Minerva vs Metis: Average ballots drawn

	Minerva	Metis	% improvement
.6 win, 10% alpha.	159.13	157.71	0.892352164896625
.55 win, 10% alpha	655.02	633.62	3.26707581447895
.525win, 10%alpha	2580.39	2534.08	1.7946899499688
.6 win, 5% alpha	205.71	195.92	4.75912692625541
.55 win, 5% alpha	787.63	782.45	0.657669210162132
.525 win, 5% alpha	3159.81	3122.65	1.17602007715654
.6 win, 1% alpha	296.32	295.08	0.418466522678186
.55 win, 1% alpha	1202.82	1179.20	1.96371859463594
.525 win, 1% alpha	4743.64	4722.47	0.446281758312182

Round schedules for .6 winner tally: 100, 200, 400, 800, 1600.
Round schedules for .55 winner tally: 400, 800, 1600, 3200, 6400.
Round schedules for .525 winner tally: 1600, 3200, 6400, 12800, 25600.

In all cases these schedules are sufficiently powerful so that the cumulative stopping probabilities are in excess of .9999 (for all 18 audits).

These results seem to defy a simple takeaway. Note that, if Metis gives a substantive improvement, it's usually lowering an early-round kmin by 1.

Expectations for various margins, N = 100,000, alpha = .1

Reported winner	55000	55500	56000	56500	57000	57500	58000	58500	59000	59500	60000	60500	61000	61500	62000	62500	63000	63500	64000	64500	65000	65500	66000	66500	67000	67500	68000	68500	69000	69500
Metis	459.7468029	379.9081258	319.1051877	271.8022433	234.2633545	203.9768286	179.1926531	158.6518120	141.4355674	126.8681957	114.4172397	103.7147443	94.44411400	86.36331599	79.25665261	72.97262192	67.41856259	62.47558125	58.05869839	54.06132328	50.48084986	47.22916094	44.27722480	41.59308051	39.13060349	36.90488748	34.83736265	32.91983116	31.19887572	29.56415590
Minerva B2 (i.e., BRAVO)	468.43593047	387.62966354	326.19858050	278.33797004	240.23019088	209.55235499	184.37656387	163.53386279	146.19966699	131.16662927	118.47098104	107.48827447	98.58185056	89.78648136	82.60285386	76.07745213	70.36963613	65.33464560	60.16165947	56.81598980	53.03153858	49.82442534	46.76877440	43.82112590	41.30553879	38.94344781	36.83014673	34.99887689	33.37598595	31.28888145
% improvement	1.85492336787171	1.99198834936683	2.17456272938875	2.34812618226897	2.48379950162278	2.66068416934782	2.81158875548894	2.98534546814958	3.25862541192731	3.27707860480833	3.42171664888481	3.51064352322366	4.19725997404583	3.81256211241228	4.05095114095554	4.08114378221145	4.19367456941985	4.37603100103855	3.49551708475031	4.84840013456558	4.80975809969338	5.2088195206704	5.32737843143592	5.08440927684185	5.26548102409724	5.23466833120376	5.4107416312344	5.94032125972614	6.52298403873841	5.51226335321853
abs. improvement	8.689127537854	7.72153773657	7.09339275536	6.53572674994	5.96683628384	5.57552633589	5.183910737734	4.88205076176	4.764099500848	4.298433544756	4.053741282457	3.773530145988	4.1377365554259	3.4231653707796	3.3462012513014	3.1048302074557	2.9510735351312	2.8590643460384	2.1029610855598	2.7546665263655	2.5506887225181	2.5952643931989	2.4915496003315	2.2280453908448	2.1749353073433	2.0385603299673	1.9927840822365	2.079045724697	2.1771102369296	1.7247255459575

Reported winner	70000	70500	71000	71500	72000	72500	73000	73500	74000	74500	75000	75500	76000	76500	77000	77500	78000	78500	79000	79500	80000	80500	81000	81500	82000	82500	83000	83500	84000	84500
Metis	28.08313839	26.68399930	25.37105271	24.17468967	23.09965497	22.02732936	21.09118226	20.09147978	19.26858041	18.45019559	17.73038367	17.00499991	16.29271135	15.65148772	15.07490584	14.53044370	14.01379762	13.50952439	13.07471579	12.43453081	12.00767290	11.60699687	11.22068214	10.85347438	10.50408901	10.17484641	9.867667289	9.572906414	9.292138544	8.948696863
Minerva B2 (i.e., BRAVO)	29.57075302	28.27658145	27.08564000	26.21521361	24.68958788	23.75503038	22.51659551	21.28574946	20.45296046	19.75146333	19.09955206	18.42909416	17.98446902	16.94225403	16.37515890	15.91902151	15.39513911	14.42419626	13.96908447	12.90642804	12.47904200	12.04787481	11.62798603	11.32674561	11.07019835	10.78577137	10.55332424	10.23291928	10.09551806	9.80939108
% improvement	5.03069577573952	5.63215942920938	6.33024472083754	7.78373952118487	6.43968996909126	7.27299012950837	6.33050074209435	5.61065363660333	5.79075120877321	6.58820924030453	7.168589020137	7.72742403158196	9.40677019884664	7.61862211024829	7.94039966247852	8.72275852441503	8.97258201690326	6.34123284500648	6.40248600496739	3.65629882101439	3.77728598334723	3.65938348547071	3.50278964744821	4.17835138566496	5.11381388845709	5.66417500884178	6.49707088550075	6.44989814070884	7.9577840211249	8.77418606348623
abs. improvement	1.4876146230597	1.5925821487112	1.7145872967766	2.040523942922	1.5899329144041	1.7277010148602	1.425413246078	1.1942696762347	1.1843800554997	1.3012677322819	1.3691683924027	1.4240942516473	1.6917576724578	1.2907663122251	1.3002530625388	1.3885778062649	1.3813414835665	0.9146718713393	0.8943686786272	0.4718975895899	0.4713691045869	0.4408779412452	0.4073038911537	0.473271232447	0.5661093409023	0.6109249669946	0.68565695706187	0.66001287072095	0.80337952367253	0.86069422589375

Reported winner	85000	85500	86000	86500	87000	87500	88000	88500	89000	89500	90000	90500	91000	91500	92000	92500	93000	93500	94000	94500	95000	95500	96000	96500	97000	97500	98000	98500	99000
Metis	8.679882975	8.432726173	8.205541224	7.985385063	7.779368004	7.586076348	7.395018115	7.214055991	6.683182685	6.490124201	6.310049949	6.138236852	5.975445924	5.822549218	5.675539749	5.536277847	5.403750779	5.218454600	5.087416792	4.946722592	4.830779246	4.722145252	4.620290529	4.524738445	4.435056682	4.350850315	4.271754597	4.197430383	4.127560094
Minerva B2 (i.e., BRAVO)	9.51797106	9.26849980	9.00768052	8.78575700	8.75329663	8.55715422	8.33616449	8.11151324	6.93436222	6.73235326	6.59241869	6.42046002	6.24324643	6.06038424	5.88235294	5.73700287	5.67234053	5.50743275	5.56496317	5.41560504	5.25510280	5.14338468	4.99881923	4.84848504	4.71111021	4.58891521	4.53302853	4.39573870	4.29760296
% improvement	8.80532295372973	9.01735613612014	8.9050594080148	9.10988019691564	11.1264209038531	11.3481404520644	11.2899209451892	11.0639929958727	3.62224434793729	3.59798509926681	4.28323435595541	4.39568461431442	4.2894432413384	3.92442162450146	3.51582426157105	3.49877853302616	4.73507809280319	5.24705731045458	8.58130352844259	8.65798830049578	8.07450534599024	8.18992658015011	7.57236235463568	6.67727335373232	5.85962788411926	5.1878259525162	5.76378297916115	4.51137641468616	3.95669101061304
abs. improvement	0.83808809105152	0.83577363628865	0.80213930215156	0.80037193714641	0.97392862607869	0.97107788055932	0.94114638155443	0.89745725780261	0.25117954391051	0.24222906744717	0.28236874229298	0.28222317355386	0.2678005123221	0.23783502998679	0.20681319185723	0.20072502493262	0.26858975395184	0.28897815288981	0.47754638113932	0.46888245104913	0.42432355682138	0.42123942914025	0.37852870597765	0.3237466000381	0.27605352754768	0.23806493635251	0.26127392649202	0.19830831907115	0.17004287017465

Takeaway: Improvement generally seems to improve as the margin widens, at least until about margins of 40%. After 40% margins, the improvement is much more unpredictable, probably for reasons of minimum sample size.