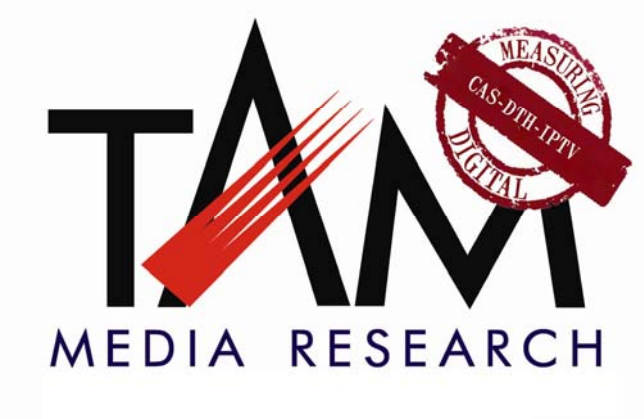


TAM Methodology Document

Confidential

I. TAM guiding principles in Sample Spread & Design

The guiding principle behind the TAM sampling plan has been to strive and achieve both depth and width in coverage across India.

The first step has been to broadening coverage to all states but initially within the existing reporting population stratum of Urban markets with Greater than 0.1 Mn. Population. This has now been achieved with the exception of J&K and North East states (TAM is already present in Assam) where conducting fieldwork is of a slight issue. The next step has been to deepen coverage to the Urban towns with Less than 0.1 Mn. population stratum for all markets as well as cover Rural markets. Thus, while attempt is to cover more markets, existing markets will also keep growing in terms of sampling size.

When we began the service in 1998, the plan started off with a sample purely proportionate to the TV owning universe across markets across control population strata. After this, adjustments were made to ensure a reportable sample and to ensure that the household weights are in manageable range across markets and population strata. Each market met with the required criterion of 50 sample individuals for a 1/8th demographic analysis in the viewership software.

II. Establishment/Baseline study

This is the first step in setting up a Peoplemeter panel. The Establishment survey (ES) establishes a number of facts about the Universe that are needed for establishing & running a continuous TAM panel. The ES sample is often designed in multiples of the proposed or existing sample sizes, with typical sample sizes varying from 6 to 8 times the TAM sample size. This means for a panel of 8000 homes, the sample size for ES is approx. 60,000 to 80,000 homes. This of course will increase should one expect more depth of analysis from the data collected.

The ES serves to establish:

1) **Universe Size** - The Universes that TAM operates for projection and reporting have the ES as the base.
2) **Universe Profiles** - Proportions generated from the ES are used as the basis for configuring the TAM panel. For instance, if the sample is designed to be proportionate to the C&S penetration and the ES tells us that the C&S penetration is 70%, then 70 out of every 100 households in the TAM panel would be C&S homes.
3) **Sampling Frame** - Given the large respondent base, the ES is also used as a sampling frame for TAM. Simply put, the ES addresses also serve as a database from which TAM homes can be recruited. Since the TAM panel is based on results of the ES, it is extremely important that the ES is based on a high quality random sample.

NRS (National Readership Study) that was being released frequently by the industry was used by TAM as the ES in the initial years. This easily gave us a larger sample size study, cost and operational efficiency and the possibility of customising it to market needs at an affordable cost. Today, since 2008, the NRS has been replaced by our annual baseline study conducted All India with a sample size varying from 70,000 to 110,000 executed by Nielsen & IMRB across the entire country.

Implications of ES for TAM

Before the universes via ES are updated there a number of activities that TAM needs to conduct, all of which are in order to make the panel representative, in line with the new ES.

a. To start with, the sample size for that market itself may change

   With new ES information, a stratum in a market may merit more sample households in the TAM panel

b. Once the sample sizes in a Market x Stratum are fixed, the next task is that of town selection.

   The objective here is to make the sample towns collectively representative of the universe.

c. Home-selection within each of the sample towns

   This is true for not only for the newly chosen sample towns but also for existing sample towns such as the metros. Using our panel controls, the objective will be to align the panel to the universe profile. for e.g. the C&S penetration in SEC C in Mumbai has grown from 81 % (NRS 2002) to 87 % (NRS 2005). Given that the panel is proportionate to the C&S penetration in a market, for every 100 homes, where there were 81 C&S homes in SEC C, the current requirement would be 6 more than this.

d. Universe update

   Once the above process is complete, the next step is to then release data generated by the sample units to the new universes that will reflect in Media XPress.

To reiterate the process is an extremely intensive one, both statistically and operationally. In the coming weeks, we will keep you informed of the timelines and the progress of the activities.

III. Sampling: Town selection

Before we come to Town Selection, a quick word on deciding sample size. This is a tricky one since a range of factors influence the sample size allocation of the overall sample across markets. These include desired depth of analysis (feedback of which comes from industry bodies like the JIB technical committee), availability of sufficient sample sizes for commonly analysed target groups and desired level of statistical precision. While markets are analyzed by two strata (1Mn+ and 0.1-1Mn),

for better sampling control, the 0.1 -1Mn stratum is broken up as 0.5Mn – 1Mn, 0.2 - 0.5Mn, 0.1 - 0.2Mn and Less than 0.1 Mn.

Once the sample size is decided, the next step is to choose the number of towns. As an example, consider a certain stratum in a market with a sample size of 150. To simplify the explanation, also assume that all towns have an equal number of TV owning homes. Then, two (of the many) options available are to choose 2 towns with 75 homes each or select 5 towns with 30 homes each. Each option has its merits and demerits. In the first option, we reduce operational cost and time (since only two towns are selected). This however comes at a cost of statistical precision - lower precision as compared to the second option. Deciding the number of towns is about balancing these two forces – of operational cost and time on the one hand and statistical precision on the other.

The towns for the sampling are chosen Probability Proportionate to Size. We have in the past also successfully used a technique called Simulated Annealing to ensure a balance between the parameters of Socio-Cultural Regions[1] (therefore ensuring geographic spread), C&S penetration (average C&S penetration of sampled towns equal to the population penetration) and Terrestrial availability of DD News (average availability of sampled towns equal to the population availability).

IV: Sampling: Sample split within a sample town

Within a town, the sample would be split equally between SEC A, B, C and D/E. This ensures adequate sample for processing a demographic split like SEC A, whose universe proportion as compared to the other SECs is comparatively small. It must be emphasised that this does not, in any way, bias the ratings since the results are re-adjusted to their universe proportions at a later stage.

[1] *Please see Appendix 1 for a list of Socio-Cultural Regions (SCRs)*

The CS (Cable & satellite Homes) to NCS (Non Cable & Satellite Homes) ratio in the sample would be proportionate to the universe C&S penetration in the concerned population strata.

V. Sampling: Home Selection

Just as in the case of town selection, homes across selected towns are selected to be representative of the stratum of a particular market. Initially, a statistical analysis is conducted to understand which factors explain television viewing the most. These factors are used as control factors when selecting homes. Control parameters are used within every market to ensure panel representation of all parameters that influence TV viewing.

Control parameters are further divided as Primary and Secondary parameters. Primary control parameters are those for which all parameters have to be matched at every single home level thus for instance, a SEC A, C&S household, with household size between 1-4 individuals, who prefer to watch Tamil programmes and are light viewers of television. Secondary control parameters are those which are matched on an aggregate level in a market. Thus if 30% of Mumbai's population lives beyond the municipal limits, the sample would also follow the same distribution. SEC A1/A2 has been included as an additional secondary control parameter.

A list of the control factors is reproduced below:

P.T.O…

Control Parameters	
Primary Control parameters	**Secondary Control parameters**
SEC	Geographic Dispersion
C&S	Remote ownership
Household Size	Type of TV set
Preferred language of viewing	
Claimed Weight of viewing	

SEC A1/A2

Presence of children
- 4 to 9 Yrs
- 10 to 14 Yrs

As you can see there are special variables like SEC A1/A2 or "presence of children" that are also included as controls since the presence or absence of kids makes a difference to the viewing habits of the home. SEC A1/A2 means that within the total SEC A sample, the SEC A1 and SEC A2 sample proportions would be as per their universe proportions. TAM also looks at Type of dwelling/No. of rooms as a parameter during recruitment. This may have an influence on the no. of homes with dual TV sets.

Along with this analysis, a listing exercise is undertaken to build a sampling frame. The idea is to use the control parameters described above to draw a representative sample of households. For this, in any town we would have a target number of households which a certain profile to be contacted. For example, we might need 10 homes which are SEC A, C&S homes, with a household size of less than 5 who prefer viewing Hindi programmes, have a colour TV set with a remote control, live within city limits and have at least one child at home. These 10 homes are randomly chosen from the listing database by customized software. As you can see, it wouldn't be operationally possible to maintain all the controls on an interlocking basis due to the sheer number of controls. Hence the bifurcation between Primary and Secondary controls.

Representation of Digital Homes (like CAS, DTH, IPTV homes) in the panel

The definition of "digital platforms" in the TAM context means those platforms that require a home to be equipped with a STB to receive TV signals. This definition includes CAS, DTH and IPTV platforms. Before getting into the specifics, it is well worth remembering that the TAM sample is representative of the TV owning universe. Thus TAM has seen that the rate of adoption of CAS/Digital Cable/DTH in the universe has always matched by the rate of adoption of CAS/Digital Cable/DTH within the panel – a self balance. It is also important to note that geographic dispersion is already a parameter by which TAM recruits homes and hence the number of homes in the TAM panel in CAS/Digital Cable/DTH zone will be proportionate to the universe of TV homes in CAS/Digital Cable/DTH zone. However, as a confirmatory study, TAM keep commissioning on a annual basis the Digital Establishment study to understand the rate of penetration of CAS/Digital Cable/DTH, independent of the TAM panel.

The three broad areas captured by the study are:

a) CAS/Digital Cable/DTH Penetration levels – STB already installed

b) Profile of CAS/Digital Cable/DTH adopters e.g. SEC

c) Intention to get an STB installed

A lot of care is taken to ensure the representative nature of the TAM Peoplemeter panel. In the case of digital, each SEC in a market will have digital samples proportionate to the penetration of digital in the universe in that SEC. For example, if the SEC A demographic in Mumbai has a digital penetration of 21% that will also be the penetration of digital among sample homes in SEC A.

P.T.O…

Measuring Homes with multi-TV sets: One TV may be connected to an STB and the other to Analog Cable

This is similar to a situation currently where a home may have two TV sets, one having a cable connection and the other receiving only terrestrial channels (DD). In this case, the home is classified as a C&S home with Peoplemeters attached to both TV sets to monitor TV viewing from both sets. In a CAS/Digital Cable/DTH scenario with even one of the TV sets attached to a STB, the home is treated as a Digital home. Other TV sets in the home will however have Peoplemeters attached to the sets and viewing monitored from all sets.

VI. TAM Technology

TAM uses the same technology that is used in more than 30 countries worldwide, most of whom already have a CAS/Digital Cable/DTH system in existence. The TAM technology is a Digital Peoplemeter Technology called TVM 5. This means that the Peoplemeter records the channel viewed by matching key digital signature stored in its memory automatically. In addition the home is provided with a special handset to record who is viewing the channel. Now each time someone changes a channel, the sensors attached to the TV from the Peoplemeter attached to the Set Top Box senses the channel change as well as identifies the new channel being viewed. The data is stored as encrypted data in the Peoplemeter and is transmitted to the Data centre either via GSM or GPRS through the Transmission Unit.

The actual Peoplemeter equipment in the home has three components:

1) The Base unit which connects to the TV set and where the data is stored temporarily

2) The Display Unit which is connected to the TV set and displays the number of members in the home who have logged in as viewers

3) The Transmission Unit which receives the data from the Base Unit and transmits it back to the office

VII. Weighting

After the data is collected, statistical weighting is undertaken by TAM as a means of projecting the data to the population and to ensure good quality data. We use a weighting procedure called cell weighting. In this method, 96 cells are created by interlocking four SEC groups (A, B, C and DE), three access to C&S channel groups (C&S-Analog, C&S-Digital, NCS), four age groups (4-14, 15-24, 25-34, 35+) and two gender groups (M,F). In some markets where there isn't much digital penetration, two C&S groups are used (C&S, NCS). As an example, assume that the SEC A, C&S, 4-14 Male cell had a population of 10000 (from NRS 2005) and we had a sample of 100 in that cell. This means that every individual in that cell has a weight of 100.

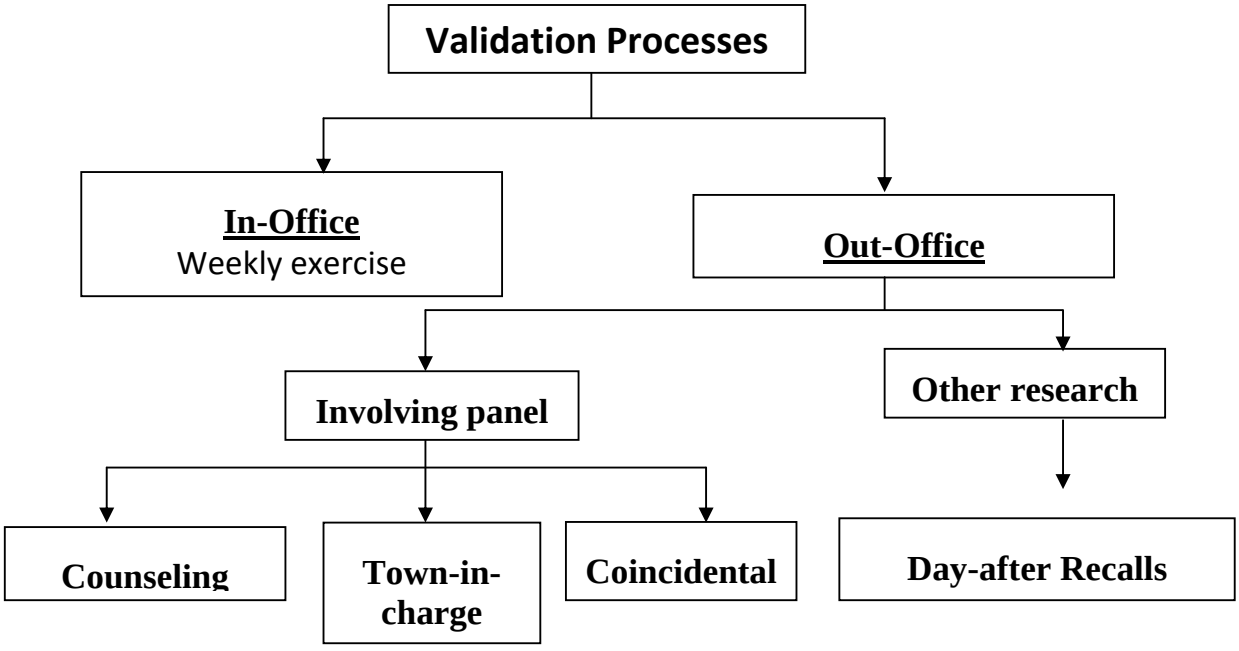
VIII. Quality Control and Data Validation

Before data release to the clients, TAM also undertakes a series of Quality Control and data validation procedures. The idea is to give quality data out to the industry. These are in place as part of the regular panel maintenance procedures. The weekly

validations include a validation called the Connectivity validation. In this, reports on the distribution of a channel across various frequency bands (called connectivity reports) are actively used. Thus, for instance, if a channel's reach has shown a significant increase over previous weeks, the first aspect to be checked is the connectivity. In a lot of cases, it is seen that the reach jumps up due to the channel being made available by the local cable on a lower (better) frequency thus enabling more TV sets to receive it. The other areas the validation team looks at are:

1) Compliance Validation e.g. Checks on button pushing by panel home members
2) Technical Validation e.g. Checks on equipment related issues
3) Viewing Validation e.g. Checks for abnormal viewing, continuous viewing.
4) Personnel Validation e.g. Checks by the data collector on household information

The chart below summarizes the validation process



Each of these processes is itself an intensive one. For example: The in-Office Validation Process is made up of two stages:

Stage 1: De-encryption & Pre-processing

In the first step the data is de-encrypted and passed through a number of automated quality rules. These are in line with global best practices across our parent companies. Steps undertaken here are Time Synchronization for e.g. where data from all homes are synchronized to a single time reference. The reference that TAM uses is the internet atom time.

Stage 2: Weighted data check

While the quality measures described above are all to do with disaggregated home data, in this stage, the validation is a mixture of home-by-home checks as well checks on data in the form that would be seen and used by a client. The first step in this stage is to project the data to the universe. This data comes from homes that have passed the quality checks described in Stage 1.

After this step, market-wise channel-wise Reach, Time Spent and Channel Shares are computed for all the qualifying homes put together. This is done not only on an overall basis but across SEC, CS/NCS, Age-groups and Gender. Then a series of validation steps is undertaken as described below:

1) Trend Check

The market trend for the above parameters is checked over a period of 13 weeks data. The present week's data is compared with this trend and variations set aside for further validation based on threshold levels depending on genre.

2) Connectivity Check

All channels that are transmitted by the cable operator fall into five basic groups of frequencies: Prime, Colour, S, Hyper and UHF. Transmission of a channel on a lower frequency set, in general, makes it accessible to more TV sets. For e.g. a channel transmitted on an S-band frequency (say, throughout a city) makes it accessible to 'S-band' colour TV sets only. In other words, at least 30% of the homes in the universe (= the % of B/W TV sets in the C&S universe) cannot receive this channel.

Now if next week, the cable operator makes the same channel available on the Prime band, then automatically these 30% homes start receiving the channel.

There is a good chance now that the walk-ins to the channel will be much higher than the previous weeks. If the trend check in step 1 above would have detected a spurt in viewership, the connectivity check helps us validate this spurt and confirm that this is due to an increase in connectivity. Vice-versa, dips in viewership are also accounted for, many a time, due to a change in transmission frequency to a higher frequency band by the cable operator.

3) Power Cuts

Power cuts are another major reason for viewership dips and the Power cut check is the next step after the connectivity check. The Field department supplies Power cut reports to the validation team. These power cut reports are home-by-home reports that the validation manager uses to get an idea of the severity of the power cut.

4) Special-event Check

Certain weeks see the occurrence of special events such as cable operator black-outs. The validation team analyses the effects of these events on the data. This proceeds in both ways – one in attributing the effects of a spurt/dip to a special event and the other the reverse way i.e. looking at the effect of the event on the data irrespective of a spurt/dip.

5) Home Performance History

This is a report that details:

a) **The viewing behaviour of the home in the previous weeks**

The check here is to see whether the viewing behaviour of the home in the current week is generally in a range, the previous 13 weeks being the frame of reference. For instance, if a home that typically views television for an hour on an average, suddenly clocks an average daily viewership of 3 hours, then

the validation manager would single the home out for a check. It could have so happened (as we have seen over the years), that the home has had guests, which has increased the time for which the TV set in the home. Increases in TV viewing are also event led e.g. Cricket.

In similar vein, continuous viewing – viewing for a stretch of time without interruption - is checked on a home-by-home basis to confirm that the viewing is actual viewing and not due to reasons such as the Peoplemeter equipment going faulty. This situation is rare but when it occurs, the home is rejected from the sample.

b) The number of times that home has been included as a valid sample in the panel

The table below shows one such actual report. The *'s indicate that the home has been accepted as part of the sample. The 'Status' column indicates whether the home is 'On-trial' or if it is an active panel home. On-trial (OT) homes are newly recruited homes whose performance is under scrutiny before they can be fully part of the panel. Some of the homes have certain codes, such as 'UNC' against them on certain days – these indicate that the home was rejected from the sample on that day due to quality reasons.

Home	Status	6/18/2003	6/19/2003	6/20/2003	6/21/2003	6/22/2003	6/23/2003	6/24/2003
9240400	OP	***	***	***	***	***	***	R
9260100	OP	***	***	***	***	***	***	***
9260300	OP	***	***	***	***	***	***	***
9260400	OP	***	***	***	***	***	***	***
9270100	OP	***	***	***	***	***	***	***
9270200	OP	***	***	***	***	***	***	***
9270300	OP	***	***	***	***	***	***	***
9270400	OP	***	***	***	***	***	***	***
9280200	OP	***	***	***	***	***	***	***
9280300	OT	***	R	***	***	R	***	***

As can be seen above, apart from one of the homes (which is an 'OT' home) the rest of the homes are high quality homes that have passed through the quality checks for every day of the week. The first home in the set above has not passed the quality check on Day 7 of the week but that is not a cause for

alarm. What however, does catch one's eye is the highlighted OT home (the last home in the table) which has been accepted for only two of the seven days of the week – this home will not be part of the active panel till such time that it starts passing the quality checks on more occasions.

6) Viewing statements

In some cases, especially homes which are newly inducted into the panel, the viewing statements are examined in greater detail. Here the check would be on elements on the viewing behaviour like switching between channels – do they follow a pattern? , Are there too many atypical viewing sessions? etc.

7) Special Interest Channel check

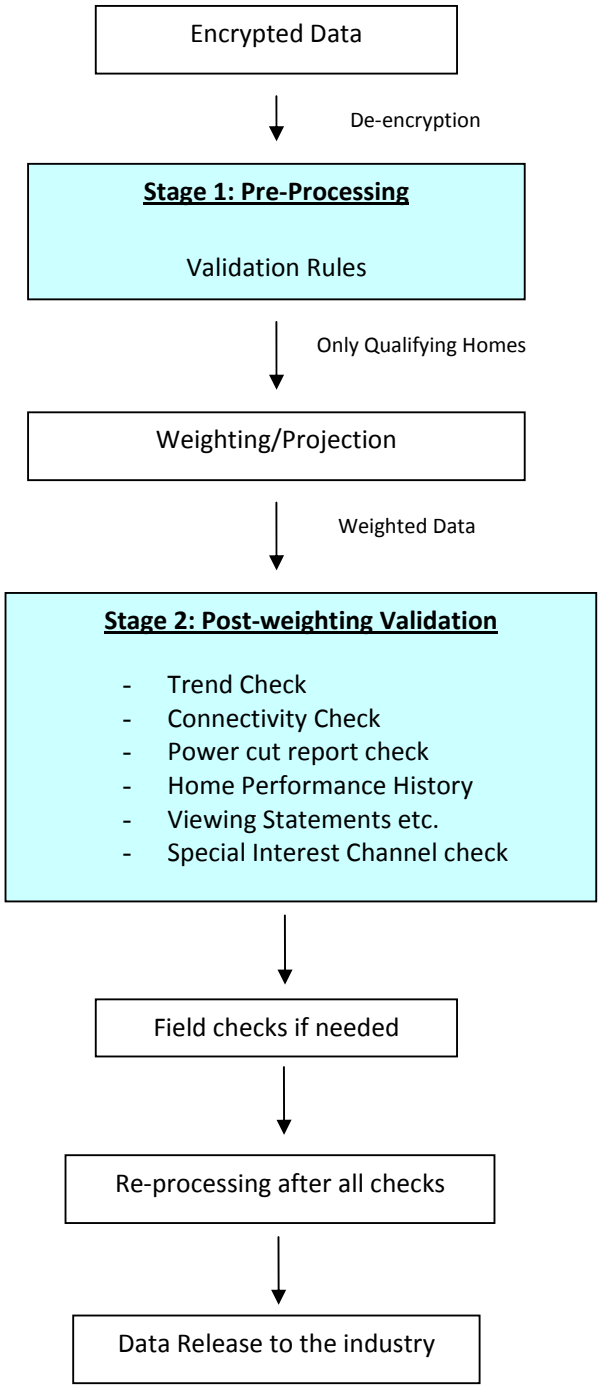
This check bestows special attention on special interest channels such as those belonging to the news genre. The idea acknowledges the difference in viewing level between mass channels and special interest channels. Thus small changes in viewing, which may not impact the overall level of data, would seem large when viewed in the context of only the special interest genre. In this check, viewing statements of panelists are examined specially with relation to that genre (e.g. news viewing) and compared to previous behavioural trends. It should be noted that this is no way biases the check towards the genre. It is only a confirmatory check conducted at the end of the regular viewing check.

At the end of the six checks above, further field checks are conducted, if required, to validate any remaining data points. Sometimes it is necessary to make a personal visit to the home to ascertain cause of variation.

A flow-chart overleaf gives a summary of the In-Office validation process.

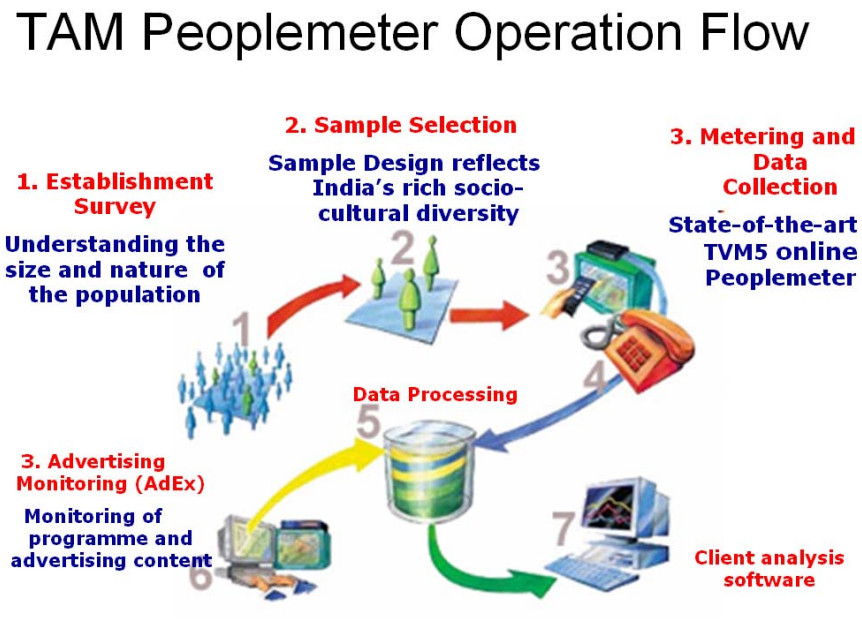
P.T.O…

Quality Check – In-Office Validation Process Flow Summary



IX. Summary

The following chart may serve as a useful summary of the entire Peoplemeter Operation Process.



Appendix I: List of Socio-Cultural Regions (SCRs) used by TAM in sampling

State	SCR
AP	Andhra (E)
	Andhra (W)
	Rayalseema
	Telengana (N)
	Telengana (S)
Assam	Brahmaputra Valley
	Cachar
Bihar	Bhojpur
	Maithila
	Bihar
Jharkhand	Jharkhand Hills
	Jharkhand Plains
Delhi	Delhi
Gujarat	Saurashtra (Kathiawar)
	Kachchh
	Bhilistan - Gujarat
	Gujarat Plains
Karnataka	Old Mysore
	Kanara (S)
	Kanara (N)
	Karnataka (Deccan)
	Malnad
Kerala	Malabar (North Kerala)
	Kochi (Central Kerala)
	Central Travancore
	Travancore (South Kerala)
MP	Bhundelkhand - MP
	Baselkhand (MP)
	North Malwa (E)
	North Malwa (W)
	Bhilistan - MP
	South Malwa (W)
	South Malwa (E)
	Chhattisgarh & Gondwana (N)
Chhatisgarh	Chhattisgarh & Gondwana (S)
	Baselkhand
	Dandakaranya
Orissa	Dandakaranya
	Gondwana - Orissa
	Orissa Hills & Plateau
	Coastal Orissa (Kalinga)

State	SCR
Maharashtra & Goa	Konkan
	Desh (Western Ghat) (N)
	Desh (Western Ghat) (S)
	Khandesh
	Marathwada
	Vidharba (E)
	Vidharba (W)
	Goa
Haryana, HP & Chandigarh	Eastern Haryana
	Western Haryana
	Himachal Pradesh
	Chandigarh
Punjab	North Punjab Plains
	South Punjab Plains
	Bisht Doab
Rajasthan	Maru Pradesh (Marwar) (S)
	Maru Pradesh (Marwar) (N)
	Jaipur (Aravallis)
	Mewat
	Mewar (S)
	Mewar (N)
TN & Pondicherry	Madras
	Coimbatore
	Tanjore
	Madurai
	Pondicherry
UP & Uttarakhand	Rohelkhand (W)
	Rohelkhand (E)
	Braj (W)
	Braj (E)
	Oudh (N)
	Oudh (W)
	Oudh (E)
	Oudh (S)
	Bhundelkhand
	Bhojpur
	Uttarakhand
West Bengal	Darjiling
	Duars
	Ganga Delta
	Rahr