Final Report TMI Georgia for ComCom

19 August 2021

EXECUTIVE SUMMARY

3M3A has completed an independent audit of the Television Audience Measurement system run by TMI in Georgia at the request of the Georgian National Communications Commission (ComCom).

The audit was carried out on behalf of the Georgian National Communications Commission. It was conducted in June and July 2021, with data from 2018 up to May 2021 and fieldwork in July 2021.

We found the operation to be highly professional and we acknowledge the full cooperation and transparent interaction we have had with the panel and data teams and the technicians in the field.

Full analysis has confirmed our initial impression that the service has been set up and run to the highest standard and complies with the principles of the GGTAM and international standards.

We find that the methodologies, policies and quality control practices of TMI are all excellent. They are well documented, follow international guidelines and have been put into practice consistently.

We particularly commend the panel management which is equal to if not better than any we have seen worldwide. The excellent panel management is reflected in the high quality of data and success in achieving international benchmarks and key performance indicators.

The end result is a well-designed, high-quality panel which produces consistent and reliable outputs.

In summary we confirm that the TMI service in Georgia is of an international standard and we have no hesitation in saying that it can be relied on to produce accurate data capable of use as a market currency.

Audit Scope

1) Methodology and conduct of the Establishment Survey
2) Representivity of Establishment Survey
3) Methodology of Establishment Survey
4) Sampling of the Establishment Survey
5) Collection of Establishment Survey Data
6) Updating and repetition of Establishment Surveys
7) Panel size and households providing data
8) Panel design and control targets
9) Recruitment of the panel
10) Panel stability and turnover
11) Panel weighting
12) Panel efficiency
13) Control and alignment with panel targets
14) Panel performance
15) Compliance and coincidental surveys
16) Channel referencing
17) Production rules and validation / rejection
18) Data production and verification including check on data output and delivery servicing
19) Visit to 30 randomly selected households for independent verification of:
    a. TV, meters and equipment
    b. Household records
    c. Recruitment and panel experience
    d. Channel tests to confirm correct meter operation
20) Technical security and redundancy

The results and data are compared to relevant international standards based on 3M3A's wide experience of TAM systems and in particular to the GGTAM standards.

Key to Recommendations

3M3A applies a diagnostic scheme to prioritise issues and recommendations.

Priority Level	Definition
GOOD	The service element or feature is working as expected or within acceptable parameters.
FIX	Urgent action required to bring a critical service or feature up to acceptable standard.
CHANGE	An existing service or feature not working optimally or fully as planned and needs attention or change.
IMPROVE	Extending or expanding an existing service to deliver more.
DEVELOP	Adding new or existing services and features.

ESTABLISHMENT SURVEY

(Audit Scope Sections 1-6)

All requested documentation regarding the Establishment Survey was provided by TMI. This includes:

Establishment Survey Design and Reports 2017-2021

Establishment Survey Databases 2017-2020
- weighted by individual and household

Establishment Survey Questionnaires

Panel Design Controls and Recruitment
- Panel Targets
- Panel Recruitment Sources

The ES descriptions are clear and transparent and follow established methodologies to ensure a random and representative sample aligned to panel design.

Establishment Surveys use voter lists as the primary sampling unit with random selection of addresses. Distance between addresses for survey is maintained.

Sample size is adequate, at a multiple of at least four times the size of the panel.

Distribution between the cities is based on public census data, with a downward adjustment for Tbilisi in order to obtain adequate sample in other areas. The ES distribution was changed slightly for 2021 to cover new areas marked for panel expansion.

Contact rates and interview completion are very good and consistent across cities and targets.

Year	Completed	Total	Success %
2017	3320	8020	41.4%
2018	2753	6526	42.2%
2019	2704	6692	40.4%
2020-21	4500	8835	50.9%

Table 1: ES Interviews and Completion 2017-2021.

Assessment Area	ComCom Benchmark	Status
Establishment Survey:	Average number achieved	**CONFIRMED**

Number of achieved interviews		
3M3A Comment Total sample size is appropriate to the size of the panel and ongoing need for recruitment. The panel expansion has been reflected in a larger ES. Successful interview rates are between 40-50% and quality control is good.		**GOOD**

Universe Updates

The Universe estimates have been updated annually based on the Establishment Survey results and the last official census in 2014.

The definition of the Universe until 2020 was:
"*Individuals living in the 7 biggest Georgian cities (Tbilisi, Batumi, Kutaisi, Rustavi, Gori, Poti, and Zugdidi), aged 4 years and older, residing in private households that have at least one television used to watch television programs.*"

Unusually the universe has been declining due to population change. However in the expanded panel the Universe will now be:
"*Individuals living in the settlement where the majority (at least 80%) can fluently speak Georgian, aged 4 years and older, residing in private households that have at least one television used to watch television programs*."

This will more than double the universe of both households and individuals.

Assessment Area	ComCom Benchmark	Status
ES Updates of the survey during the audit period	Universe updates at least one time per year and conduct of sufficient surveys to provide panel updates and recruitment of households	**CONFIRMED**
3M3A Comment ES Surveys have been conducted annually. They are supplemented as necessary by boost surveys to balance the panel. Universe updates have also been made annually in accordance with ES results.		**GOOD**

ES Quality Control

Quality control processes have been described in depth and conform to international best practice. This includes:
- monitoring of individual interviewers and relevant completion rates, productivity etc.
- GPS tracking of interviewers, time-stamp and editing controls
- Internal consistency checks – duration of interviews, type of responses, number of interviews etc.

Interviews are also recorded using fieldwork software and 30% are re-checked by the QC team or corrected as necessary.

Assessment Area	ComCom Benchmark	Status
Establishment Survey: Sampling Methodology	QC Indicators: Randomness and Type of QC controls	**CONFIRMED**
3M3A Comment Sampling methodology is in line with international best practice. QC controls are appropriate. They are fully documented and described and results are consistent.		**GOOD**

ES Weighting

The ES data has been provided in a full database format for analysis of weighting.
Weighting of the ES was based on standard characteristics available from GeoStat such as:
- Age and Gender
- Household Size
- Head of Household status
- City

The ES weighting is described in detail in the document "2020-2021_ES_Report24.0621" The method is very clear and uses data from the Georgia 2014 census to establish the correct proportions of:

- Geography x Rural/Urban
- Age x Gender
- Head of Household x Household size
- Head of Household x Rural/Urban

The auditor finds the Establishment Survey weighting to be in line with international standards. Having the relatively recent National Census is a big advantage. The high efficiency level shows an ES sample with a good correspondence to the Census.

Assessment Area	ComCom Benchmark	Status
ES Representativeness: Weighted Criteria	Usage of the criteria impacting generally the TV viewing	**CONFIRMED**
3M3A Comment Criteria used for weighting are stable and appropriate to TV viewing. They are in line with the publicly available data.		**GOOD**

Panel Expansion

For 2020-21 the ES was increased to accommodate the planned panel expansion from 540 to 800 homes.

The previous proportion of ES to panel (minimum 4x) was maintained in Tbilisi and the 6 existing panel cities. However an increased proportion of 8x was used in the new areas in order to provide greater certainty to the ES data and a sufficient pool of recruits.

For the new areas, which are mainly smaller urban and rural areas, municipalities were used as a primary sampling unit with internet penetration as a sub-stratum. In urban areas voter lists with randomised selection was used (in line with the previous surveys) however in rural areas a random walk and skip methodology was used from a designated starting point (polling station, school, grocery store, bus stop).

Other quality control areas remained as per previous surveys.

We can test dispersion of weights and the statistical efficiency of the ES and our calculation shows that the weighting is limited and that the normalized ES weight gives an efficiency score of 0.82. The Innovative "Asymmetric RIM weighting" developed by Kantar's Michael Baxter is used.

```
Descriptive Statistics
ES_Survey_2020_Household_W_21_06_2021$ESWeightHH
Label: Establishment Survey HH weight
N: 4486

                        ESWeightHH
----------------- ------------
            Mean         0.23
         Std.Dev         0.11
             Min         0.04
              Q1         0.15
          Median         0.21
              Q3         0.30
             Max         0.64
             MAD         0.11
             IQR         0.15
              CV         0.46
        Skewness         0.65
     SE.Skewness         0.04
        Kurtosis        -0.08
         N.Valid      4486.00
        Pct.Valid      100.00
```

Table 2: ES Weighting Analysis

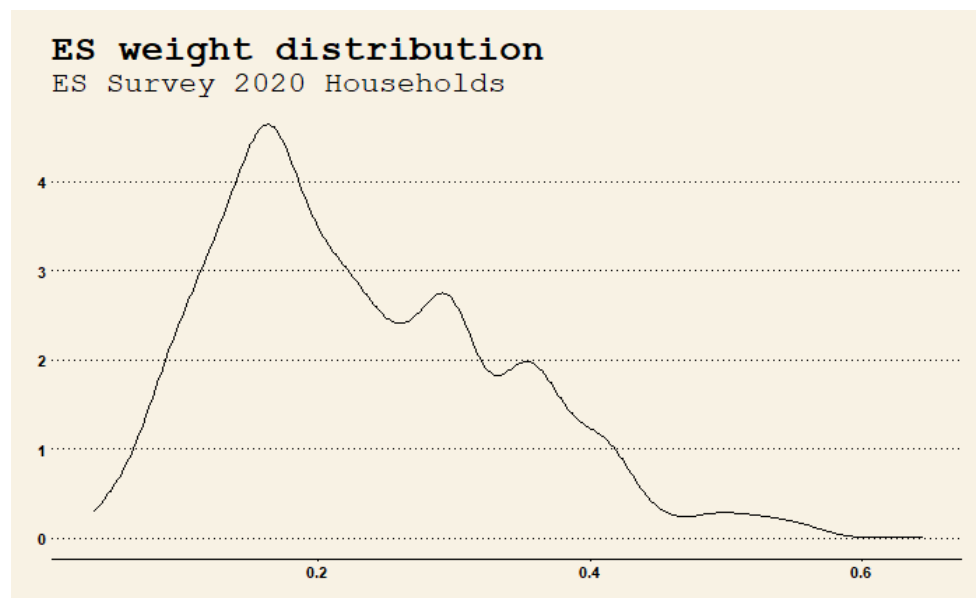The spread of the weights shown as a density plot also gives an appropriate bell shape.

Figure 1: ES Weight Distribution (2020)

Assessment Area	ComCom Benchmark	Status
ES Alignment: Criteria of the sample structure versus the theoretical objectives	Use of relevant demographic control targets based on public data and variance within acceptable tolerance using	**CONFIRMED**

	an agreed formula such as +/-5%.	
3M3A Comment The efficiency of the ES weighting (82%) is good and within acceptable limits.		**GOOD**

ES Questionnaire

The Establishment Survey questionnaire has been reviewed and we can confirm it collects all necessary information for use in designing the panel and selecting homes for recruitment.

It covers standard areas which are known viewing variables such as claimed media consumption and internet access, as well as essential household demographic information.

Our only minor comments about the Establishment Survey would be that it is quite long and goes into a level of detail about channel viewing and type of content consumed which is not strictly necessary and would not be used as a control. We would normally make this comment in the context of interview duration being a barrier to successful completion, but given that the rates of completion are very good it is clearly not a problem for the survey. It is therefore a theoretical observation not a recommendation for change.

ADDITIONAL NOTE: TMI has responded that they will review the Establishment Survey to attempt to reduce the duration.

The average length of the most recent ES was 18 minutes and the maximum duration was 59 minutes.

We also note that a typical ES would have a number of basic screener questions at the very beginning, for example HH size, age/gender and internet access. In this way if the interview is not successfully completed then it is useful to be able to monitor rejection rates. However, given that Partial Completion is only a very small percentage of unsuccessful interviews (<2%) this is also not an area of current concern.

Assessment Area	ComCom Benchmark	Status
Establishment Survey: Questionnaire	Demographic of each eligible individual to the panel and TV equipment of the household	**CONFIRMED**
3M3A Comment		**GOOD**

PANEL DESIGN AND OPERATION, PRODUCTION RULES

(Sections 7-8, 10-14, 17, 18)

We have received and reviewed all necessary documentation regarding the panel design.

This includes:
- Target and Universe Update Description

- QC Reports 2018-2021

- 28 day HH performance reports 2018-2021

- Validation Rules and QC Rules

- Weighting Description and RIMs

- Weighting reports 2018-2021

Key indicators in the review period (2018-2021) suggests that the panel is extremely stable and operating at a good level of efficiency.

Panel design and management

Panel size and households providing data

Panel size has been stable and not fallen below 500 in the checked period 2018-2021.
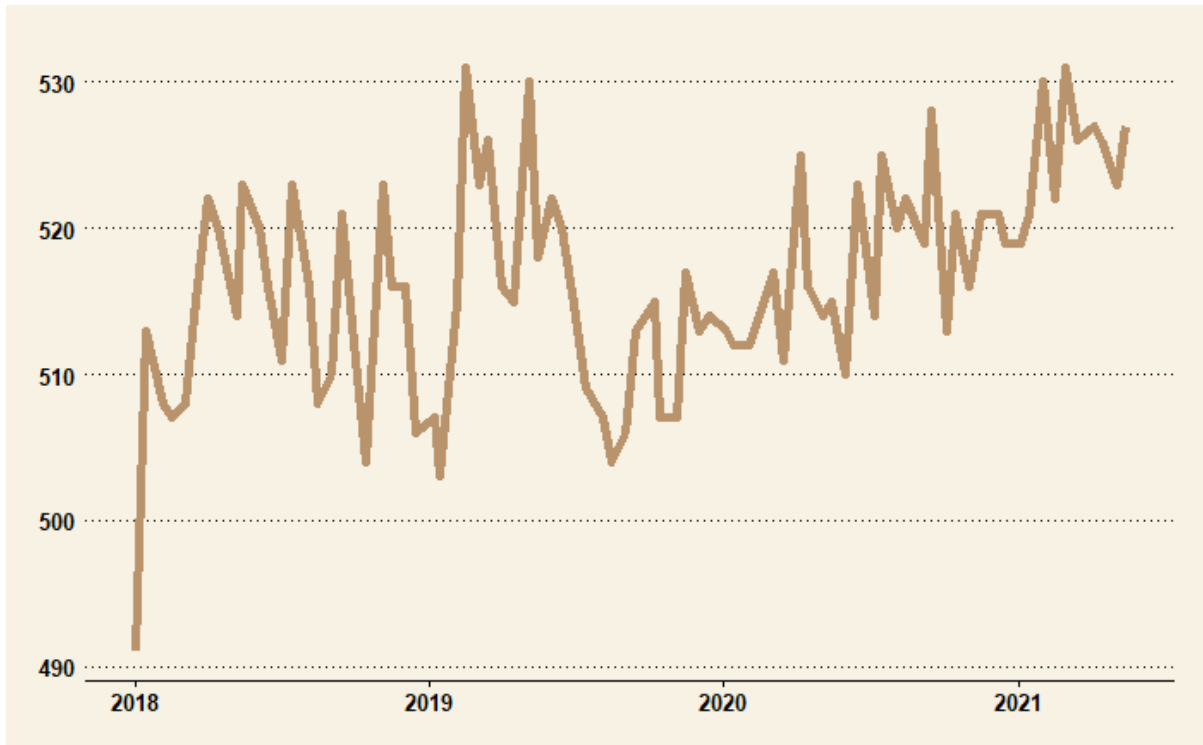
Fig. 2. Overall panel size (households) from 2018 to 2021

Looking at the panel over time we see that the average number of reporting households has remained consistent ranging between 502 and 528 between January 2018 and May 2021. In the circumstance of the pandemic this is an excellent performance.

Month	AverageHH	Month	AverageHH	Month	AverageHH	Month	AverageHH
2018-01	502	2019-01	505	2020-01	512	2021-01	520
2018-02	508	2019-02	523	2020-02	513	2021-02	526
2018-03	511	2019-03	524	2020-03	514	2021-03	528
2018-04	521	2019-04	516	2020-04	520	2021-04	526
2018-05	518	2019-05	524	2020-05	514	2021-05	525
2018-06	518	2019-06	521	2020-06	516		
2018-07	517	2019-07	512	2020-07	520		
2018-08	512	2019-08	506	2020-08	521		
2018-09	516	2019-09	510	2020-09	524		
2018-10	508	2019-10	511	2020-10	517		
2018-11	520	2019-11	512	2020-11	518		
2018-12	511	2019-12	514	2020-12	520		

Table 3: Monthly average of reporting households. Also see Annex 2 'Monthly Polling Indicators 2018-2021' for further detail of Polling, Rejection and Total Homes in Production.

Assessment Area	ComCom Benchmark	Status
Panel Size: Number of installed panellists	Monthly average of installed panellist households compared with the operator commitments	**CONFIRMED**
3M3A Comment The monthly reporting average has ranged between 93% and 98% of installed homes which is comparable to the highest international standards and in line with operator commitments.		**GOOD**

Panel Targets - Control Parameters

Breaking down the total of installed panellists to individual control parameters we also see a consistent performance.

For ease of viewing the tables shown below are recent examples from May 2021. For a full breakdown of monthly averages please see the linked tables.

For each target we have shown the tolerance in the final column using the square root of the cell size as the ideal. This is the standard Kantar methodology although it should be noted that some other vendor systems apply a 10% variance and in practice either one is acceptable.

Tables 4a-4d: Monthly averages of installed panellists (individuals) by control parameters

a) Geography

city	Sample (n)	Sum weights	Unw.prop.	Wgt.prop.	ideal.sample	to.balance	sqrt.ideal
Tbilisi	837	989	0.482	0.664	1154	317	34
Rustavi	206	116	0.119	0.078	136	-70	12
Gori	72	38	0.041	0.026	45	-27	7
Kutaisi	248	135	0.143	0.091	158	-90	13
Zugdidi	82	44	0.047	0.030	52	-30	7
Poti	65	38	0.037	0.026	45	-20	7
Batumi	228	130	0.131	0.087	151	-77	12

In the table above we see the effect of the deliberate dis-proportionate panel for Tbilisi. In a proportionate panel the individuals from Tbilisi would be two-thirds of the panel which would leave insufficient sample in the other cities. It is therefore reasonable to under-sample Tbilisi and boost the sample in other cities.

b) HH Size

size_of_hh	Sample (n)	Sum weights	Unw.prop.	Wgt.prop.	ideal.sample	to.balance	sqrt.ideal
One Person HH	83	72	0.048	0.048	83	0	9
Two Person HH	176	181	0.101	0.121	210	34	14
Three Person HH	310	288	0.178	0.193	335	25	18
Four Person HH	456	381	0.262	0.256	445	-11	21

Five Person HH	325	258	0.187	0.173	301	-24	17
Six+ Person HH	388	310	0.223	0.208	362	-26	19

In this table we see a slight undersampling of two and three person households. Large households of 4 or more persons are slightly over-sampled although close to the ideal tolerance. Only the case of two person HHs falls outside of both the Square Root and 10% tolerance threshold.

It is not uncommon in many markets for homes of this size to be difficult to recruit as it will include younger couples with no children who may be working and are hard to contact. This should be a high-priority area for TMI in future boost sample recruitment.

c) Number of TV sets

number_of_tvs	Sample (n) sqrt.ideal	Sum weights	Unw.prop.	Wgt.prop.	ideal.sample	to.balance	
1	1134	952	0.652	0.638	1109	-25	33
2+	604	539	0.348	0.362	629	25	25

Sample size is within tolerance.

d) Age and Gender

sexage	Sample (n)	Sum weights	Unw.prop.	Wgt.prop.	ideal.sample	to.balance	sqrt.ideal
M4-9	72	68	0.041	0.046	80	8	9
F4-9	75	61	0.043	0.041	71	-4	8
F10-15	77	57	0.044	0.038	66	-11	8
M10-15	83	52	0.048	0.035	61	-22	8
F16-24	98	99	0.056	0.066	115	17	11
M16-24	106	94	0.061	0.063	109	3	10
F25-34	121	115	0.070	0.077	134	13	12
M25-34	129	137	0.074	0.092	160	31	13
F35-44	112	104	0.064	0.070	122	10	11
M35-44	118	120	0.068	0.080	139	21	12
F45-54	105	90	0.060	0.060	104	-1	10
M45-54	132	113	0.076	0.076	132	0	11
F55-64	108	78	0.062	0.052	90	-18	9
M55-64	129	103	0.074	0.069	120	-9	11
F65+	88	69	0.051	0.046	80	-8	9
M65+	185	131	0.106	0.088	153	-32	12

While there is some variance in individual targets by age and gender there are no areas of concern. For example while Males 25-44 are under-sample, Males are on target or over-sample in all other age categories. We can also state that males in this age group are a difficult recruitment target in almost every market. All other categories are within or very close to tolerance.

The difficulty of recruitment during the recent pandemic situation should not be underestimated and overall we see that TMI has done an excellent job to keep the panel generally balanced.

Assessment Area	ComCom Benchmark	Status
Panel Design: number of installed panellist households by control parameter	Monthly average of installed panellist households by control parameter	**CONFIRMED**
3M3A Comment The monthly averages naturally vary over time and to produce a total average would not provide insight. In general the targets conform to acceptable tolerance. Although variance is shown in certain areas there is no indication of serious imbalance or poor management.		**GOOD**

Assessment Area	ComCom Benchmark	Status
Representativeness: Panel Alignment – Sample structure v theoretical objectives	Use of an internationally acceptable formula for statistical variance such as +/-10% or square root of cell size. The variance will be calculated on two randomly selected days per month for an agreed period of not less than 12 months.	**PARTIALLY CONFIRMED**
3M3A Comment The majority of key target cells are aligned within acceptable tolerances. There is some variance in certain groups. While this could be improved, we note that it would only be a cause for concern if it had a significant impact on panel efficiency or required heavy weighting, which we do not see.		**CHANGE**

Panel design and control targets

The "control targets" or variables used for adjusting the panel on a daily basis through rim weighting – "the rims" are:
- Geography
- Household size

- TV sets in HH
- Work status
- Children in HH
- Foreign language
- Internet in HH
- TV reception type

These are all typical panel controls, that are stable and easy to classify. We see very high adherence to the ideal panel balance. The number of weighting categories is relatively high for a panel of just over 500 households, but TMI have very good control over the panel monitoring and balancing.

This is seen in the following tables where we see that the efficiency – a good indicator of how much the daily sample has to be weighted to fit with the ideal proportions given by the ES. The efficiency has increased slightly from 2018 until today. The efficiency level should stay above 0.7 according to market standards globally.

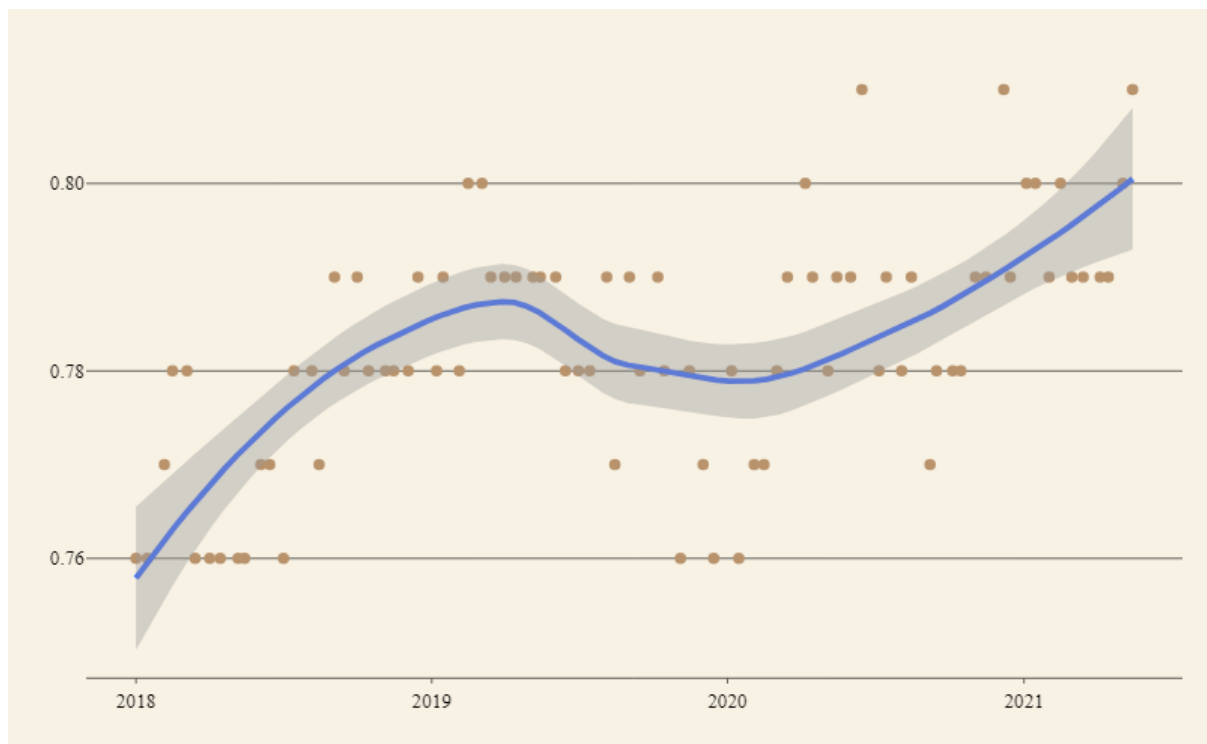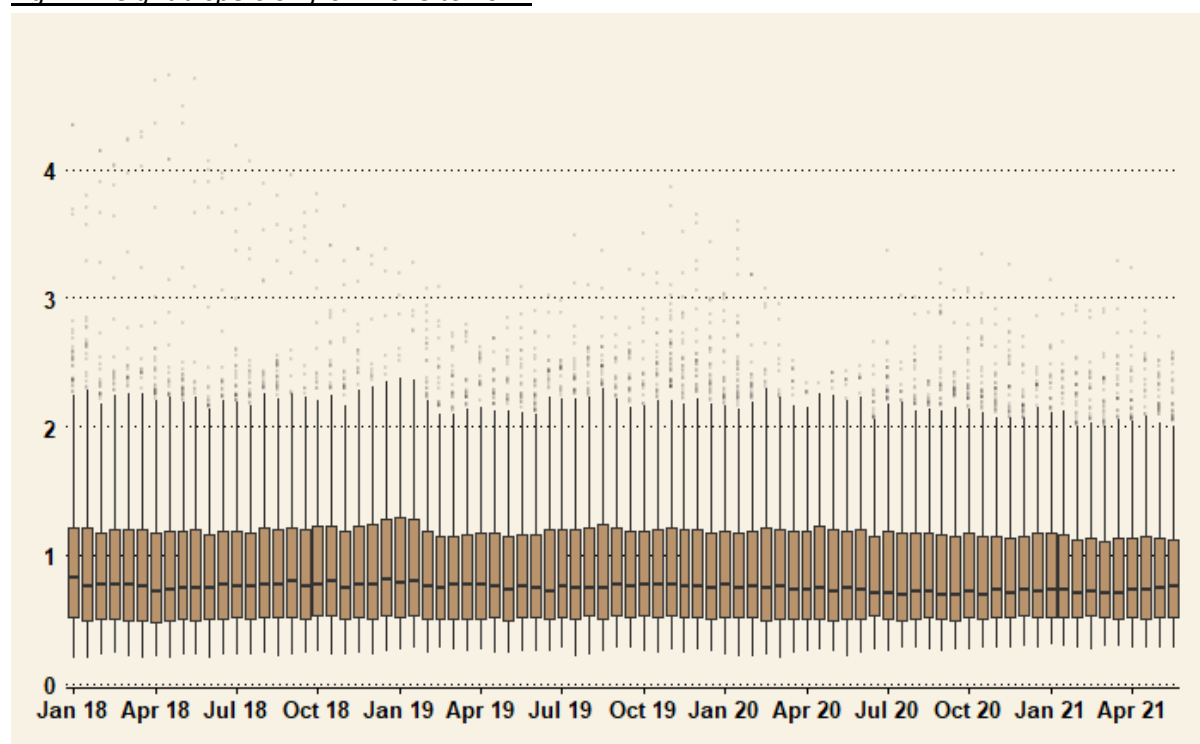*Fig. 3. Overall panel efficiency from 2018 to 2021*

Fig. 4. Weight dispersion from 2018 to 2021

Georgia Cities 2021-05-15

city	Sample size(N)	Sum weights	Mean weight	sd	DEFF	EFF
Tbilisi	837	989	1.18	0.43	1.18	0.85
Rustavi	206	116	0.56	0.17	1.03	0.97
Gori	72	38	0.53	0.15	1.02	0.98
Kutaisi	248	135	0.54	0.16	1.03	0.97
Zugdidi	82	44	0.54	0.18	1.03	0.97
Poti	65	38	0.59	0.21	1.04	0.96
Batumi	228	130	0.57	0.17	1.03	0.97

Georgia Gender 2021-05-15

gender	Sample size(N)	Sum weights	Mean weight	sd	DEFF	EFF
Male	781	680	0.87	0.48	1.23	0.81
Female	957	811	0.85	0.50	1.25	0.80

Georgia Household Size 2021-05-15

size_of_hh	Sample size(N)	Sum weights	Mean weight	sd	DEFF	EFF
One Person HH	83	72	0.87	0.50	1.25	0.80
Two Person HH	176	181	1.03	0.60	1.36	0.74
Three Person HH	310	288	0.93	0.53	1.28	0.78
Four Person HH	456	381	0.84	0.46	1.21	0.83
Five Person HH	325	258	0.79	0.44	1.19	0.84
Six+ Person HH	388	310	0.80	0.42	1.18	0.85

Georgia "Socio Economic Class New" 2021-05-15

socio_economic_class_new	Sample size(N)	Sum weights	Mean weight	sd	DEFF	EFF
1	260	229	0.88	0.49	1.24	0.81
2	229	209	0.91	0.51	1.26	0.79
3	228	207	0.91	0.47	1.22	0.82
4	539	446	0.83	0.47	1.22	0.82
5	482	400	0.83	0.49	1.24	0.81

Georgia Age Groups 2021-05-15

age_group	Sample size(N)	Sum weights	Mean weight	sd	DEFF	EFF
4-9 Years Old	147	129	0.88	0.36	1.13	0.88
10-15 Years Old	160	109	0.68	0.30	1.09	0.92
16-24 Years Old	204	193	0.95	0.67	1.45	0.69
25-34 Years Old	250	252	1.01	0.45	1.20	0.83
35-44 Years Old	230	224	0.97	0.45	1.20	0.83
45-54 Years Old	237	203	0.86	0.56	1.31	0.76
55-64 Years Old	237	181	0.76	0.40	1.16	0.86
65+ Years Old	273	200	0.73	0.44	1.19	0.84

Table 5: Weight Distributions by category

The weighting process is well controlled and there do not appear to be an excessive number of iterations required. When analysing the iterative process we see that 99.7% of cells converge as expected.
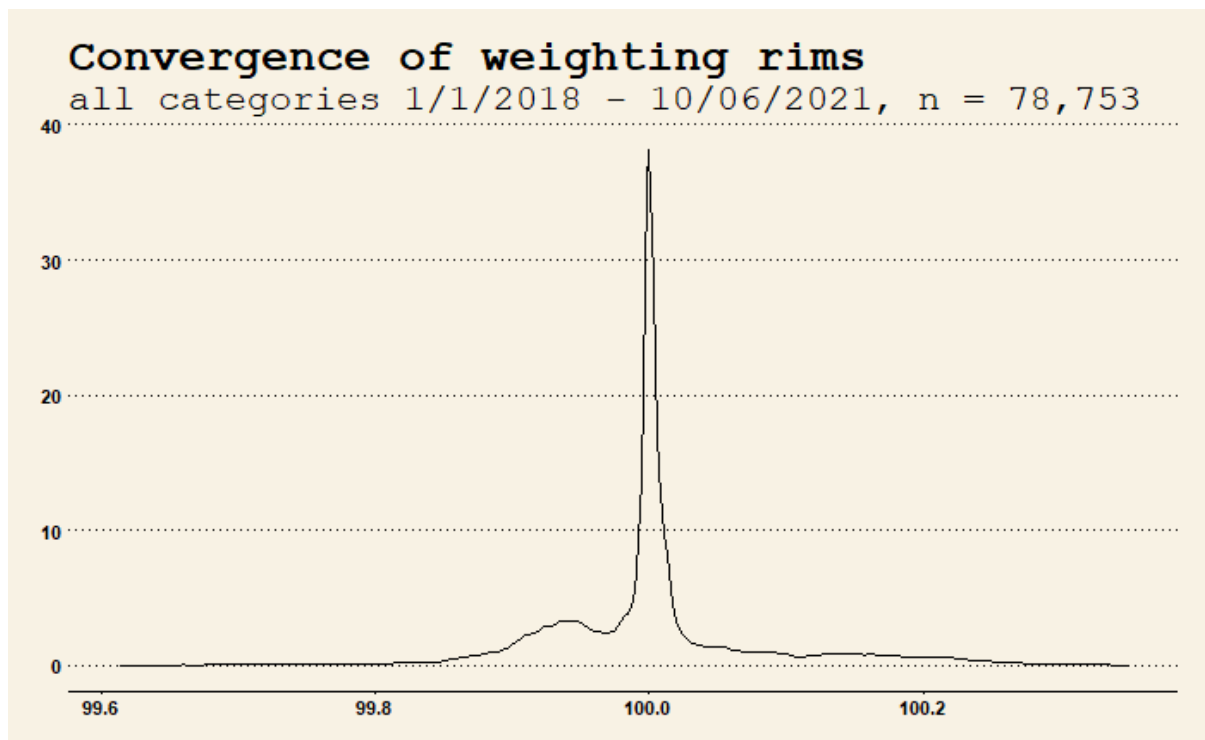

Convergence of weighting rims
all categories 1/1/2018 – 10/06/2021, n = 78,753

Fig 5. Convergence of Weighting Rims

Overall, we see a well balanced and well-maintained panel.

Assessment Area	ComCom Benchmark	Status
Representativeness: Panel Weighting Criteria	Range of minimum to maximum weighting. Conduct of the weighting process (e.g. number of iterations).	**CONFIRMED**
3M3A Comment Weighting is consistent and there are no extremes, as shown in the mean weights and weight dispersion.. The weighting criteria are relatively stable, and the process is well controlled. If in future any weighting issues arose there is room to reduce the number of rim cells.		**GOOD**

Assessment Area	ComCom Benchmark	Status
Representativeness: Panel Efficiency	Efficiency score=1/(1+RSD²) RSD=Relative standard deviation Minimum 70% (considering proportional nature of panel	**CONFIRMED**
3M3A Comment The efficiency of the panel has been good and shows a trend of improvement. It has been above 70% from 2018 onwards and is currently above 80%.		**GOOD**

Panel performance

It is important that the whole panel is reporting over time to provide longitudinal data from individuals and households. In practice this means avoiding a much larger gross panel than the size of the panel reporting every day.

Using a file of households per day, we calculate the number of days households report data.

The table below shows the averages of key panel performance indicators (monthly figures have been aggregated into quarterly averages - for monthly figures see Annex 2):

Quarter	Acceptable HHs	HHs not Polled	HHs Polled	HHs in Production	HHs on Directory
Qtr1 2018	510	12	519	524	530
Qtr2 2018	518	13	525	532	538
Qtr3 2018	514	17	522	532	538
Qtr4 2018	513	15	522	530	537
Qtr1 2019	520	11	527	533	539
Qtr2 2019	520	12	526	533	539
Qtr3 2019	514	15	521	530	535
Qtr4 2019	513	14	522	528	537
Qtr1 2020	517	12	529	530	541
Qtr2 2020	517	14	530	531	544
Qtr3 2020	522	12	528	535	541
Qtr4 2020	521	14	525	531	539
Qtr1 2021	526	9	530	535	552
Qtr2 2021	525	9	528	533	553

Table 6: Monthly Polling Indicators

To look into further detail we show below an example at daily level of a typical recent month from May 2021. The results show a very high level of polling every day for the full month of May.

The results below show that of 534 registered households in May, 516 or 97 percent were polled 28 days or more. This is an unusually good result.
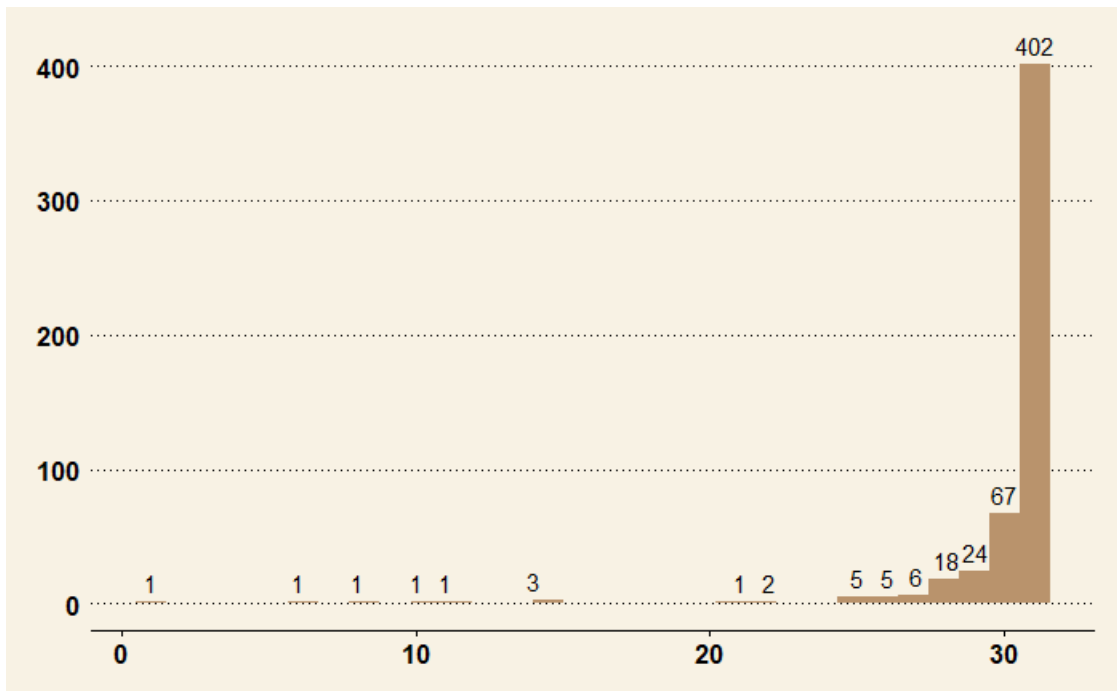
Fig 6. Example of polled homes within a month

This can also be seen in the table below which shows the same month and causes of non-polling or rejection. 94% of all household days are valid.

	Count	%
Total	15624	100 %
OK	14691	94 %
Off directory (NF)	147	1 %
Non Poll (NP)	691	4 %
Rejected (REJ)	95	1 %

Assessment Area	ComCom Benchmark	Status
Panel Performance:	Monthly average Percentage of in Tab households versus in directory households Minimum 90% of the directory household	**CONFIRMED**
3M3A Comment In tab households are consistent and well above 90%.		**GOOD**

Daily viewing and nil-viewing in the panel

As an example of panel performance we show below a chart of the panelists and households that watch TV during the month of May 2021. We find that for individuals about 60 percent view TV on any day during the month (the figure is the sum of weights for individuals with viewing time and individuals without viewing time registered in the daily .swd files).

Fig 7a. Nil viewing by individual, May 2021

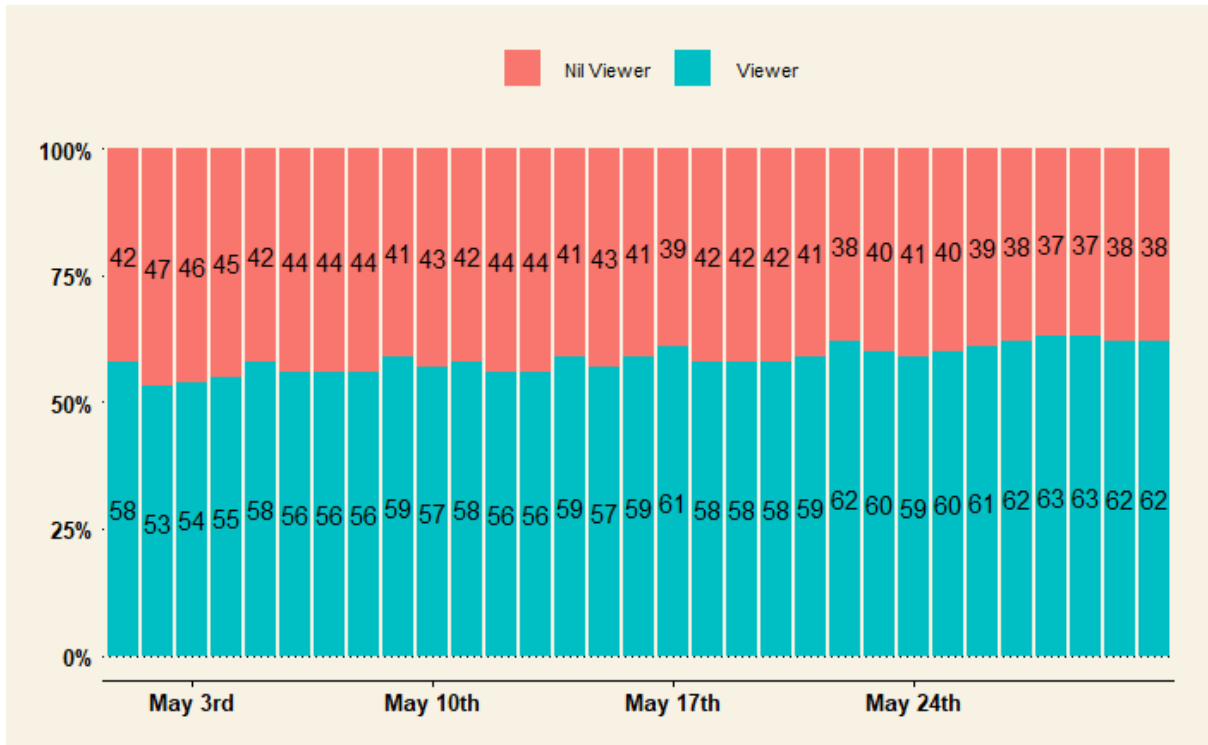We have also checked the data for households. There can of course be more individual nil viewers than complete households nil viewer. We find that the data are very much in line with what we see in other TAM markets.
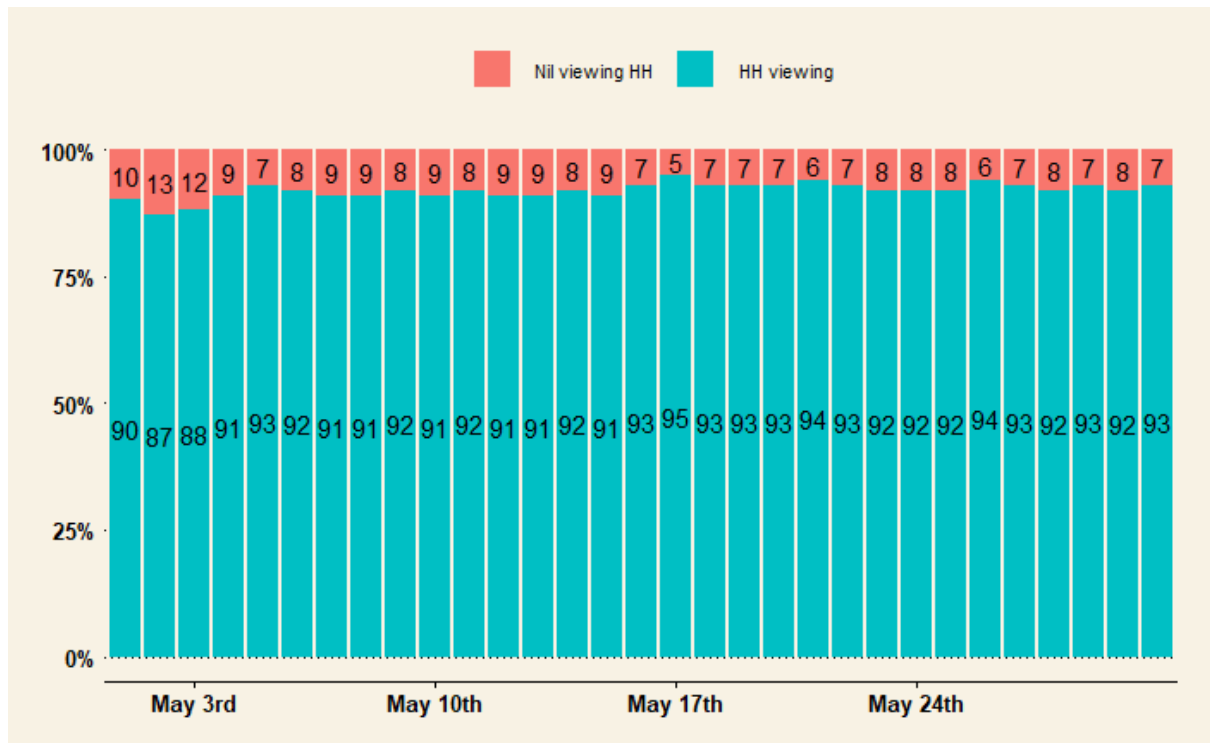
Panel Stability

While panel stability is desirable there is always some degree of turnover for various reasons.

There is no consistent international standard in this area. Some markets enforce a level of turnover and place restrictions on length of panel tenure, whereas others allow natural churn to take effect. To our knowledge there is no evidence that length of time on a panel has been shown to have any effect on behaviour.

We have examined annual turnover on the panel, and apart from between 2018-2019 which was slightly higher find that it is within acceptable parameters.

Year	unique HH ids	Out	In	Year End	Churn
2018	690	165		525	31%
2019	647	113	122	656	17%
2020	624	90	90	624	14%
2021	559		25	584	-

Table 7: Annual Turnover

In this regard we look at panel turnover as an indicator that the panel is well-managed and the panellists themselves are content.

Assessment Area	ComCom Benchmark	Status
Panel Stability: Monthly rotation	Between 15 and 25% rotation per year	**CONFIRMED**
3M3A Comment		**GOOD**

Editing, Validation and QC

TMI supplied their list of QC processes and editing / validation rules.

These include:

- 'Gap' rules covering leading, trailing and bridging i.e. when the TV is on but no viewer has registered. The system will attempt to assume viewing for up to 10 minutes. These are standard rules within Atria, the Kantar editing system.
- Rejection rules covering examples such as non-polling, uncovered viewing and invalid viewing.
- Withheld procedures for technical problems or household behaviours such as unmonitored devices or extended holidays.
- Work orders and flags. These are rules which generate a work order i.e. to contact the household and check the behaviour. It may or may not be correct. A good example is extreme viewing. In some homes a TV may be on for extended periods and this is genuine viewing once it has been confirmed.

The full list is too numerous to repeat here but we have reviewed the set of rules provided by TMI and confirm that they are following standard QC processes and the applied thresholds are in line with international practice.

TMI also noted that during the pandemic any households which have been rejected for a continuous period of more than three months (for example because a technician was not able to visit and correct a problem) are switched from Witheld to Drop Out status. This is a sensible practice and in fact exceeds some other systems we have seen.

Having also reviewed the TMI QC reports 2018-2021 we see no evidence for any concerns. There are no significant and consistent areas of failure either at a system level or household level. As seen in Table 6 above the levels of polling are very high on a day to day basis.

The major cause for failure on a given day is non-polling, which is typically a technical error, followed by Uncovered Viewing, averaging under 5 per day in most months.

Assessment Area	ComCom Benchmark	Status
Uncovered Viewing and Rejection Rules	Types and parameters for rejected households	**CONFIRMED**
3M3A Comment The rules for uncovered viewing and other criteria for withholding and rejection are in line with standard practice. Having reviewed the QC logs they appear to be consistently applied and there is no single cause of failure which is so significant as to cause concern.		**GOOD**

Data Delivery

To verify the data delivery we examined the upload times of the FTP servers maintained by TMI for the three different types of files – Audience (AS) Programme (PS) and Spot (SS).

Our understanding is that the target time for Audience files is 1000 hours and for Programme/Spot files 1500, on working days. Weekend and holiday files are uploaded on the next working day as is common in many markets.

Taking the previous year of files (June 2020 – May 2021) we see that in general the delivery times are usually in advance of these targets, which is a very good performance given the potential interruptions caused by changes to working practices during the COVID pandemic.

	On Time	Exceptions	% On Time	Average Time
AS Files	344	22	94%	09:21
PS Files	351	15	96%	14:05
SS Files	351	15	96%	14:05

Table 8: File Delivery Times and Exceptions

The distribution of time can be shown visually as below.

26
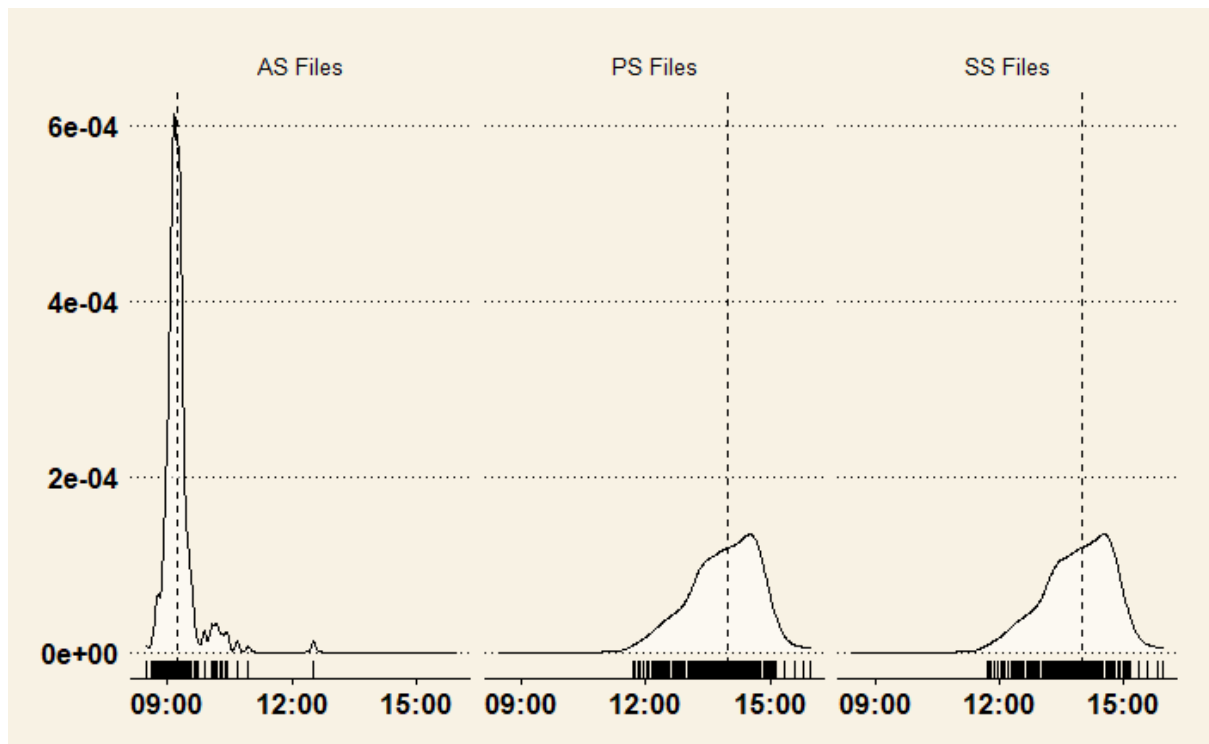
Fig 8. Data Delivery Average Time

Even late deliveries were normally within one hour of the agreed time. Only in one case during the past year was an audience file delivered with a substantial delay.

Assessment Area	ComCom Benchmark	Status
On Time Delivery	% average on time	**CONFIRMED**
3M3A Comment Delivery is consistent and the vast majority of files are delivered before agreed times. Exceptions are rare and minimal.		**GOOD**

COINCIDENTAL STUDIES

(Section 15)

Coincidental studies have been carried out on a bi-annual basis. We have received reports for 2018-2020.

The Coincidental Questionnaire is a standard format which asks a sequence of simple questions to confirm whether the TV was being viewed at the time of the call and by who, along with a brief check on the home demographics.

Correct use can be by a viewer (in the room with TV on, button pressed) or by a non-viewer (not in the room with TV on, button not pressed). Incorrect answers are when a person is in the room with TV on but without button pressed or not in the room, but their button is pressed.

Answers given by the respondent are compared to the actual viewing logs from the meter to determine actual compliance.

The results of the surveys are as follows:

Dates	Homes Surveyed	Compliance
Apr 2018	314	83.8
Dec 2018	352	84.1
May 2019	301	83.3
Dec 2019	341	81.2
Jun 2020	326	84.3
Dec 2020	366	89.6

Table 9: Coincidental Studies and Compliance 2018-2020

The rate varies slightly among different categories and age groups. However no target group shows signs of serious concern.

In general we would regard anything over 70% as acceptable and anything over 80% as good. 90% or more is exceptional therefore we confirm that the TMI coincidental rate is very good.

It is worth noting that having observed the slightly lower trend from 2018 to 2019, TMI took the initiative of launching a compliance campaign with panel homes. A quiz was produced and sent to the homes to reinforce the required behaviours and homes were offered additional incentives for completing it. During household visits a number of homes

mentioned this and it appears to have had the effect of reversing the trend and delivering considerable improvement to compliance.

We commend the pro-active approach of TMI in this area.

Assessment Area	ComCom Benchmark	Status
Evaluation of Compliance: Coincidental Studies	At least one Coincidental Study per year	**CONFIRMED**
3M3A Comment Compliance rates are in line with international standards. TMI actively monitors and manages compliance rates.		**GOOD**

FIELDWORK: HOUSEHOLD VISITS

(Sections 9, 14 and 19)

HH Information

A total of 33 homes, representing 110 individuals, were visited between the dates of July 12 and July 22, 2021.

The main purpose was to check the panel management and records and to confirm the correct installation and working of meters.

Homes were visited from four regions as follows:
- Tbilisi 13
- Rustavi 4
- Kutaisi 8
- Batumi 8

This exceeded the minimum proposed target of 30 homes.

Selection Process

The auditor selected a pool at random from the total panel for visits to be scheduled by TMI, depending on the availability of panellists.

The home visits are not intended to be a complete statistical representation of the panel, nevertheless attention was given to ensuring a spread of key characteristics. In the final number of visits achieved the numbers were:

- 19 small homes (1, 2,or 3 people)
- 14 larger homes (4, 5, 6 or 7 people)
- 12 homes with children, 21 without
- 22 homes with 1 TV set, 10 with 2 sets and 1 with 4 sets

We confirm that all homes visited were drawn from the random sample chosen by the auditor, with the majority (24) coming from the first list provided. This satisfies us that homes could not have been chosen to represent favourable performance.

Visit Methodology

The visits took the form of a short survey asked directly to the household followed by a technical channel test.

The survey examined three key areas:
1. Televisions and equipment, reception type, TV coverage, use of other devices.
2. Individual and HH details, numbers in the home, names, age, gender, relationships, work status, education, internet access and social class.
3. Panel experience, recruitment process, receipt of incentives, absence of interference or collusion.

Panel Check

The panel records provided by TMI were checked against details provided by the panel homes. This is to ensure that the panel is in reality as designed and also that viewing information is reported accurately.

The key areas for comparison reflect typical factors used as targets in planning and evaluation.
- HH size
- HH composition – age and gender
- Presence of children
- Number of TV sets
- Reception type (pay/free)
- Internet access
- Working status
- Education level

Socio-economic status was also queried but this is a more difficult area to assess because of potentially subjective responses.

The results of the checks per HH were as follows:

Category	Correct	Incorrect
HH Size	32	1
Children	33	0
TV Sets	33	0
Reception	33	0
Internet	33	0
Work Status	28	5
Education	31	2
Total	223	8
%	96.5%	3.5%

Table 10: Household Data Check Results

Some degree of error is always expected in any panel. We see that in the key areas of HH size, Children and TV sets the performance is nearly perfect which is an excellent result and the overall error rate is better than most international systems.

The only note is the slightly higher error rate in work status, although this is not entirely surprising. Even in normal times it is a situation which can change rapidly and that in the past year many people have had significant change and difficulty in employment.

ADDITIONAL NOTE: TMI has responded that due to the volatility of the working status they have already decided to remove 'working status' as a weighting variable and it will not be used in the weighting for the expanded panel. We agree this is a sensible decision.

Panel Management

Respondents were asked about the installation process and training, incentives and regularity of contact from TMI.

The households universally reported good relationships with TMI and the assigned technician. Frequency of contact was generally every few weeks and households had good recall of contact reasons.

The reasons given for the most recent contact were varied and show a very active approach to panel management. These included:
- Classification checks
- QC calls such as incorrect buttons, prolonged inactivity or non-polling
- Special activity such as the campaign to improve compliance
- One member reported a follow-up call after using an incentive voucher to ensure that there were no problems and the store had not asked about the panel.

The households were aware of or were regularly receiving their incentives, which they appeared to appreciate and several homes mentioned with approval the items they had been able to purchase. TMI ensures that vouchers can only be spent on non-viewing related items, in line with international practice.

The homes were all aware of the general purpose of the panel and all confirmed they had been trained to use the meter and that all members understood the function and responsibilities.

In areas of active panel management there are no concerns.

Assessment Area	Panel Management	Status
The panel management is as good as any we have seen. Records are accurate and TMI is to be commended for an excellent and pro-active approach.		**GOOD**

Panel Recruitment

Respondents were also asked about their recruitment process and a number of screener questions to eliminate interference or manipulation.

The purpose of the recruitment questions is to check that respondents have been drawn from the randomly selected Establishment Survey (ES), typically through a face-to-face interview. Not all members could remember the recruitment process (and it should be noted that the interview may not have been with the household member who was initially

recruited) but the majority confirmed the process of face-to-face Establishment Survey followed by phone recruitment by TMI.

Respondents were also asked as a check whether they had been contacted by anyone other than TMI regarding their viewing or participation on the panel, or if they knew any other homes on the panel. No issues were noted here.

TMI has also provided full details about Recruitment Sources going back to 2015. These include:
- Dedicated Establishment Surveys (2015-2020) 64%
- Pre-election surveys (2016, 2020) 2%
- Other (Transport / Credit surveys) 3%
- Boost Surveys (2015-2019) 30%

The majority of the panel (64%) has come from Establishment Surveys and another 30% from Boost surveys to recruit households with more difficult demographics.

Within the Boost survey sample there is further randomisation of selection within the internal software used by TMI i.e. homes are validated if they meet the desired demographics and then randomly selected for contact.

The methodology of both the Establishment and Boost surveys is appropriately random using random address selection or a random walk technique to select homes for interview (See Section 3 for a full description of the ES and sampling methodologies).

Assessment Area	ComCom Benchmark	Status
Recruitment	Random contact of the panellists through the Establishment Survey and potentially additional surveys	**CONFIRMED**
3M3A Comment Recruitment follows standard practice and is primarily from Establishment Survey. Supplementary boosts are used to balance panel demographics.		**GOOD**

Regular Guests

One area noted in our initial review of output data was the high level of guest viewing, frequently above 10% of homes.

On investigation with the panel we have been made aware of the numbers of Regular Guests in the panel. This appears to be a characteristic which is special to Georgia.

In most TAM systems guests are registered but not included in overall universe calculation or given their own weighting because they are considered a proxy for guest viewing by the HH members. Guest information is limited to age and gender and other characteristics are taken from the Head of Household or Housewife.

In the Georgian panel there is a distinction between 'normal guests' and 'regular guests'. Regular guests are individuals who are frequently in the household but it is not their main residence or it is their main residence for less than one year. This aligns with a definition of GeoStat.

However regular guests are fully identifiable with the same demographics as other HH members.

We confirm that TMI is compliant with international practice and is following the standard procedure set out by Kantar. Nevertheless we think that this may be a special case for the Georgian market.

In the Instar calculations Guests are assumed to be included in the universe and contribute to the sample used in the reach calculations.

We have looked at a significant global client's advertising for the month of June 2021 using Instar. There were 12 720 spots flighted with the following performance.

Individuals 18+	With guests	Without guests	Guests contribution	% increase
Universe	1211	1211		
Sample	1456	1399	57	4.1%
TVRs	5 496	5 256	239.27	4.6%

Table 11a: June 2021, Top Spots Template Instar Analytics 2

Guests contributed 4.6% additional TVRs coming from 57 additional 18+ individuals

The reach and frequency calculation used in Instar reads as follows:-

Campaign	Total Inds 18+ with guests
GRP	5 496
OTS	69
1+ (%)	79.7

Table 11b: June 2021, Spots R&F Template Instar Analytics 3

We suggest examining the potential of including Regular Guest status within the Establishment Survey in future, so that it can be included in panel design. TMI has been careful to use only targets which can be confirmed by GeoStat.

However many countries use the Establishment Survey to add data which is not available in public census information and this would fit that practice. In this way TMI could be sure that the number of regular guests is representative of the overall universe.

Assessment Area: Panel Design - Regular Guests	Regular Guests	Status
3M3A Comment The practice of including guests is correct and it is understandable that TMI makes it easy to register by giving them a standard button on the meter. We suggest that a question about regular guest presence is included in the Establishment Surveys so that this can be monitored for any effect on the Universe and controlled if necessary.		**DEVELOP**

ADDITIONAL NOTE: TMI has responded that they are happy to consider this based on feedback from the industry.

Channel Tests

A channel test was conducted in each home and on each metered television set in the following way.

(i)   The test begins with switching off the TV/meter and then switching on to observe the startup.

(ii)   A household member and/or guest is registered on the meter and channels are changed after at least one minute duration up to three minutes for the main TV set and any others. In some cases unreferenced channels or alternative platforms such as You Tube were viewed.

(iii)   Registration was changed at least once during the test, usually by adding another member or a guest. Generally the household member is asked to operate the meter to demonstrate their understanding.

(iv)   Finally the TV and meter are switched off and checked. In multiple set household the other TVs are also checked in the same way.

Channels were selected at random and generally left to the household member to choose. The channels included in this way (in no particular order) were:

- Imedi
- Ganatleba
- Pirveli
- Channel 1
- Rustavi 2
- Mtavari
- Formula
- Maestro
- PosTV
- GDS
- Adjara
- Kavkasia
- Palitra News
- Marao
- Ertsulovneba
- Euronews
- Comedy Channel
- Comedy TV
- Obieqtivi
- TV25
- Cartoon Network
- Starvision
- Silk

Having tested many meter systems in different locations and countries the auditors are aware of a general rate of error in channel logs, normally around 5-6%. This is sometimes corrected in reporting data using editing rules.

Such errors are produced naturally because of a variety of issues such as reception difficulty, interference or inadequate reference data. It should also be noted that short duration tests of 1 minute are likely to produce more errors than normal viewing. For example if the test takes place across a commercial break it is more likely to have difficulty with matching.

The critical element of testing is not the overall error rate, provided it is within expected margins.

If the errors are random and show no sign of bias or tendency to affect certain situations more than others then they effectively cancel each other out. No one channel will have any disadvantage or relative effect on reported performance.

The results of the channel tests were as follows:

Sets Tested*	42	Description

Total Actions	168	Channel tests and off/deregistration
Correct	160	Channel and Viewer Registration
Incorrect/Errors	8	No Match = 6 Incorrect Credit = 2
Total	**95%**	

Table 12: Channel Test results

* 3 Sets Not tested: one home had no electricity at the time, one was set up in a way that only the viewer (who was not present) could operate, and the third was in a room where an elderly person was asleep.

As stated above, this is a very typical rate for any audio-matching system.

The 8 errors observed were distributed across 8 different channels therefore we conclude that it is genuinely random and should affect no one channel more than any other.

Assessment Area: Channel Referencing		Status
Channels are correctly sampled, HH members correctly reported and error rates are within expected tolerance. There is no sign of any bias.		**GOOD**

Other Viewing

As a general observation regarding channel viewing we noted a significant number of homes who reported that they used other devices such as laptops, phones and tablets for viewing.

20 of the 33 homes said they did this, with a range of content from short videos to longer content such as movies.

Coupled with the ability of some IPTV platforms to provide a 'semi-smart' capability where homes can view You Tube and other content through their box, this suggests that a large amount of viewing cannot be captured - and this is only likely to increase. It also establishes behaviour which may transfer to OTT platforms in future as has been seen in other countries with Netflix, Disney+, Amazon etc.

While not a primary concern at this point we suggest that TMI and the industry stakeholders monitor the amount of unmatched viewing on the TV meters over time, and at a future date consider the installation of router meters to the panel in order to measure viewing to digital devices in the home.

TECHNICAL SECURITY & REDUNDANCY

(Sections 16 and 20)

The TMI offices were inspected and documentation provided regarding the following:
- Physical security – staff access and rights
- Network security
- Backup of data processing
- Redundancy of channel referencing

Physical Security

The TMI office is fully secured and compartmentalised to prevent unauthorised access. The office is divided into 9 zones covering different functions and areas.
It is fully alarmed and covered by cameras (both main and backup sites) which can be accessed and operated remotely by authorised staff. Access is by card and logs are maintained.
Only relevant members of staff have access to areas which are necessary for their work – this was demonstrated on site and a list of staff and roles with access privileges has been reviewed.
No single member of staff has access to all areas.
The most highly restricted areas, such as server rooms, are extremely limited.
Two fully redundant sites are maintained in separate offices.

As an example of the physical security standard maintained in the office, a 'Guest' alert light has been installed which is switched on when non-TMI staff are in the office for any reason. The guest alert is mirrored in the Panel administration room and while it is on the door to the panel room is not opened from either side.

Network Security

Connection to the network is on an isolated internal network or for external access via a VPN with two factor-authentication applicable to both hardware and software and passwords are updated at least annually.

Anti-virus software is deployed on all network-connected devices.

Access is available only to authorised IP addresses and all server ports are restricted.

Data is stored on the network, not on local devices. There is no off-site or cloud storage and it is not transmitted off-site as part of the production process.

Personal Identification Information is encrypted within the network and a separate encryption system is used for recruitment addresses and information.

Field Security

Field technicians are provided with security training to avoid surveillance or monitoring including:
- parking away from panel homes
- checking vehicles for devices
- deletion of outgoing calls and navigation history

Field technicians are given access to household information only as necessary for work orders.

Backup and Redundancy

A main server room and backup server room are maintained in separate locations within Tbilisi.
Server rooms are cooled and supported by UPS power systems as backup.
Temperature and humidity is monitored.

Full channel reference capability is maintained in both sites, with dedicated decoders for channels.

A total of 74 channels are monitored, including 13 regional channels and 17 foreign channels. 34 of these are Georgian channels which are fully measured for programmes and spots.
We confirm that the TV signal collection is fully redundant.

Overall we observed that TMI has a well documented and comprehensive approach to security and backup.

Privacy, physical and network access is proactively managed and systems are well supported, maintained and backed up.

We confirm that the security systems comply to international standards and the terms of the audit scope.

Assessment Area	ComCom Benchmark	Status
TV Signal Collection: Number Collected	At least one back up per TV signal	**CONFIRMED**
The range of channels covers the Georgian market and provides a full picture of viewing.		**GOOD**

Assessment Area		Status

Security and Redundancy		**CONFIRMED**
Systems are documented and subject to active management and monitoring with backup and redundancy.		**GOOD**

CONCLUSION

In summary we confirm that our overall view of the TMI panel is that it is well-run, well-organised and meets any standard of international measure.

The setup and performance of the Georgian system would not be out of place in any market run by Kantar or other major vendors. We understand that key Kantar personnel have been closely involved in the system and we have also observed excellent management and motivated staff within TMI during the course of the audit.

We are of course happy to answer any questions or make further observations as requested by ComCom or TMI stakeholders.

Sincerely,
3M3A
Christopher O'Hearn
Robert Ruud
Brenda Wortley

Annex 1: Documentation List

TMI Presentation Overview

Establishment Survey Design and Reports 2017-2021

Establishment Survey Databases 2017-2020
- weighted by individual and household

Establishment Survey Questionnaires

Panel Design Controls and Recruitment
- Panel Targets
- Panel Recruitment Sources

Demographic Update Questionnaire

Coincidental Survey Questionnaire

Coincidental Study Reports 2018-2020

Target and Universe Update Description

QC Reports 2018-2021

28 day HH performance reports 2018-2021

Validation Rules and QC Rules

Weighting Description and RIMs
- Weighting reports 2018-2021

People Meter Description

Panel Guides and Materials

Security and Privacy Policies

Annex 2: Monthly Polling Indicators 2018-2021

month	Acceptable HHs	HHs not Polled	HHs Polled	HHs in Production	HHs on Directory
2018-01	508	15	516	526	531
2018-02	509	11	519	523	529
2018-03	512	9	522	524	531
2018-04	519	12	527	533	539
2018-05	519	11	526	534	538
2018-06	515	14	523	530	538
2018-07	516	17	522	534	539
2018-08	511	18	520	531	537
2018-09	515	16	523	532	539
2018-10	515	14	523	531	537
2018-11	514	15	521	530	536
2018-12	511	16	522	528	538
2019-01	514	14	523	530	537
2019-02	526	11	533	537	543
2019-03	521	9	527	532	536

2019-04	518	13	525	532	538
2019-05	521	11	529	534	540
2019-06	519	13	525	533	538
2019-07	516	13	522	530	535
2019-08	510	18	516	530	534
2019-09	516	13	524	531	537
2019-10	514	14	521	529	535
2019-11	513	15	522	529	536
2019-12	513	14	524	527	539
2020-01	515	15	526	531	541
2020-02	518	10	529	529	540
2020-03	519	9	533	529	542
2020-04	518	10	531	530	541
2020-05	514	16	525	528	541
2020-06	519	14	535	534	549
2020-07	520	15	527	537	542
2020-08	521	13	526	536	539

2020-09	524	8	531	533	540
2020-10	518	12	524	528	537
2020-11	524	17	528	536	545
2020-12	519	11	524	531	535
2021-01	525	10	529	534	549
2021-02	528	10	532	537	554
2021-03	526	9	530	535	553
2021-04	525	8	530	532	553
2021-05	524	11	527	535	554