

BRC TAMS 2019 Audit

6 March 2019



WE KNOW

Scope of the Audit

1. Defined along the same lines as the 2017 TAMS Audit:

- Recruitment, Installation, Training of new households
- Validation rules / Database Check Edits
- Panel Quality Control
- Panel turnover (actual churn)
- Panel Tenure
- Motivation (incentives)
- Polling dashboard
- RIM Weights
- SEMS
- Panel Updates
- Inventory (meter stock report)
- Coincidental Study
- Household visits

Panel Audit

The dashboard introduced in 2017 covers all the necessary elements

Recruitment, Installation, Training of new households

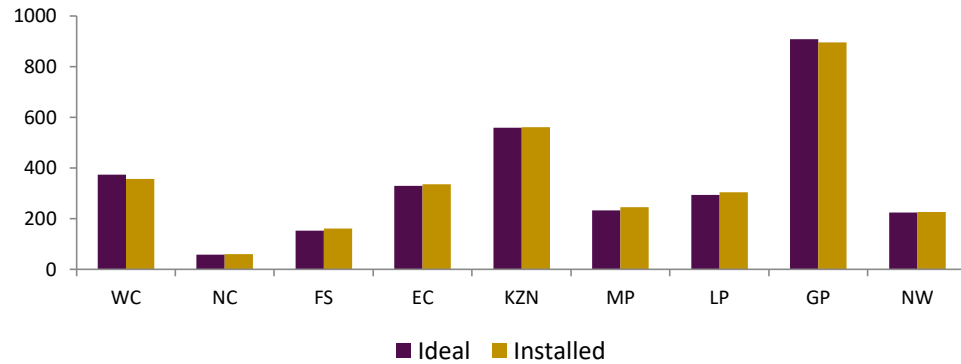
- Material delivered to new households has been reviewed and is inline with international standards
- Nielsen monitor the “pre-production” panellists and isolate the non compliant households for trouble shooting/technician visit and eventually removal
- There are good relationships between the Nielsen technicians and the panellists

Validation rules / Database Check Edits

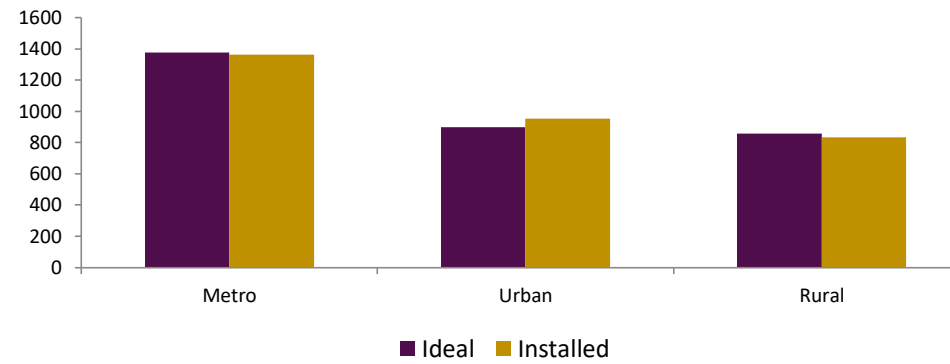
- All checks are in place to international Nielsen standards
- System is monitored internationally by internal auditors
- We can confirm the correct flagging of load-shedding households
- We recommend that unidentified viewing should be expanded in Nielsen reporting

Panel Quality Control

PROVINCE

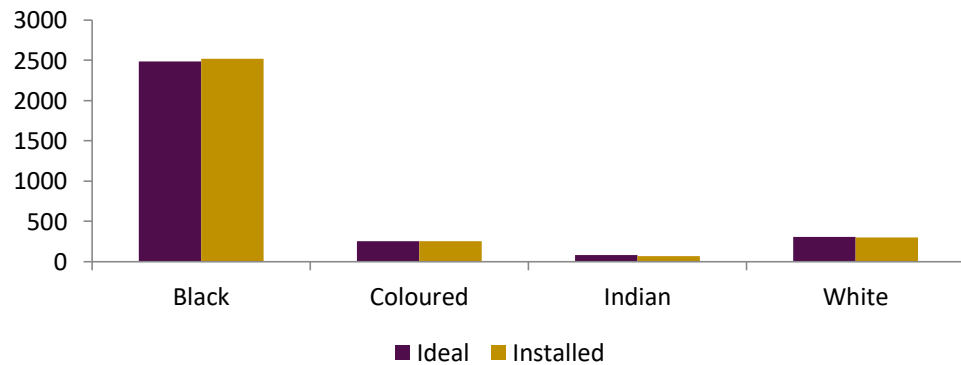


AREA

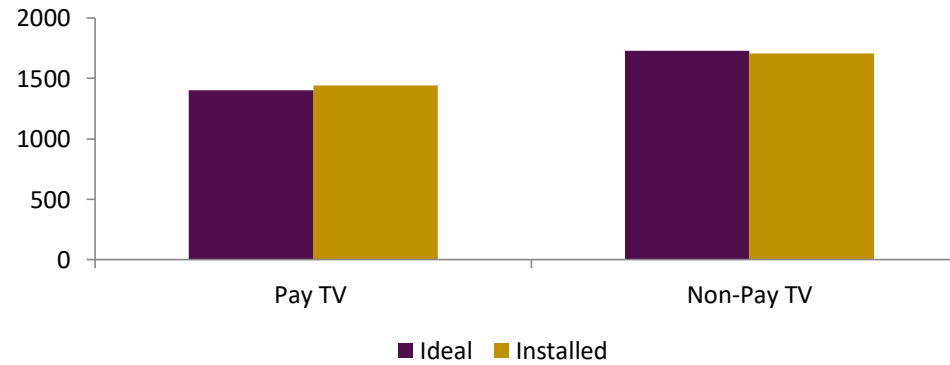


- Panel balance is good

RACE



PAY VS NO PAY

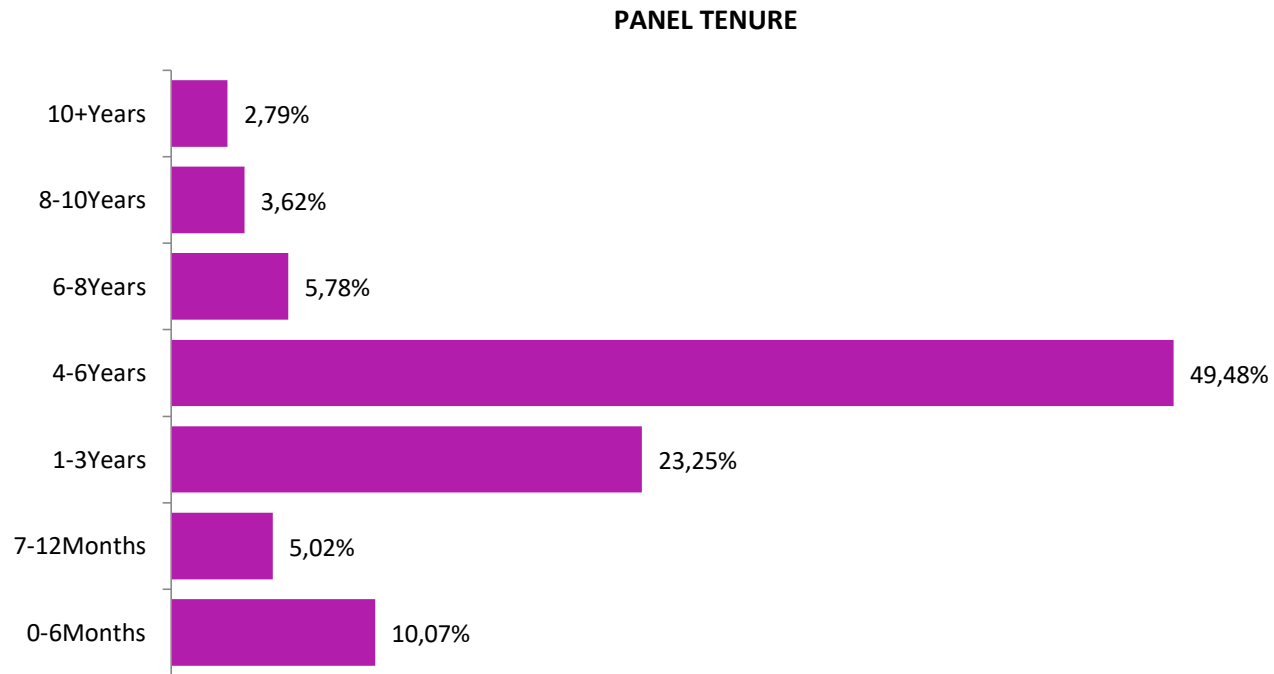


Panel churn

Churn levels on average are within the ranges outlined in the GGTAM (Global guidelines for television audience measurement)

				2017 actual churn	2018 Actual churn					2017 actual churn	2018 Actual churn					2017 actual churn	2018 Actual churn
Western Cape	Black	Non-Pay	Urban	15%	18%	Eastern Cape	Black	Non-Pay	Urban	16%	15%	Limpopo	Black	Non-Pay	Urban	41%	13%
Western Cape	Black	Non-Pay	Rural	0%	17%	Eastern Cape	Black	Non-Pay	Rural	10%	8%	Limpopo	Black	Non-Pay	Rural	16%	10%
Western Cape	Black	Pay	Urban	34%	6%	Eastern Cape	Black	Pay	Urban	14%	2%	Limpopo	Black	Pay	Urban	9%	5%
Western Cape	Black	Pay	Rural	100%	0%	Eastern Cape	Black	Pay	Rural	9%	0%	Limpopo	Black	Pay	Rural	6%	5%
Western Cape	Coloured	Non-Pay	Urban	20%	10%	Eastern Cape	Coloured	Non-Pay	Urban	26%	10%	Limpopo	Coloured	Non-Pay	Urban	0%	
Western Cape	Coloured	Non-Pay	Rural	38%	9%	Eastern Cape	Coloured	Non-Pay	Rural	0%	0%	Limpopo	Coloured	Non-Pay	Rural		
Western Cape	Coloured	Pay	Urban	30%	14%	Eastern Cape	Coloured	Pay	Urban	13%	0%	Limpopo	Coloured	Pay	Urban	0%	
Western Cape	Coloured	Pay	Rural	0%	0%	Eastern Cape	Coloured	Pay	Rural		0%	Limpopo	Coloured	Pay	Rural		
Western Cape	Indian	Non-Pay	Urban	50%	0%	Eastern Cape	Indian	Non-Pay	Urban			Limpopo	Indian	Non-Pay	Urban		
Western Cape	Indian	Non-Pay	Rural			Eastern Cape	Indian	Non-Pay	Rural			Limpopo	Indian	Non-Pay	Rural		
Western Cape	Indian	Pay	Urban	0%	0%	Eastern Cape	Indian	Pay	Urban	0%		Limpopo	Indian	Pay	Urban	0%	
Western Cape	Indian	Pay	Rural			Eastern Cape	Indian	Pay	Rural			Limpopo	Indian	Pay	Rural		
Western Cape	White	Non-Pay	Urban	0%	22%	Eastern Cape	White	Non-Pay	Urban	100%	25%	Limpopo	White	Non-Pay	Urban	100%	
Western Cape	White	Non-Pay	Rural	0%		Eastern Cape	White	Non-Pay	Rural			Limpopo	White	Non-Pay	Rural		
Western Cape	White	Pay	Urban	8%	6%	Eastern Cape	White	Pay	Urban	39%	6%	Limpopo	White	Pay	Urban	0%	100%
Western Cape	White	Pay	Rural	0%		Eastern Cape	White	Pay	Rural			Limpopo	White	Pay	Rural		
				19%	12%					16%	8%					16%	9%
Northern Cape	Black	Non-Pay	Urban	25%	33%	KwaZulu-Natal	Black	Non-Pay	Urban	20%	18%	Gauteng	Black	Non-Pay	Urban	15%	10%
Northern Cape	Black	Non-Pay	Rural	29%	29%	KwaZulu-Natal	Black	Non-Pay	Rural	9%	11%	Gauteng	Black	Non-Pay	Rural	67%	0%
Northern Cape	Black	Pay	Urban	0%	17%	KwaZulu-Natal	Black	Pay	Urban	12%	6%	Gauteng	Black	Pay	Urban	6%	5%
Northern Cape	Black	Pay	Rural	100%	0%	KwaZulu-Natal	Black	Pay	Rural	4%	9%	Gauteng	Black	Pay	Rural	0%	0%
Northern Cape	Coloured	Non-Pay	Urban	15%	15%	KwaZulu-Natal	Coloured	Non-Pay	Urban	50%	13%	Gauteng	Coloured	Non-Pay	Urban	56%	20%
Northern Cape	Coloured	Non-Pay	Rural	0%	0%	KwaZulu-Natal	Coloured	Non-Pay	Rural			Gauteng	Coloured	Non-Pay	Rural		
Northern Cape	Coloured	Pay	Urban	0%	14%	KwaZulu-Natal	Coloured	Pay	Urban	25%	9%	Gauteng	Coloured	Pay	Urban	18%	19%
Northern Cape	Coloured	Pay	Rural			KwaZulu-Natal	Coloured	Pay	Rural			Gauteng	Coloured	Pay	Rural		
Northern Cape	Indian	Non-Pay	Urban			KwaZulu-Natal	Indian	Non-Pay	Urban	28%	33%	Gauteng	Indian	Non-Pay	Urban	67%	0%
Northern Cape	Indian	Non-Pay	Rural			KwaZulu-Natal	Indian	Non-Pay	Rural			Gauteng	Indian	Non-Pay	Rural		
Northern Cape	Indian	Pay	Urban			KwaZulu-Natal	Indian	Pay	Urban	13%	26%	Gauteng	Indian	Pay	Urban	17%	0%
Northern Cape	Indian	Pay	Rural			KwaZulu-Natal	Indian	Pay	Rural			Gauteng	Indian	Pay	Rural		
Northern Cape	White	Non-Pay	Urban	50%	0%	KwaZulu-Natal	White	Non-Pay	Urban	25%	14%	Gauteng	White	Non-Pay	Urban		
Northern Cape	White	Non-Pay	Rural		0%	KwaZulu-Natal	White	Non-Pay	Rural			Gauteng	White	Non-Pay	Rural		
Northern Cape	White	Pay	Urban	25%	0%	KwaZulu-Natal	White	Pay	Urban	11%	6%	Gauteng	White	Pay	Urban	8%	9%
Northern Cape	White	Pay	Rural		0%	KwaZulu-Natal	White	Pay	Rural			Gauteng	White	Pay	Rural		
				18%	17%					14%	13%					12%	8%
Free State	Black	Non-Pay	Urban	14%	14%	Mpumalanga	Black	Non-Pay	Urban	12%	5%	North-West	Black	Non-Pay	Urban	19%	18%
Free State	Black	Non-Pay	Rural	45%	0%	Mpumalanga	Black	Non-Pay	Rural	14%	7%	North-West	Black	Non-Pay	Rural	6%	8%
Free State	Black	Pay	Urban	11%	2%	Mpumalanga	Black	Pay	Urban	8%	6%	North-West	Black	Pay	Urban	13%	12%
Free State	Black	Pay	Rural	0%	0%	Mpumalanga	Black	Pay	Rural	6%	4%	North-West	Black	Pay	Rural	0%	11%
Free State	Coloured	Non-Pay	Urban	0%	0%	Mpumalanga	Coloured	Non-Pay	Urban			North-West	Coloured	Non-Pay	Urban	0%	0%
Free State	Coloured	Non-Pay	Rural			Mpumalanga	Coloured	Non-Pay	Rural			North-West	Coloured	Non-Pay	Rural		
Free State	Coloured	Pay	Urban	0%	0%	Mpumalanga	Coloured	Pay	Urban	0%		North-West	Coloured	Pay	Urban		0%
Free State	Coloured	Pay	Rural			Mpumalanga	Coloured	Pay	Rural			North-West	Coloured	Pay	Rural		
Free State	Indian	Non-Pay	Urban			Mpumalanga	Indian	Non-Pay	Urban			North-West	Indian	Non-Pay	Urban	0%	
Free State	Indian	Non-Pay	Rural			Mpumalanga	Indian	Non-Pay	Rural			North-West	Indian	Non-Pay	Rural		
Free State	Indian	Pay	Urban			Mpumalanga	Indian	Pay	Urban	0%	0%	North-West	Indian	Pay	Urban	0%	
Free State	Indian	Pay	Rural			Mpumalanga	Indian	Pay	Rural			North-West	Indian	Pay	Rural		
Free State	White	Non-Pay	Urban	13%	0%	Mpumalanga	White	Non-Pay	Urban	75%	0%	North-West	White	Non-Pay	Urban	33%	0%
Free State	White	Non-Pay	Rural			Mpumalanga	White	Non-Pay	Rural			North-West	White	Non-Pay	Rural		
Free State	White	Pay	Urban	9%	25%	Mpumalanga	White	Pay	Urban	10%	20%	North-West	White	Pay	Urban	11%	36%
Free State	White	Pay	Rural			Mpumalanga	White	Pay	Rural		0%	North-West	White	Pay	Rural		
				14%	8%					12%	6%					11%	13%

Panel Tenure

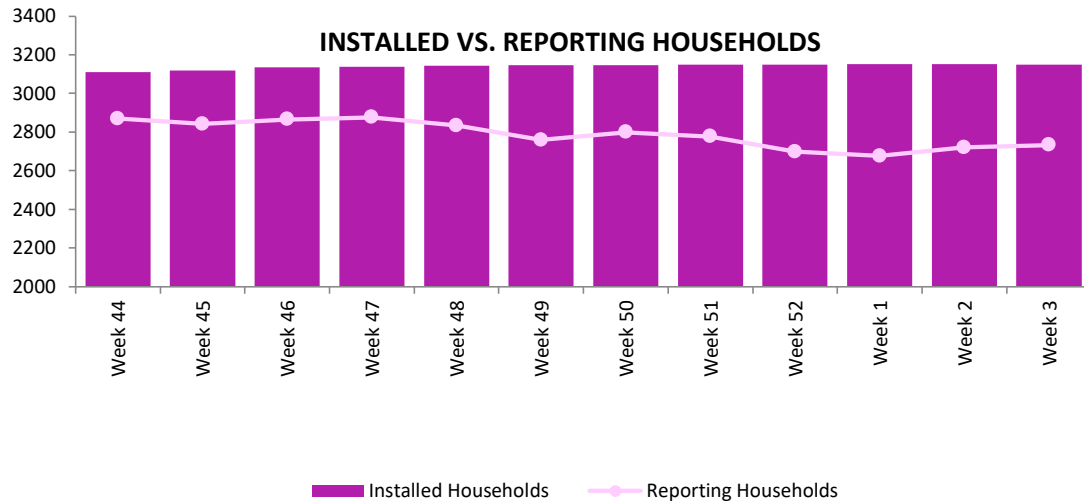


- Almost 60% of the panel has been on the panel for longer than 4 years.

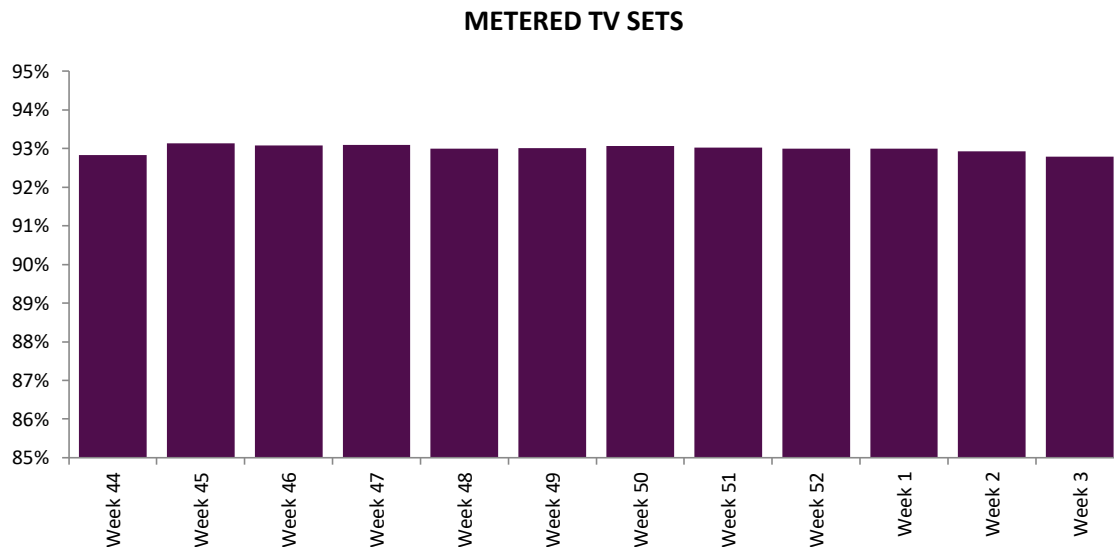
Motivation (incentives)

- All checks are in place to international Nielsen standards
- The grocery gift card works well and does not interfere with TV viewing

Polling



- Reporting vs Installed averages 89% over the past 6 months



- Metered vs Working TV sets averages 93% over the past 6 months

Weighting efficiency

- Weights and efficiencies are within the ranges (averaged over the past 6 months) as recommended in the GGTAM (Global guidelines for television audience measurement)

	Weights lowest to highest	Efficiency
Individuals	1,329 - 13,099	91%
Households	1,165 – 12,766	72%

What do we do when testing RIMs?

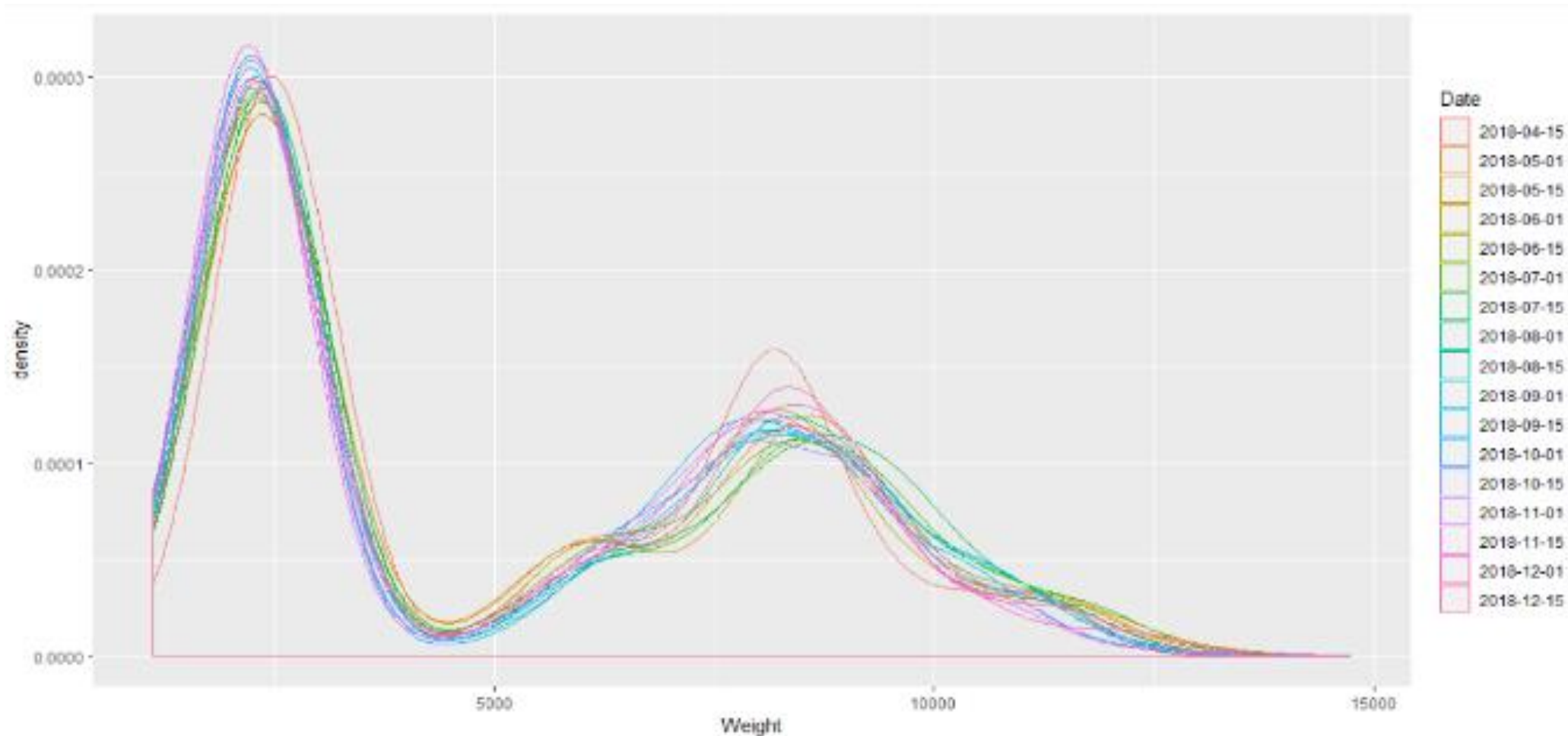
- Raw data for a selection of days
- Extract the individual weights
- Normalize weights (divide all weights by the daily mean weight)
- Compute the Standard Deviation (SD) of the normalized weights
- Compute the Variable Inflation Factor (VIF)
 - $1 + (\text{standard deviation of normalized weights})^2$
- Compute the Efficiency (EFF)
 - $1/\text{VIF}$

Household weights



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Household weights (2018 selected dates)

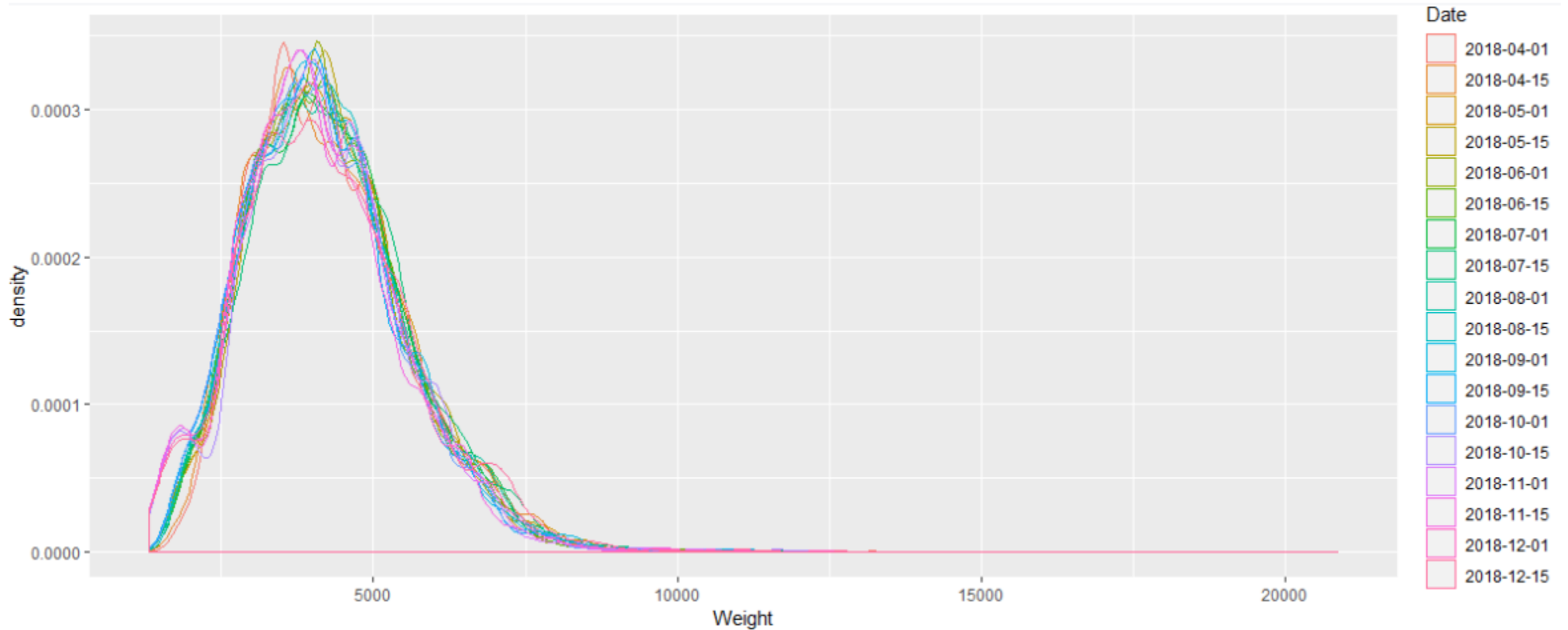


There is a “hump” in the weighting distribution that is evident throughout 2018. Whilst the outlier households are not causing any problems to the individual weights. However it is something that should be investigated further by Nielsen and closely monitored.

Individual weights

Individual weights

- Top score



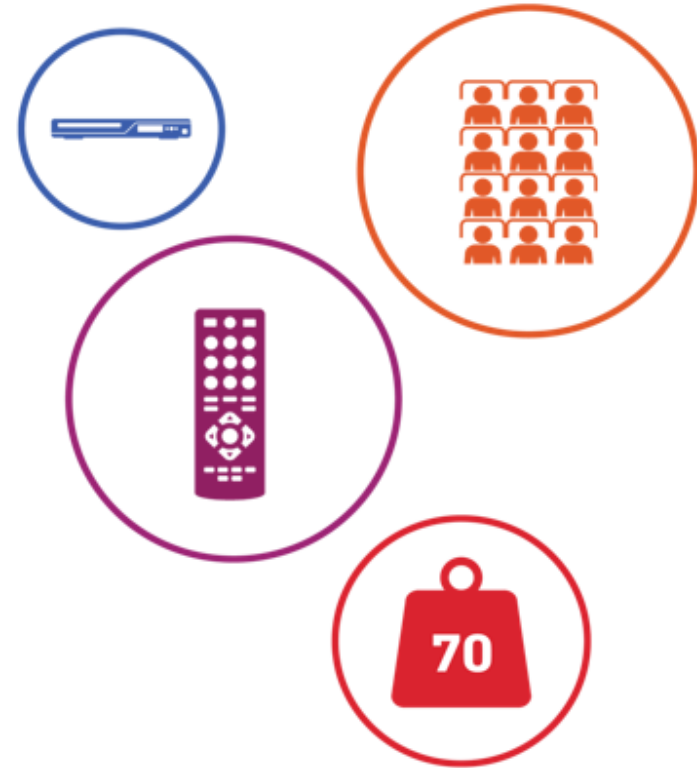
Development of SEMS for TAMS



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FROM THE ES TO THE DAILY PANEL...

- The daily panel is compared to the ES on a household and individual level. **THE ES IS THE IDEAL.**
- Theoretically, in a perfectly representative panel, everyone has the same weight.
- This is of course never the case...



THE NATURE OF LIVE PANELS...

- Panels churn, **CHANGE** and **EVOLVE** all the time
- Polling on any given day will not collect data from the whole panel.
- To **PROJECT** the correct picture, panels require **DAILY ADJUSTMENT** by **WEIGHTING**



FINDING THE RIGHT WEIGHTING MODEL...

- **STATISTICAL FACTORS**
 - Found through analysis: «influence on viewing»
- **USEABILITY FACTORS**
 - Data has to be relevant / useful for end users commercially and otherwise
- **LEGITIMACY FACTORS**
 - Necessary «country-specific factors»



STATISTICAL FACTORS...

- Some variables show clear correlations with the households viewing time.
- **THESE ARE TYPICALLY FACTORS LIKE:**
 - Access to many or few channels
 - Household size



USEABILITY FACTORS...

- **STABLE** target sizes = predictable CPP's.
- **AGE** and **GENDER** are primary targets
- **RACE** – a more usable variable than LANGUAGE (which is currently a proxy for race).
- **LSM's** are available targets as they are still used for trading.
 - **LSMs will not be a RIM WEIGHTING, nor a panel control variable.**



LEGITIMACY FACTORS...

- Most TAMS systems have elements that give legitimacy and **GOOD REPRESENTATION**.
 - These can be variables, or **SAMPLE COMPOSITION** like in SA.



Stability of the SEMs



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LSM issues on TAM Panel



Change matrix for LSM's – Jan to June 2014

- In 6 months, 522 (**22%**) out of 2354 households changed LSM after having completed their update questionnaire.
- In LSM 3 to 7, the majority of changes were upwards. Conversely, the majority of changes were downwards in the higher LSMs, where upward movement is limited.

Jun-14									
Jan-14	LSM 3	LSM 4	LSM 5	LSM 6	LSM 7	LSM 8	LSM 9	LSM 10	MOVED OUT OF
LSM 3		1		1					2
LSM 4	1		22	9	1				33
LSM 5	1	14		80	5	3			103
LSM 6		1	47		78	15	5		146
LSM 7		1	2	48		48	12	1	112
LSM 8				6	32		28	3	69
LSM 9					7	19		14	40
LSM 10							17		17
MOVED INTO	2	17	71	144	123	85	62	18	522

LSM issues on TAM Panel



Change matrix for LSM's – Jan to June 2015

- In the first 6 months of 2015, 551 (**22.8%**) out of 2413 households changed LSM.
- Again, in LSM 3 to 7, the majority of changes were upwards, even more so than in 2014.

Jun-15									
Jan-15	LSM 3	LSM 4	LSM 5	LSM 6	LSM 7	LSM 8	LSM 9	LSM 10	MOVED OUT OF
LSM2									0
LSM 3		8	1						9
LSM 4	8		42	6					56
LSM 5		25		89	8	1			124
LSM 6		1	41		86	12	2		142
LSM 7			2	30		46	21		99
LSM 8				2	34		26	3	65
LSM 9					4	19		18	41
LSM 10							16		16
MOVED INTO	8	34	86	127	132	78	65	21	551

SEM Movement On TAMS Panel



Change matrix for SEM's – Dec 2017 – Dec 2018

- In **12 months** 889 (**33%**) out of 2662 households changed SEM.
- Households changed SEM after having completed their update questionnaire.
- 456 households moved to a higher SEM.
- 433 households moved to a lower SEM.

	DEC 2018										
DEC 2017	SEM 1	SEM 2	SEM 3	SEM 4	SEM 5	SEM 6	SEM 7	SEM 8	SEM 9	SEM 10	Moved Out Of
SEM 1		13	5	2							20
SEM 2	25		46	12	2	1					86
SEM 3	10	62		53	15	2	2				144
SEM 4	2	18	65		52	16	7				160
SEM 5		4	14	36		53	10	3			120
SEM 6			2	12	37		52	5	2		110
SEM 7			1	4	8	42		41	8	2	106
SEM 8				3	2	7	40		24	8	84
SEM 9							2	17		20	39
SEM 10								2	18		20
Moved Into	37	97	133	122	116	121	113	68	52	30	889

SEM Movement On TAMS Panel: 10 SEM Groups



Change matrix for SEM's – Jul 2018 – Jan 2019

- During these **7 months**, 594 (**21%**) out of 2,824 households moved between SEM groups 1 to 10.
- Households changed SEM after having completed their update questionnaire.

10 SEM Groups Jul 2018	10 SEM Groups Jan 2019										Moved out of
	SEM 1	SEM 2	SEM 3	SEM 4	SEM 5	SEM 6	SEM 7	SEM 8	SEM 9	SEM 10	
SEM 1		12	4	2							18
SEM 2	13		37	10	1	1					62
SEM 3	9	33		36	8	1	2				89
SEM 4	1	9	37		29	15	4				95
SEM 5		5	7	27		31	12	2			84
SEM 6	1		1	8	34		42	4	1		91
SEM 7				2	5	31		35	6	1	80
SEM 8				2	2	5	22		8	4	43
SEM 9							2	8		13	23
SEM 10								1	8		9
Moved into	24	59	86	87	79	84	84	50	23	18	594

SEM Movement On TAMS Panel: 20 SEM Groups



Change matrix for SEM's – Jul 2018 – Jan 2019

- During these **7 months**, 762 (**27%**) out of 2,824 households, moved between SEM groups 1 to 20.
- Households changed SEM after having completed their update questionnaire.

20 SEM Groups Jul 2018	20 SEM Groups Jan 2019																				Moved out of
	SEM 1	SEM 2	SEM 3	SEM 4	SEM 5	SEM 6	SEM 7	SEM 8	SEM 9	SEM 10	SEM 11	SEM 12	SEM 13	SEM 14	SEM 15	SEM 16	SEM 17	SEM 18	SEM 19	SEM 20	
SEM 1		3	2	2	2		1	1													11
SEM 2	1		5	3		2															11
SEM 3	4	6		12	9	4	2	1	1												39
SEM 4	1	2	9		13	11	4	3			1										44
SEM 5		3	9	16		16	13	5	2				1								65
SEM 6	1	5	1	7	16		8	10	3	3	1		1								56
SEM 7			1	3	10	17		10	8	5	3										57
SEM 8	1			5	5	5	13		9	7	8	4	2	2							61
SEM 9			2	2	2	4	3	10		15	7	2		3	1						51
SEM 10			1			1	4	10	10		13	9	5	4	1						58
SEM 11		1				1	1	3	13	12		11	10	5		1					58
SEM 12								4	1	8	12		17	10	1	2	1				56
SEM 13								1		5	8	10		10	13	2	3		1		53
SEM 14								1			1	12	13		13	7	3				50
SEM 15								1	1	1	1	4	8	6		4	3	1	3		33
SEM 16								1					2	6	3		3	1	1		17
SEM 17													1		6	1		2	6	1	17
SEM 18														1		1	4		6		12
SEM 19															1		5	2			8
SEM 20																		1	4		5
Moved into	8	20	30	50	57	61	49	61	48	56	55	52	60	47	39	18	22	7	21	1	762

SEM Movement On TAMS Panel: 5 Supergroups



Change matrix for SEM's – Jul 2018 – Jan 2019

- During these **7 months**, 321 (**11%**) out of 2,824 households moved between the 5 SEM Supergroups.
- Households changed SEM after having completed their update questionnaire.

	5 Supergroups Jan 2019					
5 Supergroups Jul 2018	SEM 1 (0-15)	SEM 2 (16-30)	SEM 3 (31-65)	SEM 4 (66-85)	SEM 5 (86-100)	Moved out of
SEM 1 (0-15)		34	6			40
SEM 2 (16-30)	31		55			86
SEM 3 (31-65)	6	55		59	1	121
SEM 4 (66-85)			47		15	62
SEM 5 (86-100)				12		12
Moved into	37	89	108	71	16	321

SEM Movement On TAMS Panel: 3 Supergroups



Change matrix for SEM's – Jul 2018 – Jan 2019

- During these **7 months**, 229 (**8%**) out of 2,824 households moved between the 3 SEM Supergroups.
- Households changed SEM after having completed their update questionnaire.

	3 Supergroups Jan 2019			
3 Supergroups Jul 2018	SEM 1 (0-30)	SEM 2 (31-65)	SEM 3 (66-100)	Moved out of
SEM 1 (0-30)		61		61
SEM 2 (31-65)	61		60	121
SEM 3 (66-100)		47		47
Moved into	61	108	60	229

*Further investigation by Nielsen will tell us which variables are creating instability/movement
Conversations with Kantar/industry to further stabilise the SEM variables*

Recommendation to explore introducing the 3 supergroups into the weighting matrix

Panel Updates



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Panel Updates

- The regular updating of information about the panel homes is an ongoing process. It continues to operate as it should.

Inventory of tech equipment

The Meter Stock report



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Nielsen keep tight control of meter stock

BRC Meter Information January 2019																
Description	Total Installed Meters	Purchased							Rental							Total Meters
		Installed to Panel	Technicians	Storeroom	Workshop	Repair center	Damaged beyond repair	Lost(accumulated for 2018)	Installed to Panel	Technicians	Storeroom	Workshop	Repair center	Damaged beyond repair	Lost(accumulated for 2018)	
Unitam 3 - Autonomous meter	2638	1939	45	12	60	20	0	6	699	26	10	32	10	0	1	2860
Unitam 3 - Base meter (used for additional tv in home)	537	498	69	17	23	137	0	0	39	37	14	34	29	0	0	897
Unitam Classic - Combox	354	194	24	9	25	40	0	0	160	23	0	21	25	0	2	523
Unitam Classic - Meter	438	411	92	89	101	43	0	1	27	24	88	26	4	0	1	907
GTAM Meter	129	N/A	N/A	N/A	N/A	N/A	N/A	N/A	129	65	53	11	2	0	0	260
GTAM Light	48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	48	22	4	3	1	0	0	78
Total Meters	4144	3042	230	127	209	240	0	7	1102	197	169	127	71	0	4	5525

Coincidental studies

A standard method for checking meter and panel reliability



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Coincidental study - July 2018

					Panel member was present on the meter statement		Panel member was NOT present on the meter statement		RESULTS			
Campaign Date	Total households to contact this wave	Response Rate (%)	Total households successfully coded	Total persons successfully coded	(A)	(B)	(C)	(D)	Correct Button usage by claimed viewers $A/(A+C)*100$	Correct Button usage by claimed non-viewers $D/(B+D)*100$	Overall Button pressing accuracy $(A+D)/(A+B+C+D)*100$	Reported Viewing Index $(A+B)/(A+C)*100$
(Date)	N	%	N	N	Total persons claimed watching TV during the IC	Total persons claimed NOT watching TV during the IC	Total persons claimed watching TV during the IC	Total persons claimed NOT watching TV during the IC	%	%	%	%
					N	N	N	N				
July 18	2756	74.35%	2016	11094	1610	938	1282	7264	55.67%	88.56%	79.99%	88.11%

Reported Viewing Index of 88.11 % - a typical level for Nielsen and Kantar in many markets.

Household visits



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Household visits

Nothing to report

- Only one of three successfully completed
- Second one load-shedded
- Third one – amnesia and load shedded

Check of viewing data

- The viewing is stable and clearly tracked over time in the dashboard pages
- We recommend that a “load shedding” monitoring be included in the dashboard. Identifying the days, stages and viewing impact.

Overall comment

Overall the auditor is pleased with the organisation of resources at Nielsen and see clear ownership of the TAMS service from every team member.

Questions



WE KNOW

About 3M3A

3M3A is a partnership formed to support and manage TV, radio and online measurement

Measurement Media Management

We know... setting up, managing and validating an audience measurement system is complicated and critical



About 3M3A

3M3A works with stakeholders to adapt to market needs while applying best global practices

Audience Audit Analysis

We know... negotiating with vendors, managing projects and evaluating results is better with people who've been there done that



3M3A's Team: Robert Ruud



- Long experience with media measurement, central in introducing TAM and PPM meters in Norway. Cand.polit. from Oslo University. (Master of Social Science)
- Specializing in quant work and writing specifications for media measurement tender invitations.
- Extensive expertise in TAM audits and consulting in East and West Europe, Asia, South America, middle East and Africa.
- Experience: Tenders and briefs, advice and assessment including trials for online, TV and radio.
- Robert is technical adviser to the AA in Lebanon, and works extensively for broadcasters in Scandinavia

3M3A's Team: Chris O'Hearn



- Established and led 'tview' in the UAE, the first large-scale TAM system in the Middle East as head of the JIC.
- Conducted vendor contract, joint-venture negotiation, marketing, branding, recruitment.
- Project management expert and consultant specialising in media with experience in UK, South America, Sweden, and Middle East.
- Masters degree in Project Management
- Past projects: Complete Pay TV platform setup; major studio and facility construction and fit-out; media business planning and consultancy; production and journalism.
- Metadata – Project Dovetail

3M3A's Team: Brenda Wortley



- Media research specialist with 30 years' experience covering agency, sales and audience measurement with specialties in Return Path Data and Pay TV.
- Headed the media department of JWT for 5 years and joint MD of MindShare South Africa.
- Led Research and Strategy division of DStv Media Sales, the advertising sales house of MultiChoice, Africa's sub Saharan leading Pay TV platform.
- Set up Return Path Panels and large online panels across multiple countries.
- As head of Research and Audience Measurement for Multichoice since 2016 she has extended her experience across sub-Saharan Africa developing many bespoke trackers and research initiatives.
- Has been an consultant since February 2018.