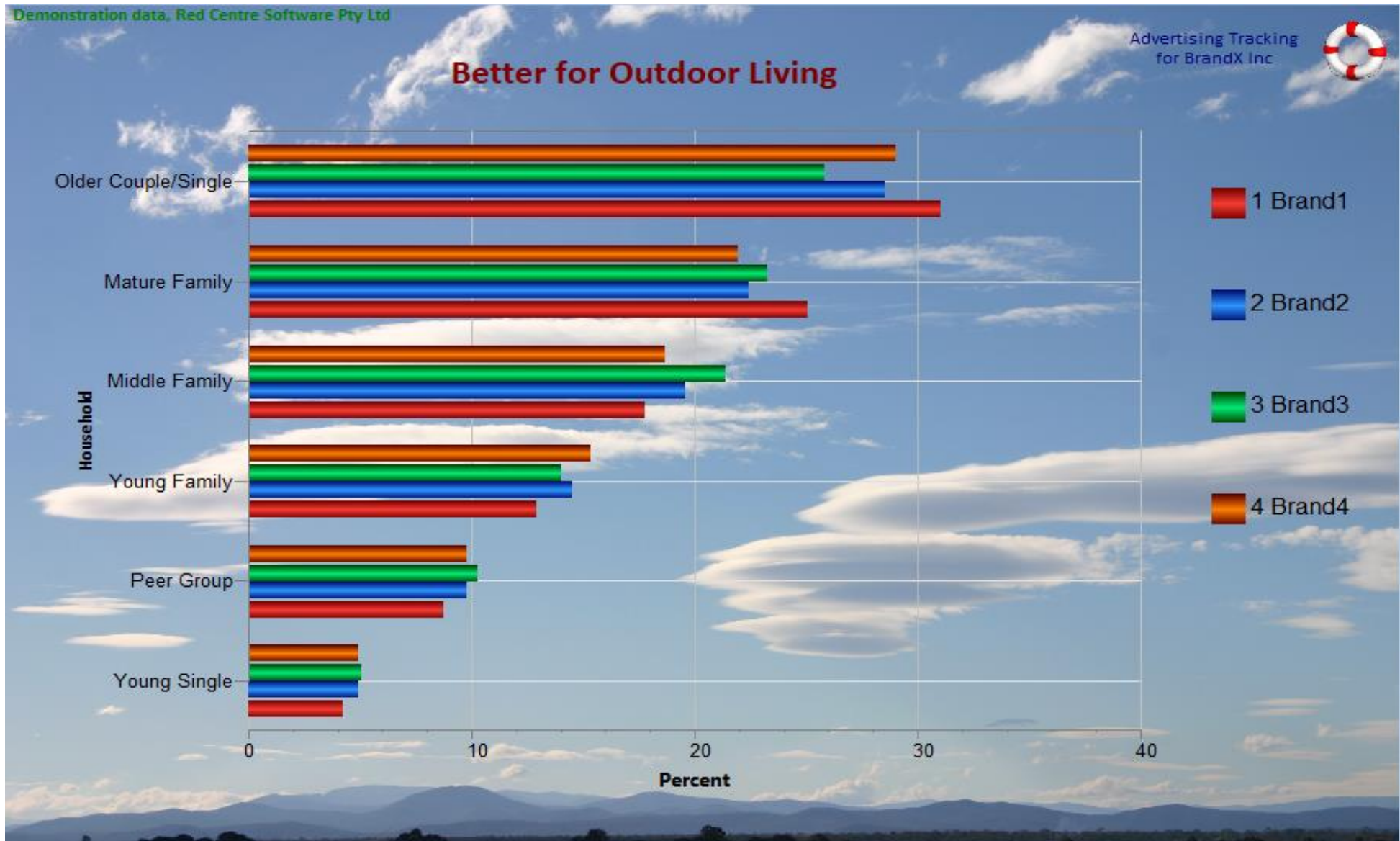


Fig18. Horizontal cluster bars on photo background for semantic reinforcement.

Multi-Pie Charts

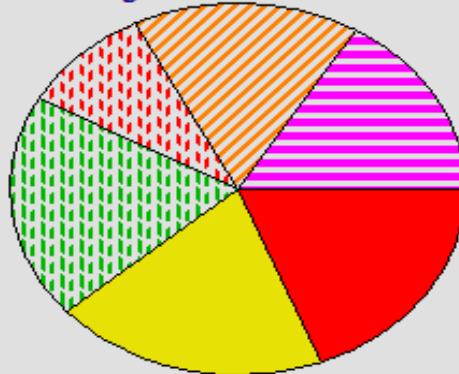
Demonstration data, Red Centre Software Pty Ltd

Advertising Tracking
for BrandX Inc

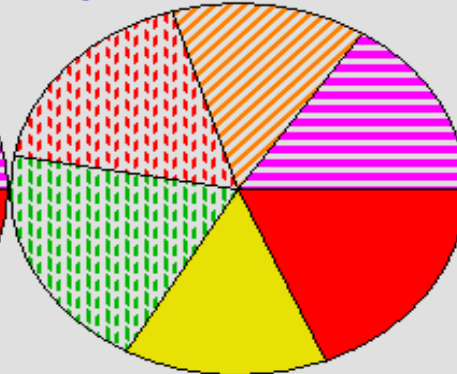


Respondent Occupation by Household

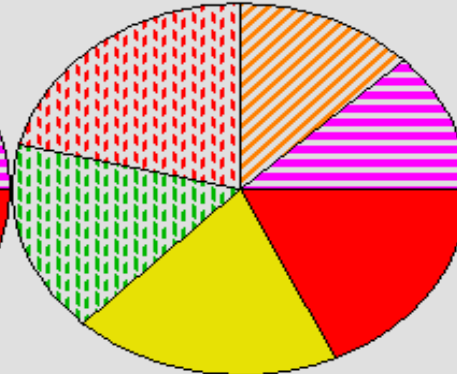
Management



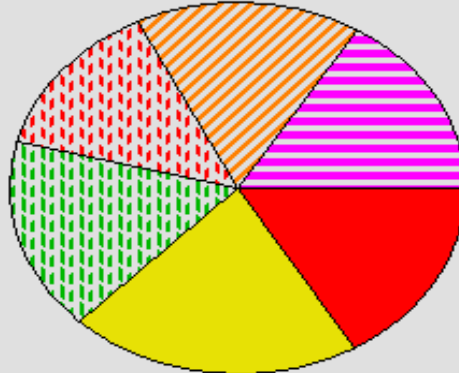
Professional



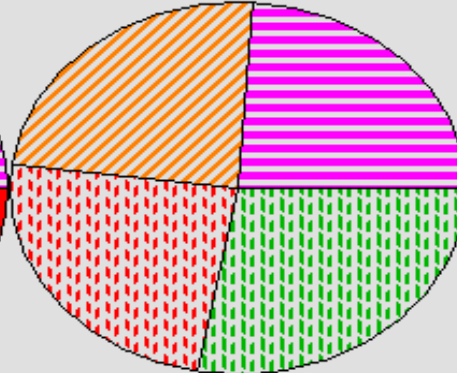
Administrative



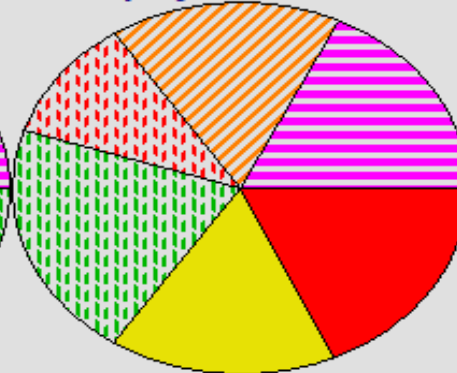
Blue Collar



Housewife



Unemployed



- 1 Young Single
- 2 Peer Group
- 3 Young Family
- 4 Middle Family
- 5 Mature Family
- 6 Older Couple/Single

Roll: none Weight: None

Filter: Region (NE)&Gender (Females)

Fig19. Multiple pies with different fills and mixed fonts.

Scale Series by Factors

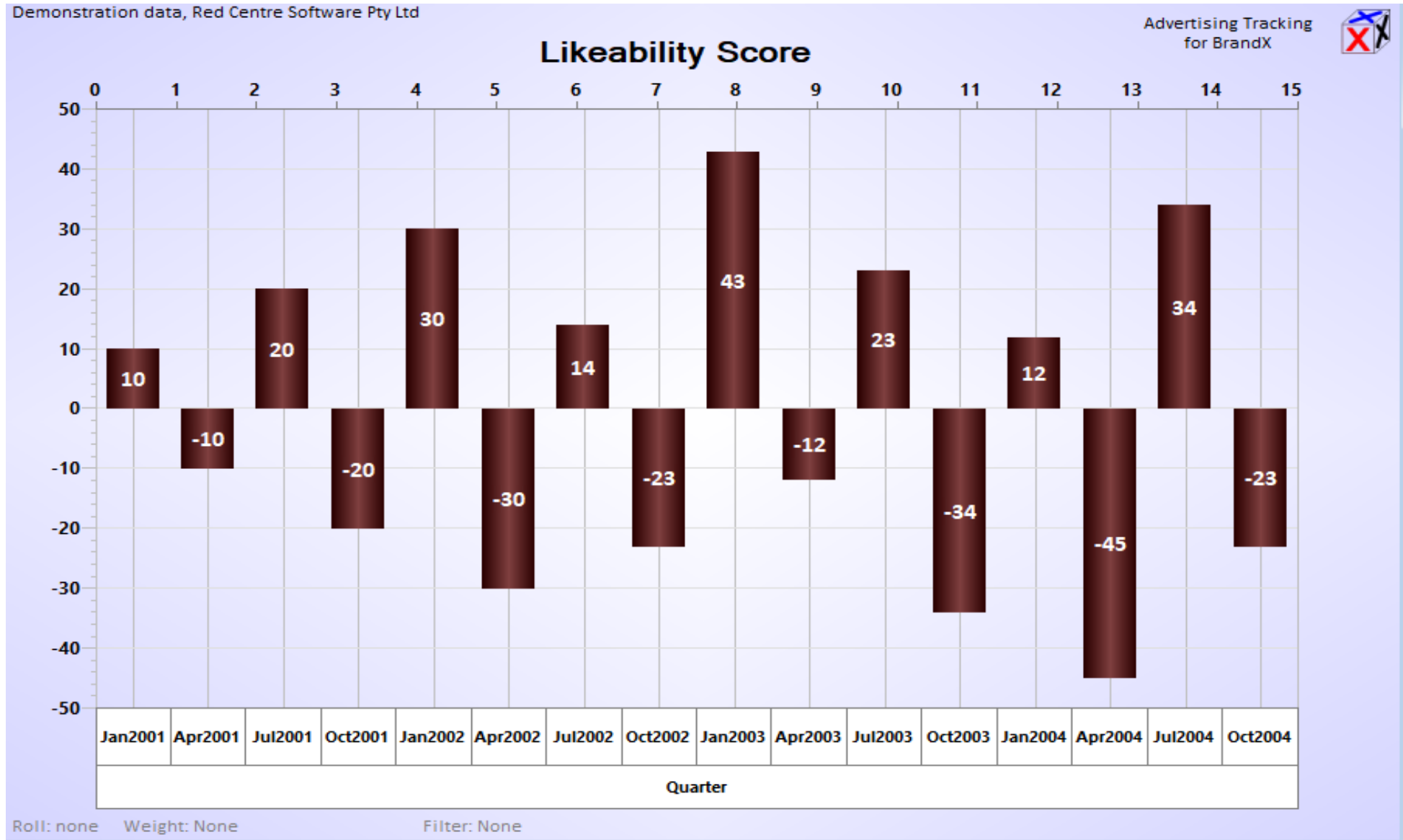


Fig20. Series can be scaled independently of the underlying table. Here, a positive table percentage of dislike is plotted as negative (scaled by -1) to enhance meaning.

The lower part of the table shows Household size weighted by itself, giving the total number of occupants across all respondent households.

Time Series Statistics

Demonstration data, Red Centre Software Pty Ltd

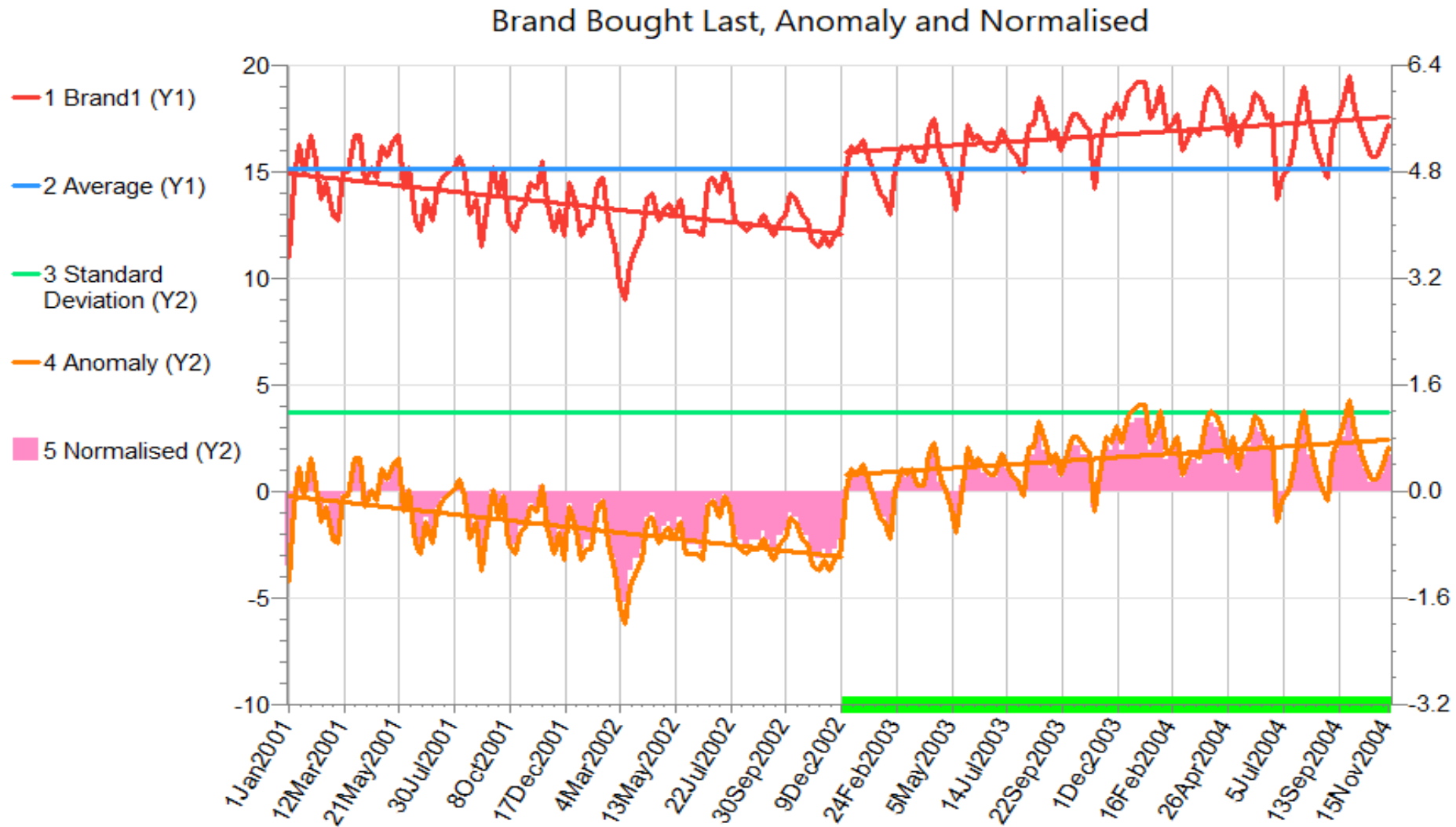


Fig21. Typical time series calculations. The average and the standard deviation are 'parked' in the table in a hidden column. The first series is the column percentages. The second and third series, as constants, are flat lines. The anomaly is then Brand1 minus Average, and Normalised is Anomaly scaled by Standard Deviation. The X axis selection is by mouse drag from 9Dec2002 to 15Nov2004. Trend lines (if present) will follow the X axis selections.

Radar Chart

Demonstration data, Red Centre Software Pty Ltd

Advertising Tracking
for BrandX Inc



Brand Image

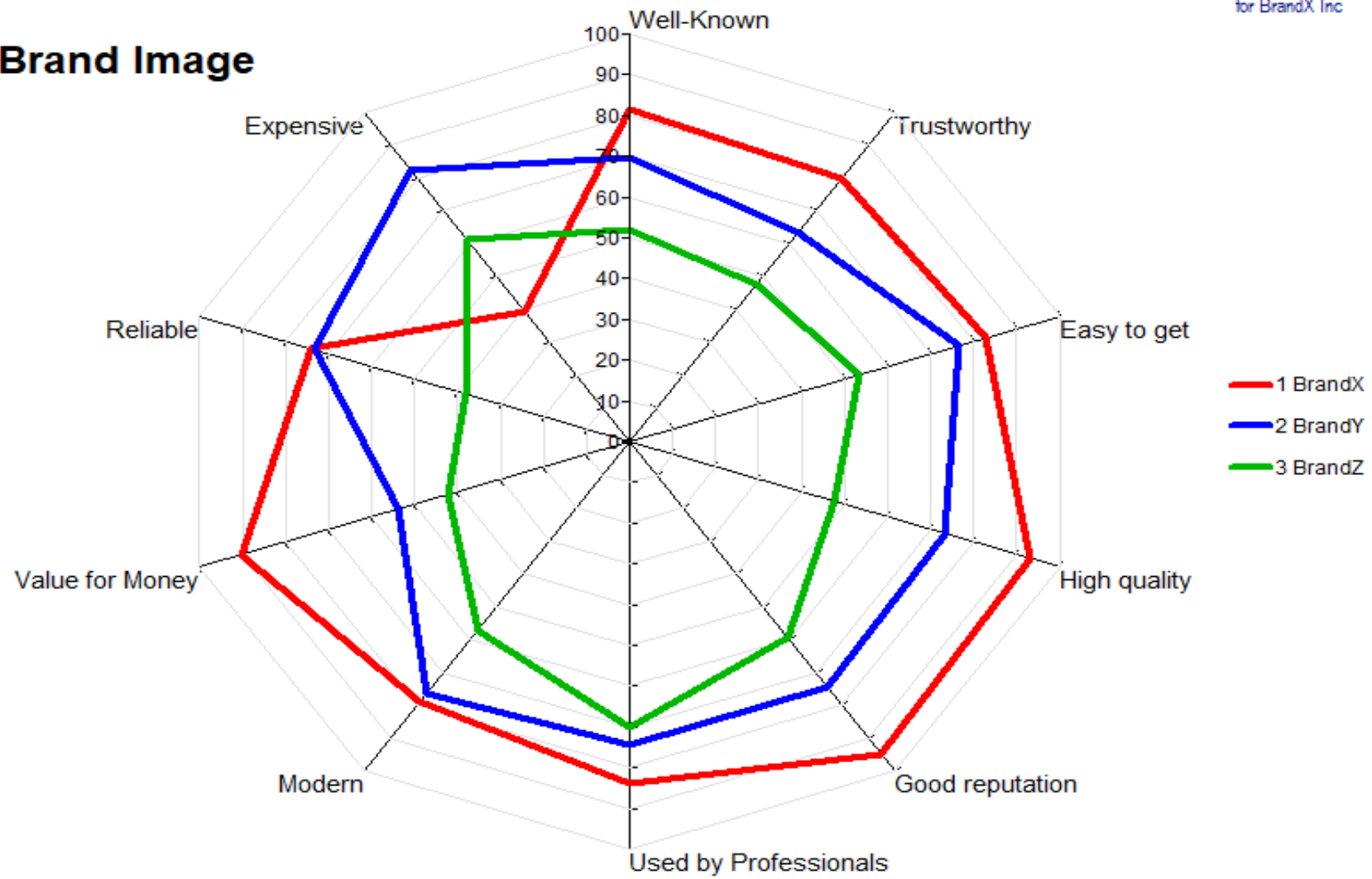


Fig22. Standard radar chart, with underlying table specified on a multi-response grid.

Scatter Plot

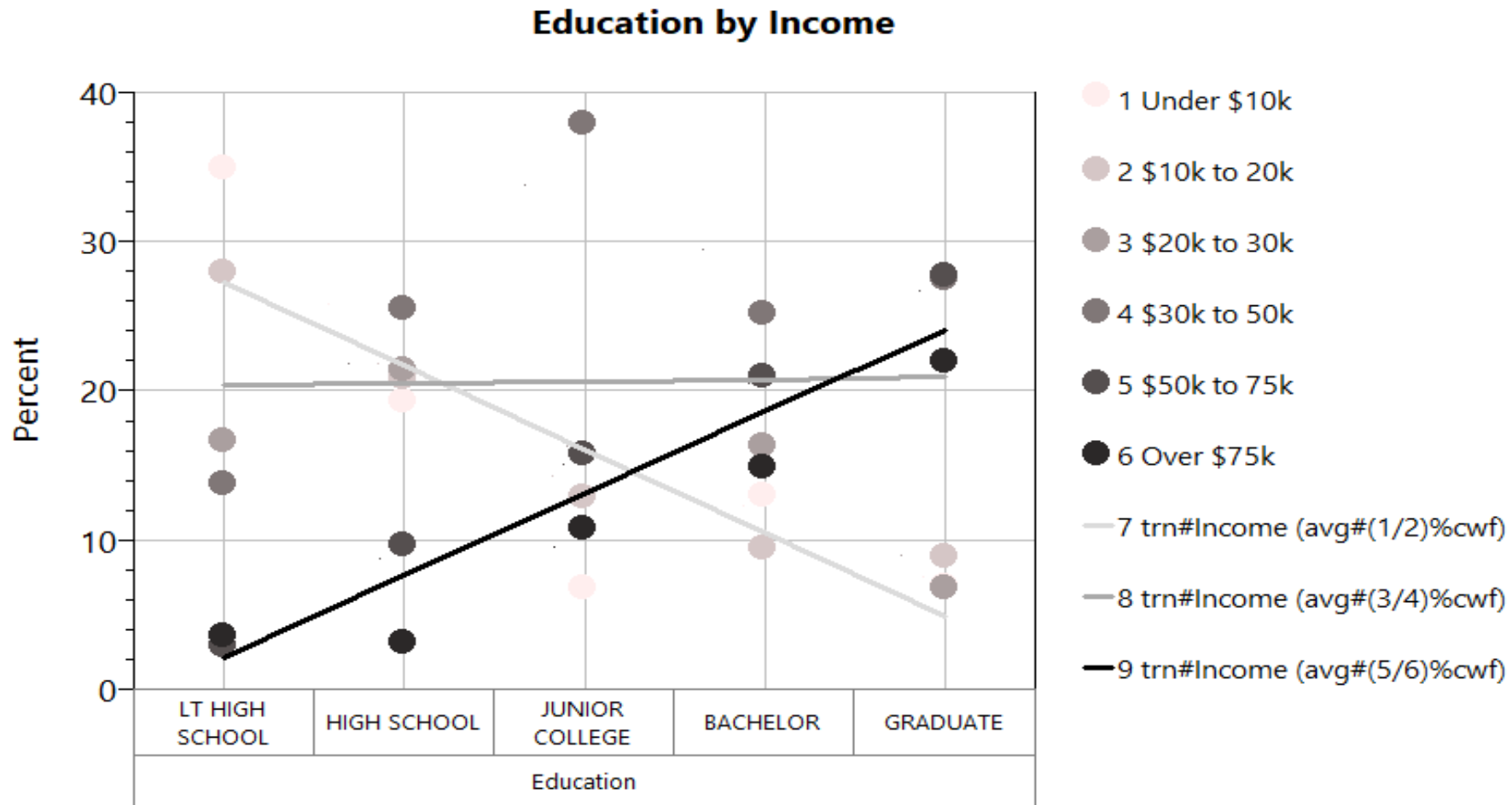


Fig23. Many functions are available. The scatter plot shows each data point, shaded as light to heavy for low to high income. The trend lines are of the average of low (1 to 2), medium (3 to 4) and high (5 to 6) incomes, percentaged (%) on cases weighted filtered (cwf).

Horizontal Bars and Lines

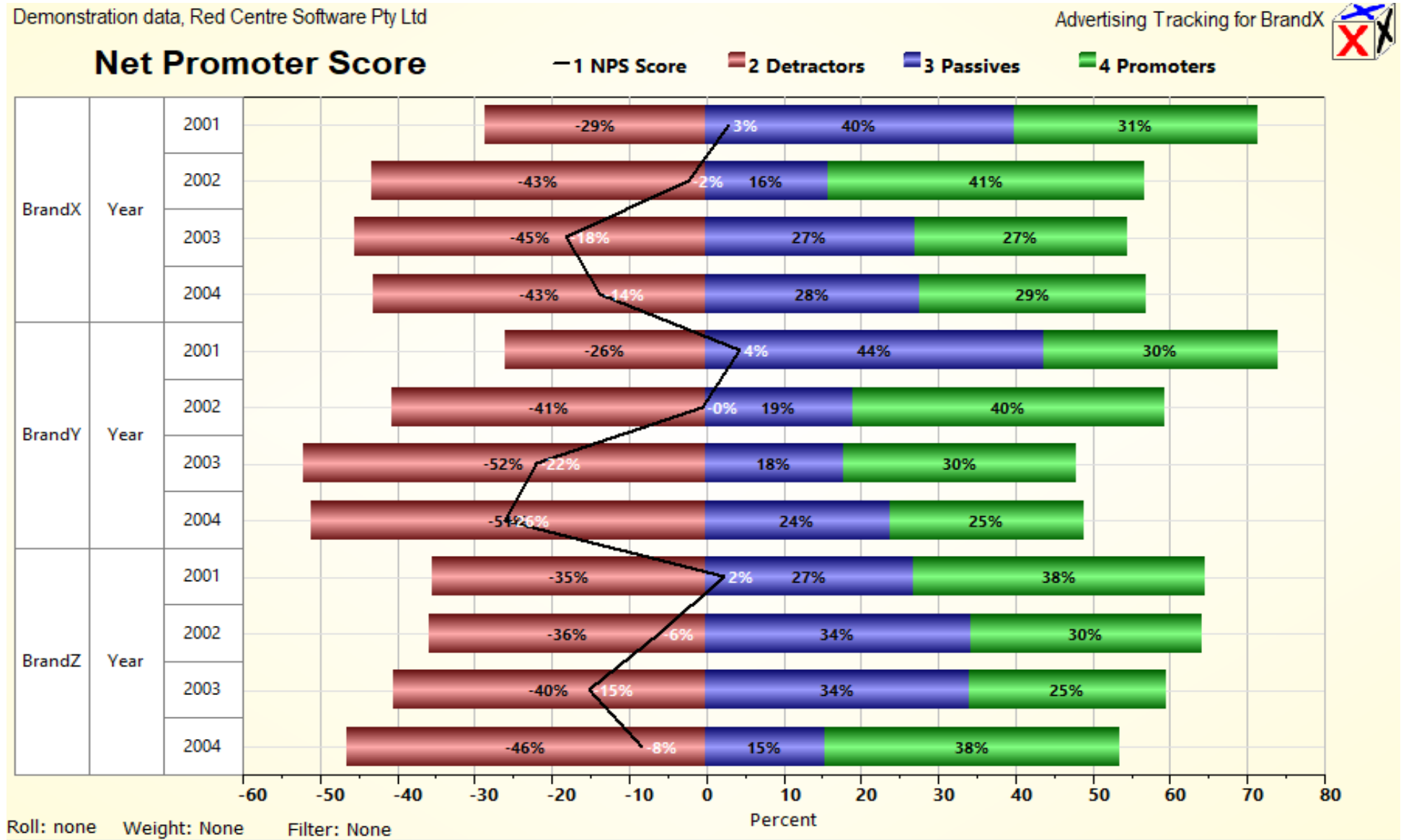


Fig24. NPS summary within Year within Brand as horizontal stacked bars and vertical line. The underlying table is the same as for Fig10.

Significance as Data Labels

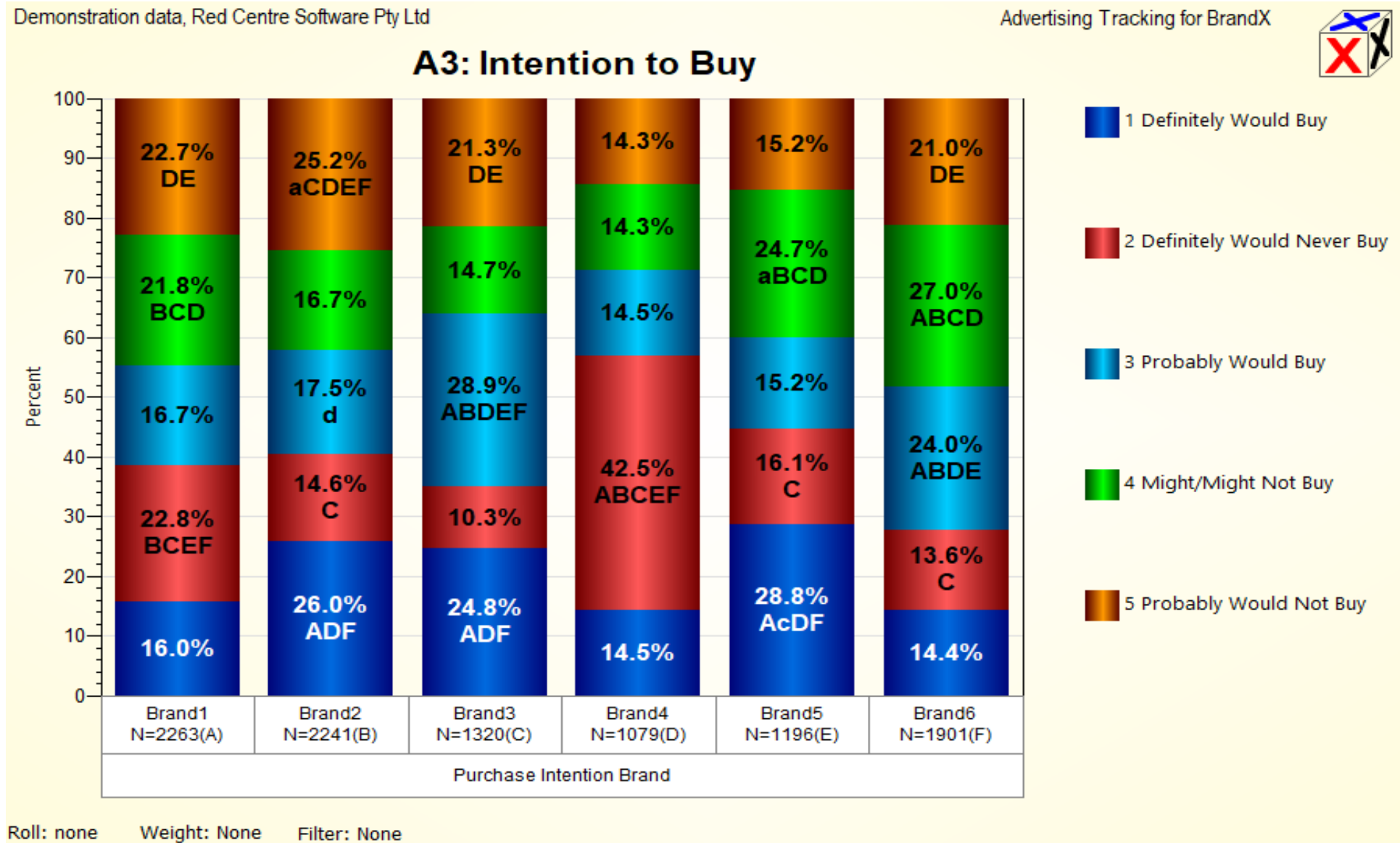


Fig25. Vertical stacked bars with data labels and column T test significance indicators. The X axis labels show base counts and the column alpha-identifier.

This and similar charts export to MS Office as MS Charts with significance, as above.

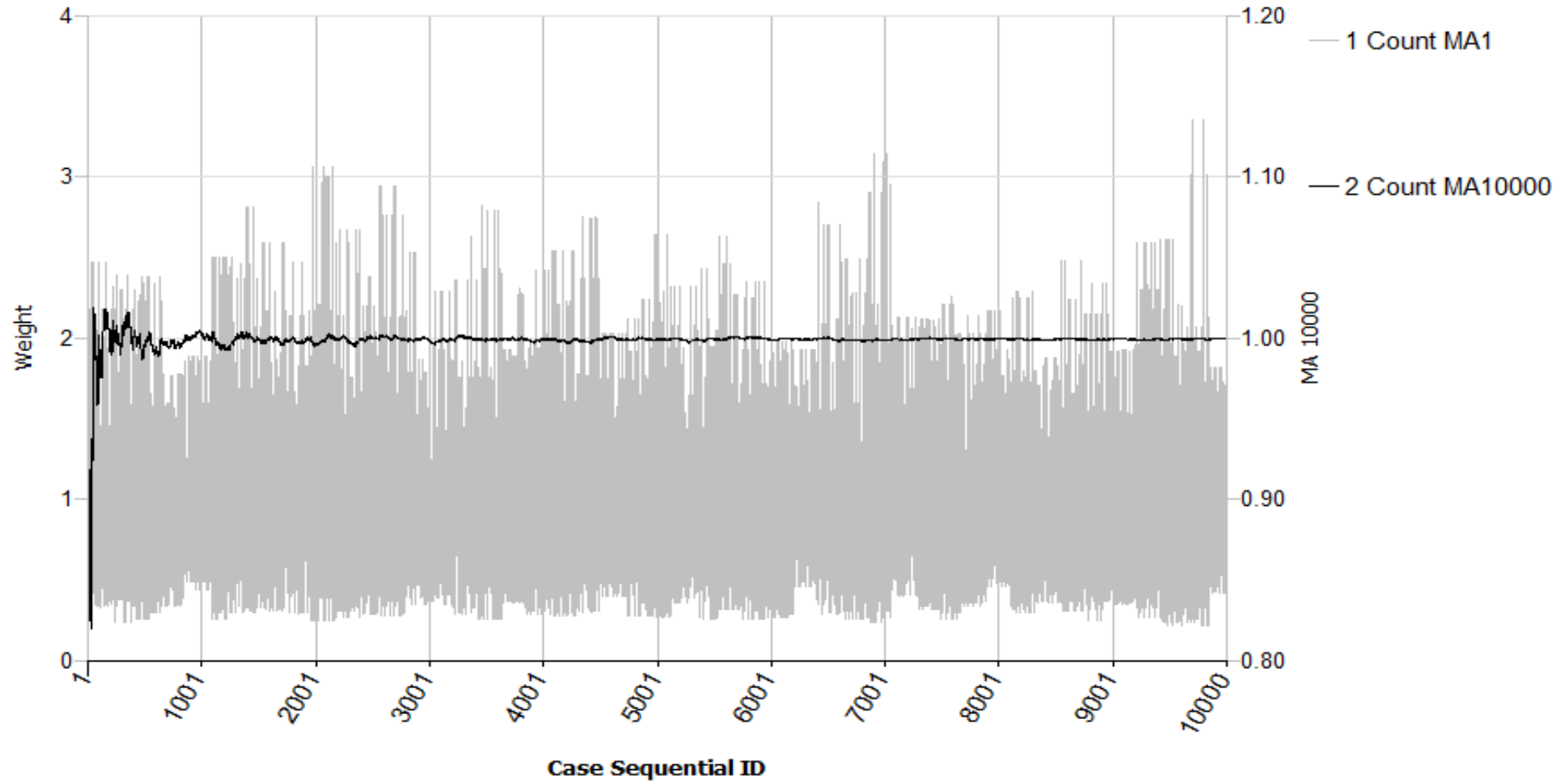
Huge Capacity

Demonstration data, Red Centre Software Pty Ltd

Advertising Tracking for BrandX



Case by Count



Filter: None Weight: WghtAgeGenRegRimPer (All)

Fig26. Ruby charts can handle huge amounts of data. 10,000 X axis points (one for each case), or 10,000 series, is a trivial load. This chart shows each weight value as absolute and as rolled at MA=10000. A good weight regime should quickly converge to 1. Outlier weights are immediately apparent.

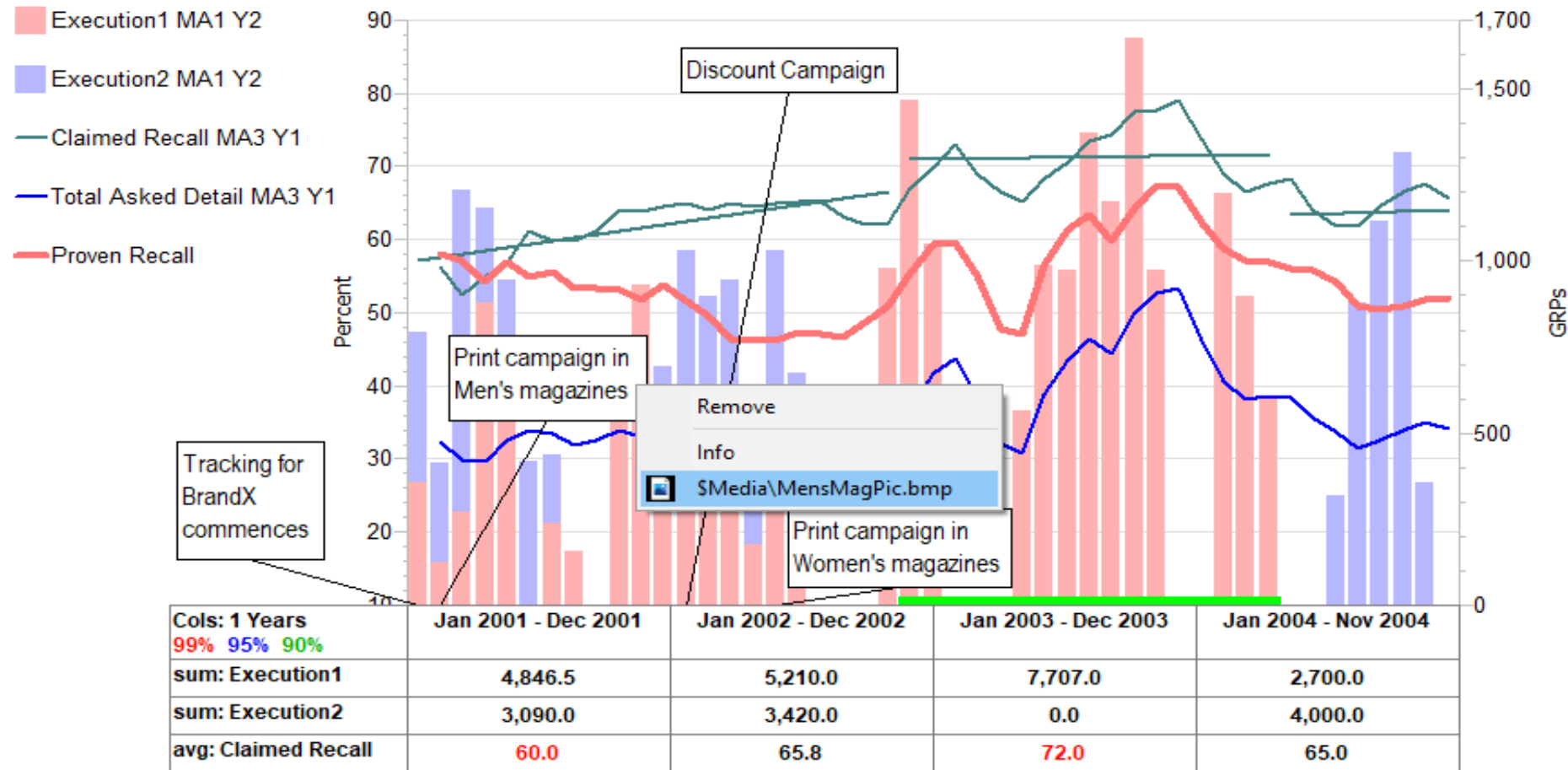
Brand and Advertising Tracking (1)

Demonstration data, Red Centre Software Pty Ltd

Advertising Tracking for BrandX



Month by GRPs, BrandX Claimed Recall



Roll: MA3
Filter: None

Monthly Plot, Annual Summary

Fig27. The pièce de résistance of tracking charts. Series 1 and 2 are pre-aggregated Gross Rating Points, supplied by an external agency. Series 5 Proven is calculated on a scaled base. The three-line series are rolled at MA2. The two GRPs stacked bar series are unrolled (since not a sample). An annual summary is shown against the monthly plot. The annual Claimed averages are tested for significance, showing that 72% is significantly high, and 60% is significantly low, both at the 99% level. Claimed Recall is piece-wise-trended before, during and after, according to the X axis selection. Callouts link to the closest X axis date. Any number of files (eg AVI, graphics, PPTs, Excel KPIs) can be associated with a callout, accessed by dynamic right mouse menu on the callout itself.

What happens if the period resolution is changed to weekly? If a filter or weight is applied? If I want to see Exe1 on-air versus off-air, and only for GRPs > 100? See next chart.

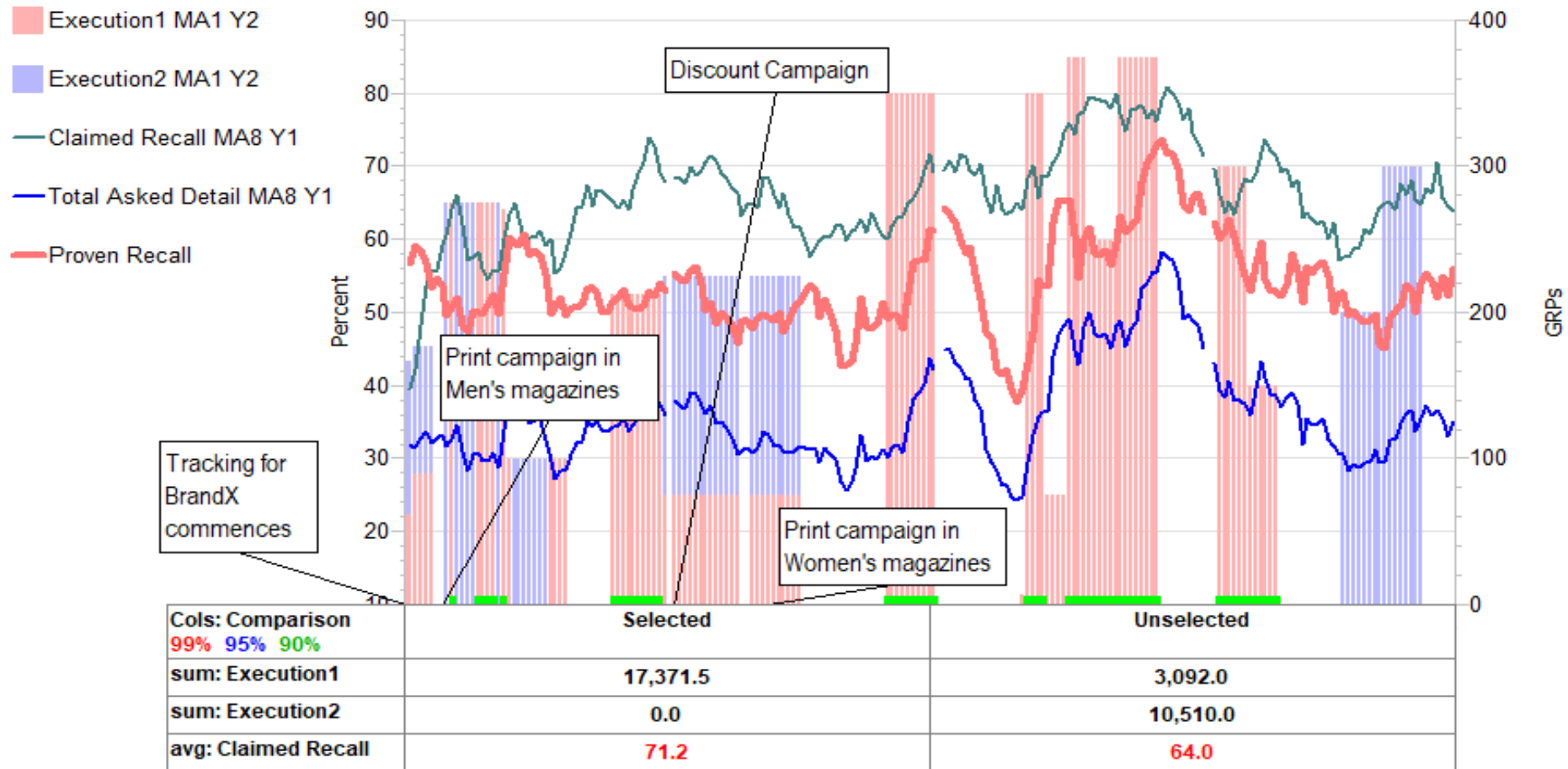
Brand and Advertising Tracking (2)

Demonstration data, Red Centre Software Pty Ltd

Advertising Tracking for BrandX



Week by GRPs, BrandX Claimed Recall



Roll: MA8 Filter: Gender (Males)
Weight: WghtAgeGenRegRimPer (All)

Weekly Plot, Selection Summary

Fig28. Period resolution now weekly. Survey series at MA8 to compensate. Filtered to Males. The GRPs have re-aggregated automatically, so the Y axis high bound has reduced from 1,700 to 400. X-axis selection by right-mouse click on the series 1 legend, Show Me > 100. That selects all X axis points where Exe1 GRPs > 100. The summary report is changed to compare selected vs unselected, and indicates 12.8% improvement in recall when Exe1 > 100. The callouts now link to the closest week date. The GRPs do not roll, and are not filtered or weighted (this behaviour is flaggable).

The mouse work for these changes was about 30 seconds. If your only tools were a cross tabulator and Excel, the above analysis could take hours (the main issue being, how to re-aggregate the GRPs?).