

MRC Digital Audience-Based Measurement Standards

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Sponsoring associations:

Media Rating Council (MRC)

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Preface

The concept of Duration Weighting for video ads is introduced for the first time in these *Digital Audience-Based Measurement Standards*. The *Standards* stipulate that when digital video audience metrics are intended for use in cross-media comparisons and aggregations, these should be calculated on a duration weighted basis, which means that the viewable impression on which the estimate is based should be discounted by the duration of the exposure in relation to the total length of the video advertisement. This duration weighted GRP then can be reported along with the corresponding non-duration weighted (traditional) GRP measure.

While this is not a mandated practice for digital audience-based metrics, MRC felt it was important to introduce the concept of duration weighting at this time, in advance of an anticipated future release of a *Cross-Media Audience Measurement Standards* document that we currently expect will require the application of duration weighting. MRC's work on developing the *Cross-Media Audience Measurement Standards* will unfold over the next year.

With the above in mind, the following points are relevant at this time to the discussion of duration weighting and what the presence of this concept in the *Digital Audience-Based Measurement Standards* means:

1. As noted above, duration weighting will be relevant to cross-media audience estimates. As such, we anticipate the forthcoming *Cross-Media Audience Measurement Standards* will require an equitable application of duration weighting across all media involved. In other words, duration weighted digital video GRP estimates are expected to be compared/combined with duration weighted video GRP estimates for all other media types included.
2. We recognize the challenges that will be inherent in requiring duration weighting for media that have differing measurement systems that currently may be less capable of the highly granular time measures available today in digital. Balancing this knowledge of current state measurement practices across different media types with an understanding of their potential capabilities, along with our desire to achieve fairness in measurement of all media, will be central to MRC's considerations as it develops the *Cross-Media Audience Standards*. The overall objective is to foster consistency as much as possible, including consistency in the levels of time granularity applied. As is noted in Section 4.2 of the *Digital Audience-Based Measurement Standards*, "Duration measurement for digital ads should be based on at least second-level time granularity (although crediting can be on less granular levels such as minute level as long as cross-media combinations include the same crediting basis)."
3. Further industry research concerning duration weighting is needed and is anticipated to be completed over the next year. For one, the concept of duration weighting as spelled out in the *Digital Audience-Based Measurement Standards* implies a direct linear relationship associated with the time a digital video ad is in view and how well that ad delivers on its goals. Further research is necessary to better understand this relationship and, if it is shown to be necessary, how to better operationalize the relationship in duration weighted measurement calculations.

To summarize, we believe duration weighting has the potential to be of great value to practitioners to facilitate cross-media analysis and have introduced the concept in this document with this potential in mind. We anticipate we will refine our views on this over the next year in our work related to the development of MRC's forthcoming *Cross-Media Audience Measurement Standards*, which will serve as the authoritative standard for cross-media audience measurement..

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1 Executive Summary

The *Digital Audience Based Measurement Standards* are intended to apply primarily to the measurement of digital advertising audiences, although the concepts it includes can be used to guide the measurement of digital content audiences, until such time that content-specific audience measurement guidelines have been established. This document serves as the framework for measuring and reporting audiences for digital ads that are viewable, filtered for invalid activity, attributed to an audience segment (or in target), duration weighted (for video where applicable and in cross-media comparisons) and comparable/able to be deduplicated across media types.

Specifically, these Standards cover the methods used for measurement of digital media activity covering advertisements including:

- 1) Establishing the appropriate universe information for projection of measurements;
- 2) Establishing exposure data to advertisements (discretely) with appropriate quality and granularity;
- 3) Providing guidance and references for the possible use of newer (passive) data sources;
- 4) Attributing audience of exposure data to advertising or measuring exposure simultaneously through methods such as panels, or a combination of methods with sufficient quality and granularity;
- 5) Ensuring adoption of viewable impression guidance within the digital audience-based measurement process with granularity sufficient for reported data breaks and characteristics;
- 6) Guidance on internal controls, quality control and other measurement practices considered best practices (including invalid traffic filtration);
- 7) Guidance on appropriate weighting, projection, calculation and reporting processes; and
- 8) Considerations for cross-media comparability of audience-based data.

Further, the Standards include the following key tenets (with appropriate Section reference):

- Viewable Impressions are the minimum required qualifying measurement unit for digital audience-based measurement including digital and cross-media Reach, Frequency and GRP (Sections 2.1 and 2.2.1).
- For digital audience measurement (display and video), average viewable duration (based on unduplicated viewable duration) reporting is required. Further, the use of Duration Weighted Viewable Impressions is required for digital video audience measurement when used for input into cross-media video Frequency and GRP (Sections 2.1 and 4.2.3).
 - a. Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations.

- b. Digital-only audience measurements not intended for cross-media combinations do not require duration weighting, but must include reporting of average viewable duration.
 - c. Duration weighting for digital-only video audience measurements is encouraged.
 - d. Duration weighting is not required for digital display ad audience measurement due to the absence of maximum creative length, although average viewable duration is required.
 - e. Special consideration for re-purposed TV content in digital media and whether differential treatment related to other duration value concepts will be included in further research performed as part of future efforts to create Cross-Media Audience-Based Measurement Standards.
 - f. This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear disclaimer.
- For reporting purposes, measurements should be segregated by the various advertisement types or events included in the campaign (placement); counts should be reported separately for ads within the campaign of different sizes or functionalities (where known), different lengths, etc. (Sections 2.1.1 and 7.4).
 - Measurement organizations are encouraged to separately report Viewable time that is also audible and to consider this in duration weighting of audience estimates; cross-media audience combinations require the same audible criteria (Section 2.2).
 - The Universe used for calculating a GRP must be based on the total audience (or selected demographic/target) measured and must be considered when determining the coverage of measurements; for cross-media audience measurement, the minimum acceptable universe should be the de-duplicated total of all persons in the media universe for each medium (Sections 3.1 and 3.2).
 - Duration measurement for digital ads should be based on at least second-level time granularity (although crediting can be on less granular levels such as minute level as long as cross-media combinations include the same crediting basis) (Section 4.2).
 - Digital audience assignment should only be done at the unique device or, more preferably, unique user level (Sections 2.4 and 4.3).
 - Panel sources should be congruent with the *MRC Minimum Standards for Media Rating Research* and are strongly encouraged to be part of an audited and accredited service; other industry measurement guidance as well as the MRC's guidelines for data integration are likely applicable (Section 4.3.4).
 - The sources of assignment data, data assignment or integration methods and data sets involved in data integration processes should be disclosed to measurement service customers; a measurement service using assignment/integration methods must use at least some "truth" information (based on records of sufficient quality obtained directly from

people or actually observed data-relationships) as part of its periodic validation procedures (Sections 4.3.5 and 4.3.5.1).

- Robust data enrichment quality checking and monitoring is required; this includes validation procedures, identification and monitoring of data gaps in transactional data, empirical support and quality control over data editing, data aggregation controls and completeness checks (Sections 4.3.5.2 and 5).
- Digital audience measurement and reporting requires filtration inclusive of both General and Sophisticated Invalid Traffic (Section 6.2).
- Vendors and publishers must disclose to the end user through the provision of concise, clear privacy policy notices describing how their app products and/or web services use and share data and what the consumer's choices are. Measurement organizations are encouraged to consider additional industry and regulatory guidelines in this area; privacy regulations must also be considered (Section 6.3).

Guidance and requirements of other IAB, MRC, and, where applicable, MMA measurement guidelines are applicable where relevant. These include the *MRC Viewable Impression Measurement Guidelines* (for both desktop and mobile viewable impression measurement), the *IAB Audience Reach Measurement Guidelines*, the *IAB/MMA/MRC Mobile Web and Mobile In-Application Measurement Guidelines*, among others.

See Appendices A and B of this document for specific calculation examples along with vendor implementation guidance, respectively.

1.1 Overview and Scope

This document presents a standard for the measurement of digital audiences to advertising using commonly understood digital audience-based metrics – such as the Gross Rating Point (herein referred to as the “GRP”). The document was prepared for the use and benefit of the media Industry, especially those constituents that analyze audience volumes, composition and behaviors on digital media and those that monetize audiences to advertising (whether buyer or seller) in a digital environment.

The “best” methods and approach to measure the audience of any media is driven by the nature of that medium, its environment, its mode(s) of delivery and how its audience views and interacts with the medium. This document establishes a detailed set of methods and common practices for entities that measure and use digital audience-based metrics. These Standards are intended to establish and document good practices of measurement; improve practices and disclosures used by practitioners; and provide education to users of digital audience-based measurement data from all segments of the Industry. This document also establishes a recommendation and benchmark for audit processes whereby, the practices and disclosures of digital audience-based measurement organizations can be voluntarily validated by third parties.

In summary, our goals for this document were as follows:

- Provide for a consistent set of definitions for key elements of digital audience-based measurement;
- Recommend minimum disclosures which should be provided to measurement data users;
- Provide a clear statement of recommended research operating practices, quality and describe minimum requirements as well as best practices;
- Encourage experimentation and advances to improve audience research quality; and
- Encourage cross-media comparability as well as comparability across countries.

With regard to cross-media comparability considerations (e.g., digital video and television), as stated above, this document represents the digital input into a Cross-Media Audience-Based Measurement Standard, which will soon follow. However, the focus of these cross-media comparability considerations within the scope of this document will be video ads. Future and separate initiatives will address cross-media comparability for display advertising content with other offline media such as print as well as any applicable considerations of audio-based media.

Included within the Cross-Media Audience-Based Measurement Standard, we will also seek to advance the earlier work for the capture, accumulation, and processing of Return Path Data (RPD data, *Multi-Channel Digital Video Data Capture, Accumulation and Processing Guidelines* issued June 2012) by setting standards for the processing of RPD to create reportable audience estimates, including pure tuning as well as estimates with audience attribution. The Cross-Media Audience-Based Measurement Standard will also address content measurement whereas this document focuses on exposure to advertising.

1.2 Standards Development Method

The Standards contained in this document originated from a project led by the Media Rating Council (MRC) and sponsored by the Interactive Advertising Bureau (IAB) and are part of the Making Measurement Make Sense (3MS) initiative, a joint initiative of the Association of National Advertisers (ANA), the American Association of Advertising Agencies (4A's) and IAB (U.S.). These Standards were developed with the participation of a large group of Digital media content providers, advertising agencies, advertisers, vendors/consultants, measurement organizations and other interested organizations. These Standards were also reviewed and approved by major buyer-side trade organizations (4As, ANA) and their constituents and thereafter provided to the public through a formal period of public comment prior to adoption.

The final Standard is published and available on the MRC website and will be re-assessed periodically to ensure it remains applicable over time.

The Standard introduces concepts and metrics that are new to digital measurement¹ and are important in cross-media audience measurement especially the notion of duration weighting of

¹ Upon finalization of these Standards, in addition to timely evaluation of currently accredited Digital Audience products (subject to a grace period of one year from issuance), a reconciliation process will likely need to take place that accounts for the differential techniques employed by the respective vendors and the potential impacts on reported estimates, the format of which is to be determined.

audience estimates for video. As a result, workflow in the transactional process will need to accommodate the requisite measurement. The MRC recommends that buyers of ads include explicit language around the length of video advertisements being purchased. Further, it is recognized that during the course of a purchased ad flight, video ad lengths may change. Duration and creative length should be considered in the planning process and monitored throughout. In addition, should the creative length change during the course of an advertising flight, the new length should be weighted appropriately and reported separately. It is expected that industry organizations such as the ANA, 4As, IAB and MMA will produce further guidance to aid their respective constituencies and the broader marketplace in considering these standards and implementing aspects of them into transactions.

The concept of exposure effectiveness and the translation of it into the contribution of differing levels of exposure to audience (through duration weighting) will be further considered in a Cross-Media Audience-Based Measurement Standard, currently under development by the MRC. This includes the consideration of any effective exposure thresholds (above which an ad exposure fully contributes to audience measurement in cross-media environments) to help further equalize audience measurement in cross-media comparisons and combinations. Any subsequent guidance developed as part of this effort will supersede Cross-Media requirements contained within this Digital Audience Standard.

2 Top-Line Measurement Definitions

2.1 Audience-Based Calculation Explanation and Components

Viewable Impressions and Duration Weighted Viewable Impressions

Ad Impressions represent a measurement of responses from an ad delivery system to an ad request from a user, which is filtered for invalid traffic and is recorded at a point as late as possible in the process of delivery of the creative material to the user's device. See the relevant IAB guidelines for display, video, mobile web and mobile in-app ad impressions measurement for further details.

Viewable Impressions are Ad Impressions that meet certain pixel and time exposure thresholds (minimum 50% of the ad's pixels for 1 or 2 continuous seconds for display and video, respectively). These thresholds are designed to add greater assurance that there was an "opportunity to see" the ad by the user beyond assurance that the ad was properly served and rendered by the device. See the *MRC Viewable Impression Measurement* and *MRC Mobile Viewable Impression Measurement Guidelines* for guidance on Viewable Impressions.

While Served Ad Impressions may be measured in aggregate in cross-media environments, Viewable Impressions are the minimum required qualifying measurement unit for digital audience-based measurement including digital and cross-media Reach, Frequency and GRP. As discussed in the *MRC Viewable Impression Measurement Guidelines*, extrapolations or other assumptions used in the process of determining the viewable status of an ad (such as when projecting viewability for unmeasurable impressions as an input into digital audience) should be

fully disclosed along with pre-determined estimates of accuracy (based on independently conducted validation studies). If extrapolated counts are presented with specifically identified counts, separate reporting must be available to users, along with full disclosure around the prevalence of projection.

For digital audience measurement, average viewable duration (based on unduplicated viewable duration) reporting is required. Further, the use of Duration Weighted Viewable Impressions is required within digital video audience measurement for input into cross-media Frequency and GRP.

Creative (placement) level minimum reporting granularity is required within campaigns. Audience measurement may be aggregated at the platform level (desktop, mobile web and in-app) and within format (display and video), along with the minimum segregated reporting (placement) discussed above. Further, total time spent across ads of differing length within the same format is permissible in addition to appropriate granular creative-level reporting. Finally, total impressions delivered (Reach) across display and video formats within a campaign may be reported; however, combined display and video format audience (demographic or otherwise assigned segmented audience) measurement is allowable but not a requirement of this Standard due to differing viewability and (in cross-media) duration weighting requirements by ad format.

Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations. Special consideration for re-purposed TV content in digital media and whether differential treatment related to any of the above duration value concepts will be included in further research performed as part of future efforts to create Cross-Media Audience-Based Measurement Standards.

This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear disclaimer.

Duration Weighted Viewable Impressions represent Viewable Impressions with total unduplicated viewable duration divided by ad duration (unit length).

Duration Weighted Viewable Impressions are calculated as:

$$(\sum \text{Viewable Duration}) \div (\text{Ad Unit Length})$$

Digital only audience measurements not intended for cross-media combinations do not require duration weighting, but average viewable duration reporting is required. However, duration weighting for digital-only video audience measurements is encouraged. Duration weighting is

not required for digital display ad audience measurement due to the absence of maximum creative length, although average viewable duration is required.

Reach

For purposes of digital audience-based and cross-platform measurement Reach represents unique users, unduplicated homes or audience who have been exposed to ads (have generated a Viewable Impression) at least once during a time period (daypart, program or any piece of content) expressed as a percentage of the measured population, universe or target. Unique audience reporting necessitates de-duplicating individuals with multiple exposures over the measured time period.

Reach is calculated as:

$$[(\Sigma \text{ Unique Audience with a Viewable Impression}) \div (\text{Measured Population, Universe or Target})] \times 100$$

Reach can also be presented as a whole number representing the sum of unique users, unduplicated homes or audience who have been exposed to ads.

Frequency and Duration Weighted Frequency

For purposes of digital audience-based and cross-platform measurement Frequency represents the number of times a user, home or audience generated a Viewable Impression and contributed to Reach within a Session or time period expressed as an average among those unique users, unduplicated homes or audience who have been exposed to ads (have generated a Viewable Impression).

Frequency is calculated as:

$$(\Sigma \text{ Viewable Impressions}) \div (\Sigma \text{ Unique Audience with a Viewable Impression})$$

For digital video Frequency measurement, the use of Duration Weighted Viewable Impressions is required for input into cross-media Duration Weighted Frequency. Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations. Duration Weighted Viewable Impressions represent Viewable Impressions with total unduplicated viewable duration divided total ad duration (ad length).

Duration Weighted Frequency is calculated as:

$$(\Sigma \text{ Duration Weighted Viewable Impressions}) \div (\Sigma \text{ Unique Audience with a Viewable Impression})$$

Digital-only Frequency measurements not intended for cross-media combinations do not require duration weighting. However, duration weighting for digital-only video audience measurements is encouraged. Duration weighting is not required for digital display ad

Frequency measurement due to the absence of maximum creative length, although average unduplicated viewable duration is required.

Rating

Digital Ratings may be calculated for re-purposed TV content or other episodic content as well as for platform specific measurement for discrete time periods. For purposes of digital audience-based and cross-platform measurement a Rating percentage is calculated as: (A) the number of Viewable Impressions a user, home or audience generated divided by (B) measured population, universe or target. The presence of a measured period of time is a critical component of a rating.

Ratings are calculated as:

$$[(\Sigma \text{ Viewable Impressions}) \div (\text{Measured Population, Universe or Target})] \times 100$$

For digital video Rating measurement, the use of Duration Weighted Viewable Impressions is required for input into cross-media Duration Weighted Rating. Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations. Duration Weighted Viewable Impressions represent Viewable Impressions with total unduplicated viewable duration divided total ad duration (ad length).

Duration Weighted Ratings are calculated as:

$$(\Sigma \text{ Duration Weighted Viewable Impressions}) \div (\text{Measured Population, Universe or Target}) \times 100$$

Digital-only Rating measurements not intended for cross-media combinations do not require duration weighting. However, duration weighting for digital-only video audience measurements is encouraged. Duration weighting is not required for digital display ad Rating measurement due to the absence of maximum creative length, although average unduplicated viewable duration is required.

The sum of digital campaign Ratings points across various pages, properties and applications equals the campaign total GRPs.

Gross Rating Point (GRP) and Duration Weighted GRP

The sum of all the Ratings for a specified advertisement or advertising campaign reported as a gross number. Reach multiplied by Frequency equals Gross Rating Points. Similarly, Viewable Impressions divided by Universe multiplied by 100 equals Gross Rating Points.

Total GRP is calculated as:

$$\Sigma \text{ Gross Rating Points}$$

Or

Reach x Frequency

Or

$[(\Sigma \text{ Viewable Impressions}) \div (\text{Measured Population, Universe or Target})] \times 100$

For digital video GRP measurement, the use of Duration Weighted Viewable Impressions is required along with campaign or creative segregation for input into cross-media Duration Weighted GRP. Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations. Duration Weighted Viewable Impressions represent Viewable Impressions with total unduplicated viewable duration divided by ad duration (unit length).

Total Duration Weighted GRP (DWGRP) is calculated as:

$\Sigma \text{ Duration Weighted Gross Rating Points}$

Or

Reach x Duration Weighted Frequency

Or

$[(\Sigma \text{ Duration Weighted Viewable Impressions}) \div (\text{Measured Population, Universe or Target})] \times 100$

Digital-only GRP measurements not intended for cross-media combinations do not require duration weighting. However, duration weighting for digital-only video audience measurements is encouraged. Duration weighting is not required for digital display ad GRP measurement due to the absence of maximum creative length, although average unduplicated viewable duration is required. See Sections 2.3 and 4.2 for further guidance on duration measurement.

Calculation of GRP as Reach multiplied by Frequency where Reach is presented as a whole number requires also multiplying this product by the measured population, universe or target.

Notes for Rating and GRP Definitions:

The measures above can be calculated for program content for a time-period using the same mathematical approach. Activity (browsers, users, etc.) included in audience must have both the opportunity to see the ads/content and sufficient evidence of time spent during the measured time period (meeting Viewable Impression requirements).

For reporting purposes, audiences can be segregated based on demographic or other characteristics as well as day-parts and/or week-parts. Inferences, adjustments and assignment

of audience information as well as projection methods and impacts should be disclosed with the reported estimates.

See Appendix A of this document for specific calculation examples along with implementation guidance.

2.1.1 Segregation of Content/Advertising Vehicles and Genres

It is critical that activity measurement is granular enough to segregate ad types and media genres for input into digital audience-based reporting. Accordingly, audience assignment methods should be equally granular, which may involve certain sample size and data-adjustment challenges to audience assignment techniques. Likewise, measurement of ads should be segregated and distinct from measurement of content (inclusive of ads). The basis for measurement should be disclosed.

While impression level measurement is strongly encouraged, where digital content is measured as a proxy for ad delivery (such as in planning), the ad delivery mechanism (static or dynamic ad serving; see Section 4.1.2 for further details) must be considered and accounted for in reporting and disclosures (where known or otherwise disclosed as a limitation). Situations where audience assignment methods break down, or become unreliable, in the segregation of content/advertising vehicles and genres, should be disclosed with causes and estimates of achieved accuracy levels.

Measurement of an advertising campaign must at minimum, be segregated by the various types of ads included in the campaign for digital audience reporting and cross-media combinations. For instance, counts should be reported separately for ads (by placement type) within the campaign of different lengths (specifically with regard to duration weighting of video creative), sizes or functionalities (where known). Audience measurement may be aggregated at the platform level (desktop, mobile web and in-app) and within format (display and video), along with the minimum segregated reporting (placement) discussed above. Further, total time spent across ads of differing length within the same format is permissible in addition to appropriate granular creative-level reporting. Finally, total impressions delivered (Reach) across display and video formats within a campaign may be reported; however, combined display and video format audience (demographic or otherwise assigned segmented audience) measurement is allowable but not a requirement of this Standard due to differing viewability and (in cross-media) duration weighting requirements by ad format.

Measurement vendors should use common industry sources for genre classification and segmentation such as the IAB Content taxonomy (<http://www.iab.com/guidelines/iab-quality-assurance-guidelines-gag-taxonomy/>) for digital media, but may also use internally developed or proprietary sources if empirically supported with auditable evidence. The source and taxonomy used in genre classification (including proprietary sources) should be disclosed and periodically updated.

2.2 Impression Counting

An Ad Impression is generally a measurement of delivery of an ad that meets established minimum thresholds for quality and the terms and conditions established between a seller and a buyer. In an application environment, this includes the measurement of an advertising exposure occurrence, contained within real-time or stored and transmitted application use activity records, client-initiated, sourced from a fully downloaded, opened, initialized application in an application Session with a Client User.

A Digital Video Ad Impression is the measurement of response from a digital video ad delivery system to an ad request from the digital video content host. A valid digital video ad impression may only be counted when an ad counter (logging server) receives and responds to an HTTP request for a tracking asset from a client. The count must happen after the initiation of the stream, post-buffering, as opposed to the linked digital video content itself. Specifically, measurement should not occur when the buffer is initiated, rather measurement should occur when the ad itself begins to appear (begins to play).

Valid Ad Impressions must meet the minimum requirements of the IAB Measurement Guidelines for the applicable creative type (Display, Rich Media or Video) and user environment (desktop browser, mobile web and application environments). See the applicable IAB Measurement Guidelines (Desktop Display, Mobile Web, Mobile Application and Video) for further details of Ad Impression measurement guidance.

2.2.1 Viewable Definition

An Ad Impression must meet certain pixel and time thresholds (minimum 50% of the ad's pixels for 1 or 2 continuous seconds for display and video, respectively) in order to qualify as a Viewable Impression. These thresholds are designed to add greater assurance that there was an "opportunity to see" the ad by the user beyond assurance that the ad was properly served and rendered by the device. See the *MRC Viewable Impression Measurement* and *MRC Mobile Viewable Impression Measurement Guidelines* for guidance on Viewable Impressions.

For counting of viewable ad impressions, existing key concepts of impression counting should be followed, as detailed in previously issued IAB Measurement Guidelines. These include:

- Client-Initiated Counting
- Mobile measurement for downloaded, opened, and initialized applications
- Inclusion of off-line application activity during a campaign reporting period
- Filtration of Invalid Activity commensurate with [MRC's Invalid Traffic Detection and Filtration Guidelines](#)
- Cache Busting Techniques
- Differentiate Significant Auto-Refresh versus User-Initiated Activity
- Differentiate Pre-Fetch and Pre-Render Activity (from traditional rendered activity and each other where possible and counts ads only after they appear on a user's browser)

- Differentiate Impressions Out-Of-Focus or with Obstruction
 - Measurers are required to account for situations of obstruction to the extent technically feasible to determine the in-focus status of measured content. Limitations in the ability to detect certain obstructions or occlusions of measured content should be fully disclosed with impact on reported results quantified where material.
- Disclosing and Filtering Material Internal Traffic
- Full Disclosure of measurement methods and key metrics by Publishers, Portals, Ad-Servers, Ad Networks and Exchanges (including Programmatic Platforms and Trading Desks)
 - In the context of viewable ad impressions, this principle of transparency of measurement processes to data users should apply to all measurers of viewable impressions, including 3rd party measurers.

While Ad Impressions may be measured in aggregate in cross-media environments, Viewable Impressions are the minimum required qualifying measurement unit for digital audience-based measurement including digital and cross-media Reach, Frequency and GRP.

This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear disclaimer.

Guidance Concerning Materiality – Matters in this document which reference “significant” or “material” are generally considered to meet this threshold when they meet or exceed 5% of reported activity, by granular reporting break. [Note: For extremely high volume campaigns thresholds can be lowered as individual entity impact may be significant at lower percentages than 5% -- auditors and measurement entities should discuss exceptions to the 5% threshold during the audit process and base these judgments on objective criteria.]

The general 5% threshold specified above may be modified by a measurement organization in select unusual circumstances (when supported by empirical evidence and judgment), but documentation must be retained by the measurement organization and available to auditors. This type of modification is not permitted as a pervasive general rule. Additionally, measurement organizations may utilize relative materiality thresholds (5%) in conjunction with absolute dollar values (empirically supported) to further reduce instances of classifying statistically insignificant matters as material.

2.2.2 Audio Considerations

As current technological limitations make it difficult or impossible for a measurer to detect the presence of unmuted audio in all situations (while player audio may be more readily detectable,

device or hardware muting detection may present challenges), detection of audio is not currently a requirement for a Viewable Video Ad Impression. However, we encourage the development of a technological or other solution to device or hardware limitations so that audio may be considered in the future. Also, we strongly encourage, but do not currently require, that the presence of audio during the duration of the time be a consideration in determining a Viewable Video Impression (and input into GRP) in those situations where it is feasible to do so today. Some video ads may not have audio, which may represent a limitation of future considerations of audio measurement requirements.

Measurement organizations are encouraged to separately report Viewable video duration that is also audible (non-mute or non-zero) for device/hardware volume and to consider this in duration weighting of audience estimates. Measurement organizations should separately report and consider duration that is audible for player volume where known. Furthermore, cross-media audience combinations require the same audible criteria (in addition to the viewable criteria discussed above). For example, television measurement may include consideration of or even require non-zero volume/non-muting conditions for inclusion in reported results. Cross-media audience measurement combination of linear television and digital video measurement would require the same audible conditions for the digital component measuring the same ads.

The use and consideration of audible conditions (or lack thereof) must be fully disclosed along with the methodology used to measure audibility and any related limitations. Audible exposure without viewability is not qualified for digital audience measurement except in audio-only applications.

As part of the consideration of audio in digital video audience measurement, vendors are encouraged to study the further development of technology or methodology to better determine device audio state and incorporate this into measurement.

2.3 Duration

Duration is the amount of elapsed time from the initiation of an ad exposure to the last audience activity associated with that ad exposure. As discussed throughout this document, for digital audience measurement (display and video), average unduplicated viewable duration reporting is required. Further, the use of Duration Weighted Viewable Impressions is required for digital video audience measurement for input into cross-media Frequency and GRP.

Creative (placement) level minimum reporting granularity is required within campaigns. Audience measurement may be aggregated at the platform level (desktop, mobile web and in-app) and within format (display and video), along with the minimum segregated reporting (placement) discussed above. Further, total time spent across ads of differing length within the same format is permissible in addition to appropriate granular creative-level reporting. Finally, total impressions delivered (Reach) across display and video formats within a campaign may be reported; however, combined display and video format audience (demographic or otherwise

assigned segmented audience) measurement is allowable but not a requirement of this Standard due to differing viewability and (in cross-media) duration weighting requirements by ad format.

Duration measurement for digital ads should be based on at least second-level granularity (although crediting can be on less granular levels such as minute level as long as cross-media combinations include the same crediting basis). For video, each exposure contributing to duration must at least meet viewability guidelines (50% of pixels in view and at least 2 continuous seconds) to contribute to digital audience and cross-media measurement. The MRC and IAB plan to continually update the *Digital Video Measurement Guidelines* to incorporate ad duration measurement and any measurement of digital video audience must adhere to this guidance. See Section 4.2 for further guidance on technical aspects of duration measurement.

2.4 Audience Assignment

Audience measurement generally involves assigning characteristics to a unique device or user either for attribution of ad and content exposure or audience-based targeting of advertisements. Assignment of demographics, behaviors or other targeting characteristics to users with digital ad exposure may involve several different methods and use of directly collected (first party), passively tracked (third party), declared, inferred, probabilistic, or otherwise modeled data. While this document may apply to assignment of online purchase behavior to users for purposes of audience reporting (such as in use of past purchase categories as a targeting demographic), it does not include attribution of such purchase behavior to a single ad or content exposure nor does it include offline attribution.

While the *IAB Audience Reach Measurement Guidelines* establish certain levels of unique measurement, digital audience assignment should only be done at the unique device or, more preferably, unique user level. As a result, a digital audience measurement vendor must have a robust methodology to identify and deduplicate unique devices and/or users for such assignment. See Section 4.3 for further detail on classification of uniques.

3 Audience-Based Universe Estimates – Basis for Projection

3.1 Universe Estimates

Generally, a demographic/geographic universe or coverage definition stated on the basis of population amounts is required for digital audience measurement. These may be customized (or limited) based on the specific attributes of the measured audience.

The source used for such universe definitions must be referenced and should be from generally accepted independent Industry or governmental third-party sources as well as derived by measurement vendors directly as part of high quality observation or surveys. These figures are critical for the projection of audiences. This data should be updated at regular periodic intervals and preferably be stated on a basis that corresponds to the audience targets and weighting variables being employed by the measurement organization.

Adjustments to universe estimates (such as surveys to update them or obtain more granular estimates than available from generally accepted source) should be supported by empirical evidence (if based on a model/projection), subject to robust quality control and disclosed.

The Universe used for calculating a GRP must be based on the total audience (or selected demographic/target) measured. The Universe must be considered when determining the coverage of measurements (see Section 3.2 below) as well as when projecting measurement estimates.

Use of total US population is preferred (for US measurement), given eventual input into cross-media audience-based measurement (total population is required for cross-media GRPs). However, in certain digital measurement, specific population subsets may be used (such as the Internet population for digital only measurement, the mobile population for mobile-only measurement and the TV population for Return Path or Set-Top-Box measurement). Where a specific population subset is utilized, it is strongly encouraged to project measurement to the total US population with adjustment to account for access or ability to access within the subset (such as TV or digital access) measured when projecting.

The Universe used in GRP calculations and estimate projections must be appropriate for the measurement and be fully disclosed to users. For cross-media audience measurement, the minimum acceptable universe should be the de-duplicated total of all persons in the media universe for each medium or more generally, total persons.

3.2 Coverage

Digital ads and content can be consumed from a browser or from within a digital application. Both consumption methods can be measured through census-like counting techniques, essentially tracking instances of consumption through tracking assets such as a JavaScript tag, beacon or application code (such as an SDK or API) for all measurable accesses.

Despite the inference of “census” there are likely to be certain limitations of coverage (incompatible types of players or browsers, functionality limitations in certain mobile devices, etc.); therefore, it is important for the measurement users to fully understand the true coverage of the reported estimates and what may be excluded from the measurement organization’s ability to measure. The coverage of, and material limits or exclusions to, coverage of digital audience measurement are required to be described by the reporting entity.

Any limitations (including any that result in systematic biases) in measurement of the intended Universe (either in sampling such as geographic areas and certain respondent types not sampled/measured or due to technical limitations of measurement) should be fully disclosed and quantified (where known and quantifiable). Measurement organizations must periodically assess any measurement limitations and resulting biases. Measurement organizations are encouraged to consider additional industry guidelines in this area. Additionally, measurement

organizations seeking MRC accreditation are required to adhere to relevant *MRC Minimum Standards* in this area.

Measurement organizations should disclose the operating systems and major browser types that are not measurable (or, conversely, all that are measurable) using meters and/or measurement assets (or conversely discretely disclose those that are measurable). The impact of these exclusions on the reported measurements should also be estimated and disclosed if the measurement organization is projecting its results to the entire universe of browsers and/or users, regardless of operating system or browser type.

As discussed in the *IAB Mobile Application Measurement Guidelines*, mobile applications can have varying coverage across the user population because of popularity, distribution methods, hardware and operating system compatibility limits or other factors (such as platform availability). Therefore, it is important that in-app measurement consider the coverage of the application itself. This is particularly important if any form of sampling is used in the measurement of application impressions or other measured metrics. Limitations in coverage should be considered in decisions about projectability of sampled results originating in applications. These guidelines require disclosure (and, if projection is used, quantification) of application coverage to users of advertising measurements.

Digital audience can be measured through taking samples of consumers and/or devices and projecting the activities of these samples to the population of users and/or devices. This is traditionally known as panel-based or sample based measurement. Herein we reference the IAB's *Audience Reach Measurement Guidelines* as an existing source of acceptable practices for this type of measurement. Additionally, the *Minimum Standards for Media Rating Research*, published by the Media Rating Council, are also applicable to this type of measurement.

For sample-based measurement of any kind, the measurement organization should be diligent about ensuring valid projections are made and that the sample is representative of the population targeted for measurement. Methods for weighting or adjusting data to ensure projectability should be supported by empirical study, and these empirical studies should be updated periodically. Standard errors around sample-based projections should be disclosed.

3.2.1 Device Identification

Measurement vendors are required to identify devices used to access digital ads and content including determining device type, platform and operating system. Enumerating audiences by device should be used as an input into determining coverage of the universe measured. Further, device audience measurement and coverage determinations should be considered in techniques to account for duplication, as discussed below.

The source used for device classification must be disclosed, supported and subject to periodic review and update. Such classification should be granular enough to distinguish different device types within manufacturer or platform. In situations where a measurement vendor assigns a

default device for sessions or impressions for which device cannot be determined, such assignments should be disclosed, quantified (if material) and empirically supported.

3.2.2 IP-Enabled Television or OTT Device

Audience measurement of IP-enabled TVs and other Over-The-Top (OTT) devices to consume non-linear digital ads is included within these Standards. The MRC and IAB plan to continually update the *IAB Digital Video Measurement Guidelines* to incorporate IP-enabled TV and OTT digital ads or content and any measurement of digital video audience must adhere to this guidance. Further, universe and coverage aspects discussed above should consider whether such devices are included in the audience measured and reflect them accordingly.

See the *IAB Digital Video Measurement Guidelines* for guidance on specific aspects of OTT measurement such as latency considerations, continuous play and TV Off situations.

3.2.3 Accounting for Duplication

A user should only be counted once (de-duplicated through direct measurement or analysis of overlap) for unique measurement, despite the fact that a user can have multiple visits during a reporting period. Furthermore, in all instances related to the reporting of audience measurement, the use of the qualifier word “Unique,” should be limited only to references to records that have been de-duplicated within the entire reporting period. See Section 4.3 for further guidance on technical aspects of tracking users/uniques and accounting for duplication.

4 Audience-Based Currency Measurement Standards – Technical Details

4.1 Tracking of Advertising Access – Technical Details

4.1.1 Client-Initiated (and viewable)

These standards rely on the central concept that counting of ad exposure should initiate on the client side, not the server side (measurement counting may happen at the server side as long as it is initiated based on client-side events), and that counting should occur as close as possible to the delivery of an advertisement to the measured user and only when ad content has been loaded. Pass-through methods of signaling interactions detected on the client side from server infrastructure are acceptable. Records evidencing longitudinal consumption of content (duration) during the measured time period should be based on active user affirmation, or at minimum periodic confirmation with the device that content and ads continue to be delivered with an opportunity to see (for example, remain viewable).

All counted ad activity that contributes to audience measurements should meet parameters of the MRC’s *Viewable Impression Measurement Guidelines*, to ensure opportunity to see is present. Impression activity not meeting Industry quality standards (filtration, viewable parameters, etc.) should have associated audience activity removed. As discussed in the *MRC Viewable Impression Measurement Guidelines*, extrapolations or other assumptions used in the

process of determining the viewable status of an ad (such as when projecting viewability for unmeasurable impressions as an input into digital audience) should be fully disclosed along with pre-determined estimates of accuracy (based on independently conducted validation studies). If extrapolated counts are presented with specifically identified counts, separate reporting must be available to users, along with full disclosure around the prevalence of projection.

Content viewability guidelines have not yet been created and it is likely that MRC and IAB will need to consider further work in this area as part of Cross-Media Audience-Based Standard efforts. However, at minimum it is required that both display and video content meet the desktop and mobile viewability pixel and time thresholds to be considered viewable and for inclusion in digital audience-based and cross-media measurement.

Measurement organizations are encouraged to separately report Viewable time that is also audible. Furthermore, cross-media audience combinations of ads require the same audible criteria (in addition to the viewable criteria discussed above). For example, television measurement may include consideration of or even require non-zero volume/non-muting conditions for inclusion in reported results and as such, cross-media audience measurement combination of linear television and digital video measurement would require these same audible conditions for the digital component measuring the same ads or content.

This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear disclaimer.

4.1.2 Audience vs. Ad Measurement

Overall, for simplification purposes, it is desirable (but not required) for the same technical implementations to measure both audiences and ads wherever possible. Technical implementations that facilitate measurement (tracking assets, etc.) may vary between audience and ads because of differences in the type of decisions being made by measurement data users. For example, content audience measurements may be oriented to provide “planning” types of inferences to buyers as to the size, location, demography, Reach and Frequency, types of users attracted to the content, how the content is accessed, time spent, device/user behavior tracking, and longitudinal device/user movements across content. Planning metrics are generally stated on the basis of a specific time period or content (such as episode or program).

Measurement for digital advertisement delivery (meaning an Ad Impression or Viewable Impression) represents a counting orientation with audience assigned Reach and Frequency of discrete exposure to the advertisement. Both unassigned delivered ad metrics (total), audience assigned ad metrics (in-target) and metrics related to content could be subjected to discrete Gross Rating Point measurement, assuming proper granularity of tracking assets and audience assignment methods. In cases where the measurement does not rely on a full census

orientation, measurement at a local level may be challenging because of sample size and/or data quality considerations (quality considerations may include coverage, representation of the population being measured, data loss, bias, etc.).

Measurement of digital advertisement delivery and ad/content audiences are generally performed separately, versus the generalized measurement orientation that currently exists for non-digital media (inferring the same audience to the content and advertising in some cases). It is critically important that measurement organizations consider varying types of content and advertising delivery models when they are establishing measurement products, measurement and reporting.

Specifically, different types of content and advertising delivery models (static vs. dynamic) should be separately tracked and segregated for reporting purposes and clearly described to users of measurement and audience data. For audience planning purposes (pre-buy), users may evaluate potential audiences reachable by a digital delivery model; these orientations could be on the basis of the total delivery model audience, market audience or within projected demographic breaks. In all cases, the measurement service should be able to demonstrate that planning bases represent realistic scenarios whereby actual ad campaigns can be executed, not merely a “theoretical reach.”

Consideration should be given to the sufficiency of sample sizes and/or data coverage adequacy in development of ad delivery and planning metrics. These metrics should be filtered to exclude invalid digital traffic. These metrics should be counted using client-initiated counting to ensure that the ad and/or content have actually been loaded and presented to the user.

These Standards recommend that measurement occur in a way that allows for the most discrete measurement of the audience as is possible, in consideration of the advertising model employed and the characteristics of the technology used to deliver content. In short, under dynamic advertising models, audiences for specific ads within content should not be inferred based on general measurements other than those that measure each discrete ad occurrence.

User and location attribution, audience data modeling and other types of audience measurement inferences should also consider the ad delivery model and likely need to be applied separately based on delivery model.

4.1.3 Script-based Tracking Method/Assets

For digital measurement of advertising, measurement methods may include a tracking asset such as a tag.

The following details are key components of existing IAB Measurement Guidelines:

1. Permissible implementation techniques include (but are not limited to) HTTP requests generated by , <IFRAME>, or <SCRIPT SRC>. For client-side ad serving, the ad

content itself could be treated as the tracking asset and the ad server itself could do the ad counting as long as counting does not occur until ad content has been loaded.

2. The response by the ad counter includes but is not limited to:
 - a. Delivery of a “beacon,” which may be defined as any piece of content designated as a tracking asset. Beacons will commonly be in the form of a 1x1 pixel image, but these guidelines do not apply any restrictions to the actual media-type or content-type employed by a beacon response.
 - b. Delivery of a “302” redirect or HTML/JavaScript (which doubles as a tracking asset) to any location, and
 - c. Delivery of ad content

See Sections 4.1.5 through 4.1.7 for specific guidance on measurement considerations for Rich media, Video and Application advertising and content.

4.1.4 Encoding, Fingerprinting and Meter-based Tracking Method/Assets

In addition to the tracking assets discussed above, measurement of ads and content may also involve embedding digital assets within content in some fashion to inject additional metadata or information or the creation of signatures or fingerprinting. For example, encoding or watermarking involves the process of putting a special code or unique identifier, often a sequence of characters (letters, numbers, punctuation, and certain symbols), into a specialized format for efficient transmission, storage, privacy protection, security or measurement. Encoding can be proprietary to a measurement vendor or commonly available such as Ad-ID[®] and the Entertainment Identifier Registry (EIDR) which represent unique ID layers. Additionally, media may be analyzed for specific signatures to develop fingerprinting and corresponding matching techniques.

Encoding (vendor specific or commonly available) or fingerprinting is strongly encouraged for effective cross-media measurement. Specifically, adoption of common asset identifiers across media types facilitates seamless accumulation of total campaign activity for a particular advertisement/creative.

Further, certain script-based techniques such as tracking via player integration, may involve some level of encoding in addition to scripting. For example, the IAB’s Video Ad Serving Template (VAST) has historically provided a placeholder for a creative ID and in version 4.0 this placeholder is a UniversalAdID element, which is required for linear ads in long-form video and enables all data associated with the creative to follow across systems.

Hardware and software meters (specific guidance for measurement via applications is discussed in Section 4.1.7) may also be used to track digital ads and content and may include meters specifically designed to decode and capture exposure to encoded content, capture fingerprints

for signature matching or to track and measure traffic regardless of whether such traffic is encoded. Meter measurement is most often accomplished via recruitment of participants for ongoing measurement as part of panels, which may be recruited using either probabilistic (proportionate to the universe measured) or non-probabilistic (such as in opt-in or convenience panels) methods. Specific guidance related to recruitment and maintenance of panels is discussed in Section 4.3.4.

The *Minimum Standards for Media Rating Research*, published by the Media Rating Council, are applicable to this type of measurement methodology. Specifically, use and maintenance of encoding, unique identifiers and metering solutions must include:

- Robust quality control in design and maintenance of technology and algorithms used with empirical support for any assumptions or parameters applied.
- Initial and ongoing detailed designed lab testing including simulation of the intended measurement environment and any potential challenging environmental factors (such as introduced interference, device types, compression, anti-virus software, etc.) to gauge survivability.
- Robust quality control over encoding data source or reference construction (ad, content, program, page, domain network, channel, etc.) to enable crediting of exposure.
- Consideration of and minimization of any user or respondent impact such as distortion or interference introduced by encoding or performance impact on metered devices.
- Consideration of encoding or metering granularity (second level granularity preferred for duration, although crediting can be on less granular levels such as minute level as long as cross-media combinations include the same crediting basis); activity measurement must be granular enough to segregate ad types and media genres within campaigns as well as ads from content for input into digital audience-based reporting. Periodic collection or transmission of measurement data does not need to be as granular as actual measurement (data may be batched for efficiency).
- Consideration of intended measurement environments and relative coverage, as well as any limitations (including any that result in systematic biases) in measurement of the intended Universe (such as due to technical limitations of measurement) should be fully disclosed and quantified (as discussed in Section 3.2). Measurement organizations must periodically assess any measurement limitations and resulting biases. Measurement organizations are encouraged to consider additional industry guidelines in this area. Additionally, measurement organizations seeking MRC accreditation are required to adhere to relevant *MRC Minimum Standards* in this area.
- Continual monitoring and analysis of collected meter data for potential consideration of downtime, bugs, compatibility issues, emerging limitations, errors and defects for support of meter updates and maintenance.
- Polling (where applicable) and transmission of data that is appropriately granular and frequent for the intended measurement and incongruence with any applicable requirements (such as in viewability polling requirements).

- Sufficient (time and size) memory and caching to ensure collected data is complete and able to be stored locally to allow transmission of collected data.
- Management of versioning to ensure encoding and equipment is the most up to date as well as efforts to reduce the impacts of multiple versions in production.

4.1.5 Rich Media Usage

Rich Media Advertising is defined as advertisements with which users can interact (as opposed to solely animation) in a web page format and include creative types that require functionality not native to the browser itself to render. In the Rich Media area, where advertising creative is more process-resource and bandwidth intensive, the number of redirects in the transaction stream can impact the accuracy of ad counting due to latency. Measurement organizations are encouraged to consider this latency when considering the structure of Rich Media serving and to periodically study impacts on measurement accuracy. See the *IAB Display Measurement Guidelines* for further guidance.

4.1.6 Video Usage

A valid digital video ad impression may only be counted when an ad counter (logging server) receives and responds to an HTTP request for a tracking asset from a client. The count must happen after the initiation of the stream, post-buffering, as opposed to the linked digital video content itself. Specifically, measurement should not occur when the buffer is initiated, rather measurement should occur when the ad itself begins to appear on the user's browser (begins to play).

Video delivered to a player using a progressive download technique delivers the digital video in a series of downloads that are stored locally on the Client User device. In a progressive download environment, a persistent connection may not be maintained and instead, groups of content/ads may be sent to the user's browser/player through a periodic (not persistent) online connection. These groups of content/ads can be variable in length (depending on the sensed connection speed and other communication environment attributes such as quality of connection) so as to enable a user experience that appears to be a continuous connection, but may not contain ads in full. As such, Ad Video Impressions are counted when the ad begins to appear and do not require the ad to be fully loaded in cache in progressive download environments. See the *IAB Video Measurement Guidelines* for further guidance.

4.1.7 Advertising Measurement in Applications

Physical attributes of the advertisement should be disclosed by measurement vendors to users by campaign along with the placement within the application as part of reporting requirements discussed throughout this document. This disclosure can be made as part of initiating the campaign with the advertising agency or buyer. Additionally, any variable attributes such as size of the advertising during the application Session should be described. Event Based Ads should be described in terms of attributes and trigger criteria.

The application measurement organization should have sufficient controls to determine that:

- The application was downloaded, opened and initialized as designed on that Client User prior to the measured Session.
- The application itself (or measurement assets within it) was functioning as intended during the session by examining data received for completeness or signs of corruption. Sessions and Ad Impression metrics associated with “faulted” conditions (situations of functionality issues with the application, errors or non-working conditions) should be tracked and segregated from fully functioning Sessions and Ad Impression metrics

Application transaction records, which contain evidence of advertising, can be derived and transmitted to the application measurement organization: (1) on a real-time basis during application execution, (2) in batched groups that are transmitted periodically (in whole or in part) during an on-line application Session or, (3) first stored during off-line application use and later transmitted during a subsequent on-line Session (not necessarily associated with the same application) of the applicable Client-User.

In certain cases, mobile applications may be configured to “Pre-load” ads (generally full-screen interstitials) whereby open and active applications load ad assets, but the app determines if the ad is shown at a later time (or if at all) such as upon specific user interaction or engagement. Pre-load requests do not qualify for measurement as a valid rendered impression unless ad content has been loaded on response to a request by a user. However, such Pre-loading may be indistinguishable from user-driven ad requests.

As such, a measurement vendor should only count these ads (pre-loaded in-app interstitials) after execution of the last part of the application code that checks for a pre-loaded ad and then if present, chooses to display it, if known. Alternatively, pre-loaded interstitials should only be counted when displayed/visible. See the *IAB Mobile Application Measurement Guidelines* for further guidance.

4.2 Duration

Duration measurement for digital ads should be based on at least second-level time granularity (although crediting can be on less granular levels such as minute level as long as cross-media combinations include the same crediting basis). Periodic collection or transmission of measurement data does not need to be as granular as actual measurement (data may be batched for efficiency). For video, each exposure contributing to duration must meet viewability guidelines (minimums of 50% of pixels in view and at least 2 continuous seconds) to contribute to digital audience and cross-media measurement. While each exposure contributing to audience and duration must meet viewability guidelines, video duration of viewable impressions includes all time the ad was in view, including the time it was in view prior to having met the threshold to be considered a viewable impression. The MRC and IAB plan to continually update the *Digital Video Measurement Guidelines* to incorporate ad and content duration measurement and any measurement of digital video audience must adhere to this guidance.

As required by the *IAB Audience Reach Guidelines*, all time spent (duration) that is included in measurement should occur within the defined reporting period. Duration, which occurs in whole or in part outside the reporting period, should be excluded from the calculation; however, if a Session overlaps a reportable and a non-reportable period, only the portion of time associated with that Session that occurs within the reportable period may be included. Only unduplicated viewable duration should contribute to session duration and unique viewable duration (separately reported and used in duration weighting) should not exceed total video ad length for any one session.

Records evidencing longitudinal consumption of content (duration) during the measured time period should be based on active user affirmation, or at minimum periodic confirmation with the device that content and ads continue to be delivered with an opportunity to see (that is, remain viewable). Such periodic confirmation may also be accomplished via the use of periodic beacons or “heartbeat” pings.

Measurement organizations should institute specific “inactivity rules,” by which a user visit is terminated and thus excluded from additional contributions to duration after a pre-determined level of consecutive inactivity. These inactivity criteria should be fully disclosed, and it is expected they may be modified in the future based on evidence from empirical study of the evolution of users’ browsing habits. See below for specific guidance related to inactivity.

Time spent or duration may be measured with regard to certain progress events such as completions, quartiles, deciles or some other segmentation of video ads. Progress duration measurement for ads should be based on at least second-level granularity (although crediting can be on less granular levels such as minute level as long as cross-media combinations include the same crediting basis). Periodic collection or transmission of measurement data does not need to be as granular as actual measurement (data may be batched for efficiency). Further, duration should be considered with regard to viewability (as defined in *the MRC Viewable Impression Measurement Guidelines*) and presented as duration while viewable.

Certain organizations may have edit rules in place that bridge gaps in user activity within a session, if they occur within a certain time frame. If such edit rules exist, they must be fully disclosed to users. In addition, they should be supplemented by empirical research that supports their application, and this research should also be made available to users.

4.2.1 Inactivity

Measurement organizations should institute specific “inactivity rules,” by which a user visit is terminated and thus excluded from additional contributions to Time Spent after a pre-determined level of consecutive inactivity. These inactivity criteria should be fully disclosed, and it is expected they may be modified in the future based on evidence from empirical study of the evolution of users’ browsing habits.

For mobile application measurement, inactivity rules may be based on application idle, which is generally defined by the application developer based on time since last interaction and can result in an application running in the background or being inactive. Device idle or power state should also be considered for inactivity rules and the mechanisms used to detect inactivity may be user configurable.

These inactivity rules may vary based on the type of application involved. For instance, some applications are designed for long periods of inactivity (such as long-form video, or scoreboards, to name two examples), in which case a longer inactivity threshold may be more appropriate than in another situation where longer periods of inactivity are not normally to be expected. Or, as another example, while an application that is not in focus on the screen would usually be considered inactive (if out of focus for the pre-defined inactivity duration), in certain limited cases, such as with applications that contain audio ads, the inactivity rules may allow for the application session to be considered as still active. In all cases, inactivity rules applied must be fully documented and disclosed.

The mobile environment may allow for differing options for determining user activity than are available in traditional online environments, and these should be leveraged in making inactivity determinations. For instance, screen dims and darks, or screen touches, can be used in helping to make inactivity determinations.

4.2.2 Duration Editing

Progress events (e.g. quartile or deciles, etc.) alone should not be used to accumulate time for purposes of duration. The use of progress events for completion of video content (and contribution to duration) requires continuous measurement and second-level granularity confirming exposure to the entire segment measured before credit can be reported. Periodic collection or transmission of measurement data does not need to be as granular as actual measurement (data may be batched for efficiency).

Certain organizations that engage in census-based measurement have edit rules in place that bridge gaps in user activity within a session, if they occur within a certain time frame (including ascribing missing progress events). Such edit rules and data adjustment should be empirically supported and disclosed to users with appropriate quantification of impact on reported results.

4.2.3 Duration Value

As stated throughout this document, for digital audience measurement, average viewable duration reporting is required. Further, the use of Duration Weighted Viewable Impressions is required for digital video audience measurement for input into cross-media Frequency and GRP. Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations. Duration Weighted Viewable Impressions represent Viewable Impressions with total viewable duration divided by ad duration (unit length).

Digital-only audience measurements not intended for cross-media combinations do not require duration weighting, but viewable duration reporting is required. However, duration weighting for digital-only video audience measurements is encouraged. Duration weighting is not required for digital display ad audience measurement due to the absence of maximum creative length, although average viewable duration is required.

Duration weighting accounts for differing ad length, makes separate GRPs for creatives of different length more comparable and normalizes exposure across platforms and media.

Creative (placement) level minimum reporting granularity is required within campaigns. Audience measurement may be aggregated at the platform level (desktop, mobile web and in-app) and within format (display and video), along with the minimum segregated reporting (placement) discussed above. Further, total time spent across ads of differing length within the same format is permissible in addition to appropriate granular creative-level reporting. Finally, total impressions delivered (Reach) across display and video formats within a campaign may be reported; however, combined display and video format audience (demographic or otherwise assigned segmented audience) measurement is allowable but not a requirement of this Standard due to differing viewability and (in cross-media) duration weighting requirements by ad format.

Simple duration weighting assumes a direct and linear relationship with viewable time and effective exposure. However, the actual segment of an ad viewed may have differential value. For example, segments of an ad with strong branding presence may represent more effective exposure. Further, viewable duration during concurrent usage of other media or repeat (or single) exposure may have differential effectiveness. Finally, exposure to differing media may likewise carry differential effectiveness. Further research in this area is strongly encouraged. The concept of exposure effectiveness and the translation of it into the contribution of differing levels of exposure to audience will be further considered in a Cross-Media Audience-Based Measurement Standard. This includes the consideration of any effective exposure thresholds (above which an ad exposure fully contributes to audience measurement in cross-media environments) to help further equalize audience measurement in cross-media comparisons and combinations. Any subsequent guidance developed as part of this effort will supersede Cross-Media requirements contained within this Digital Audience Standard.

Special consideration for re-purposed TV content in digital media and whether differential treatment related to any of the above duration value concepts will be included in further research performed as part of future efforts to create Cross-Media Audience-Based Measurement Standards.

This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear disclaimer.

4.3 Tracking of Users (Sources and Attribution) Technical Details

The classification details of unique measurements must be properly explained for reporting purposes by measurers of audience, because understanding the nature of the underlying data used as the basis for the reported unique measurement is a fundamental part of properly using the measurement. Therefore, each reporting entity is required to accurately and prominently label on the face of any report that includes unique measurements, the basis for the calculation of the unique measurement involved (e.g. devices, users, etc.). Discrete details of the basis of the calculation should be included in methodological supplements.

While the basis used for these measurements in mobile in-application environments may differ from those used for traditional and mobile web environments, the same principle of prominent disclosure should apply. At minimum one of the following terms should be utilized when describing the foundation for the reach measures:

Machine-Based Measures:

- Unique Cookies
- Unique Browsers
- Unique Devices

People-Based Measures:

- Unique Users or Visitors (both terms are acceptable and equivalent generally in digital; Cume and Reach may also be used)

While the IAB Audience Reach Measurement Guidelines establish certain levels of unique measurement, digital audience assignment should only be done at the unique device or, more preferably, unique user level. As a result, a digital audience measurement vendor must have a robust methodology to identify and deduplicate unique devices and/or users for such assignment.

It is critical, and a compliance requirement, that the audience reach measurement organization does not misrepresent machine-based measurements as people-based measurements. The measure's status as either a people-based or a machine-based measure should be clearly disclosed. Deriving unduplicated audience people-based measures from digital activity and other research is the most difficult and most valuable aspect of audience metrics. In no instance should a "unique" metric be represented in reporting and elsewhere as "Unique Users" (or represented as persons Cume) without appropriate foundation in a measurement of people.

4.3.1 Adjustment of Uniques

While it is possible for census-based measurers to produce counts of Unique Users under the *IAB Audience Reach Guidelines*, the threshold of measurement difficulty for achieving this measure in a census-based environment is quite high (generally because of the difficulty of being able to identify a cookie as a unique person persistently during the measurement period).

The measurement organization may utilize algorithms and other data adjustment procedures, utilizing means such as cookies (or mobile advertising IDs and unique device identifiers), as well as other possible identification methods such as online or offline studies, to calculate Unique Browsers and Unique Devices. Likewise, census-based measurers may similarly have procedures that ultimately can result in a Unique User metric. However, in order to report a Unique User, the measurement organization must utilize in its identification and attribution processes underlying data that is, at least in a reasonable proportion, attributed directly to a person.

For instance, data collected from registrants is one possible source that can be utilized in creating a Unique Users measure by a census-based measurement organization, if registrants represent a reasonable proportion of the total user-base and when appropriate scientific projection methods are used for non-registrants (see Section 4.3.6 for further discussion of registration data and required quality control).

Activity of tracked users should originate from actual records of user activity or collection procedures sourced from users. If this data is inferred, the nature and extent of inference as well as the inference techniques should be disclosed. If audience demographic information is gathered from users directly through registration, panels, surveys or other techniques, these methods should be disclosed.

In no instance may a census measurement organization report Unique Users purely through algorithms or modeling that is not at least partially traceable to information obtained directly from people, as opposed to browsers, computers, or any other non-human element.

A measurement organization may use passive techniques to associate Unique Users to infer a virtual household as a stand-alone reporting unit (such as in virtual panels) or for the purpose of cross-media combinations or comparisons. For example, IP addresses may be used to link users and infer a household, but are subject to many challenges that must be accounted for. Such use of IP addresses must account for availability, granularity and reliability of collected IP address data as well as household members or devices that never connect to these IP addresses and also guests that may not be part of the household, but do connect to these IP addresses. Further, device portability and the potential for a device to connect to multiple IP addresses must also be accounted for. Inferences used to determine households from user records must be empirically supported, disclosed and demonstrated to be materially complete.

Further, to the extent that models are used to adjust uniques, it is critical that robust empirical support is used to develop these models and that such models are granular enough to account for differences in media usage (in digital this includes but is not limited to site category, differences by device, location and local considerations such as maintaining the diversity of local audience behaviors). These models should be subjected to ongoing validation and any learning data or source of truth used should be empirically supported and consider and reflect the population being measured.

4.3.2 Identifying Users Across Devices

Vendors and publishers must disclose to the end user through the provision of concise, clear privacy policy notices describing how their app products and/or web services use and share data and what the consumer's choices are. In connection with end users who voluntarily disclose data, the use of clear opt-in practices is required. This is particularly important with regard to tracking users across devices or sites. See Section 6.3 of this document for further details related to privacy considerations.

With regard to cross-media comparability considerations, as stated above, this document represents the digital input into a Cross-Media Audience-Based Measurement Standard, which will soon follow. In this regard, the IAB's *Digital Attribution Primer (v 2.0 August 2016)* provides guidance for identifying users across digital media screens. Specifically, the Primer states: Device graphs are generally built and maintained by third party analytics organizations and are assembled by associating five primary device parameters: Device IDs (including MAC address), Advertising IDs, Statistical IDs (such as fingerprints), Cookie IDs (including HTML formats), and/or IP addresses. Using publicly available signals, mapping providers need first to be able to consistently identify the same device against these currencies to develop a confidence threshold. The second step is to make an association with other known devices, a process that is often proprietary and used as a primary differentiator by device graphing providers. In addition to device mapping, these measurements can also be used for targeting, segmentation, and/or online-to-offline tracking.

Device IDs, Advertising IDs and Statistical IDs are primarily mobile device markers. The key difference between Device and Advertising IDs is the persistence of the ID with the device. Whereas Device IDs are tied to the hardware or software of the device, Advertising IDs can be reset by consumers so that past behavior is not associated with their new Advertising ID. Statistical IDs—determined independently by each individual measurement organization—are inherently different than Device IDs and Advertising IDs in that they are not supplied directly by the device itself. Instead, they are determined and assigned by the measurement provider based on statistical analysis of disparate device signals.

Device graphs rely on two distinct approaches: deterministic and probabilistic methods:

Deterministic Approaches – The deterministic method relies on personally identifiable information (PII) to make device matches when a person uses the same persistent identifier—such as email addresses, a phone number, or credit card information, etc.—when logging into an app or website. When a user logs in at any point across multiple devices, deterministic data providers can associate those device IDs in a device graph and use that information to identify or target the same user across multiple screens.

This approach generally cannot determine when other individuals—friends, family, etc.—are using a primary user's device and as such measurement vendors using deterministic

approaches to identify users across devices should account for such situations. See Section 4.3.6 for further details on use of Registration data.

Probabilistic Approaches – By drawing on aggregation techniques, probabilistic approaches may incorporate thousands of anonymous data points—things like device type, operating system, location data associated with bid requests (see Section 4.3.7 for further guidance on using information passed in ad requests), time of day, and a host of others—to identify statistically significant correlations between devices. Signals may also be drawn from known multi-user identifiers like IP addresses, or from geographic regions. By using IP to Geo technology—which can establish a ZIP code or other geographical coordinates from an IP address—the incorporation of additional aggregate signals is possible. As discussed in Section 7.3, location measurement and disclosure should be consistent with MRC location-based advertising guidance where applicable (see this guidance for specific discussion of the limitations associated with IP address when determining location).

Based on these signals, probabilistic techniques attempt to determine the devices that are likely being used by the same person. Once this determination is made, that provider would likely assign a particular statistical ID to the device. For example, if a smart phone, desktop computer and a laptop connect to the same networks or Wi-Fi hotspots at the same time and in the same places every weekday, one may develop a degree of confidence that all three devices belong to a specific person (although within households this may represent different people living in the same place).

Probabilistic approaches are generally considered to be less accurate than deterministic approaches when associating device pairings, as they are largely based on inferred and/or modeled data. However, these solutions may have greater flexibility to scale across devices, meaning that device mappings can potentially incorporate more overall consumer devices than deterministic partners.

4.3.3 Accounting for Duplication

A user should only be counted once (unduplicated) for unique measurement, despite the fact that a user can have multiple visits during a reporting period. Furthermore, in all instances related to the reporting of audience measurement, the use of the qualifier word “Unique” should be limited only to references to records that have been de-duplicated within the entire reporting period.

The foundation for the initiation of unique user counting is a measurable incidence of audience activity, unduplicated for that user, respectively, and related to the applicable web-site, property or application, during the reporting period. In addition to accounting for duplication when reporting unique audience metrics such as Reach, when determining coverage of the measured universe, a measurement vendor must account for duplication across devices or platforms within the same universe. Measurement vendors are encouraged to develop and utilize robust tracking assets that can identify users across devices and platforms for purposes of de-duplication. Alternatively, vendors may measure device or platform audiences

independently and estimate/remove duplication across them. Such techniques must be empirically supported and disclosed.

It is critical that thorough descriptions of how “users” are actually determined and how de-duplication during measurement periods is accomplished are provided to users of unique user measurements. Tracking methods should be subject to internal testing and validation upon original implementation as well as periodic internal verification testing. Tracking methods and disclosures will be the subject of intense procedural verification if external certification is sought by the measurement organization.

It is likely that methods for linking “identity” (individuals and households) across digital devices and platforms to account for duplication require robust assets and techniques. Further, accounting for duplication across media will need to account for special situations such as concurrent usage and “casting” (use of a mobile device to broadcast content to TVs). With regard to cross-media comparability considerations, as stated above, this document represents the digital input into a Cross-Media Audience-Based Measurement Standard.

As was discussed above with regard to adjusting uniques, to the extent that models are used to account for duplication, it is critical that robust empirical support is used to develop these models and that such models are granular enough to account for differences in media usage (in digital this includes but is not limited to site category, differences by device, location and local considerations such as maintaining the diversity of local audience behaviors, where reporting is at the local level). These models should be subjected to ongoing validation and any learning data or source of truth used should be empirically supported and consider or reflect the population being measured.

4.3.4 Tracking Method – Panel Methods, etc.

Syndicated measurement organizations have complex methodologies for selecting, recruiting, and maintaining panels (or other methods of user-tracking based methods of attribution, for example data enrichment methods based on tracked activity and user linkages); collecting data; editing; projecting and weighting data and reporting audience activity. One strength of these organizations is the ability to attribute audience activity to users based on the known demography of users in a panel or some other user-attributed data source. This information is gathered through a combination of manual and automated techniques, some of which can involve direct contact with panelists and some involve the use of software metering techniques or other data-collection methods such as SDKs within applications or data enrichment processes.

Panels may be probabilistic and utilize random, representative sampling techniques, may be non-probabilistic such as in convenience or opt-in panels or may utilize a hybrid approach involving some level of both techniques. In either case, panel sources should be congruent with the *MRC Minimum Standards for Media Rating Research* and are strongly encouraged to be part of an audited and accredited service. In addition to the *Minimum Standards for Media Rating Research* (and supplemental guidance for those practitioners using non-probability

techniques and/or using large transactional data sets as part of their measurement processes), other industry measurement guidance as well as the MRC's guidelines for data integration are likely applicable to use of panel data for digital audience-based measurement.

If non-probability samples are utilized either on a stand-alone basis as the sole measurement source or in hybrid techniques, they must be adjusted or calibrated to account for media usage bias and potential population exclusions, and the rating service must make periodic assessments of longitudinal validity of the data results (also referred to herein as projection validity).

Similar to census-based and client-initiated tracking methods, the quality of the panel user attribution process (logging, activity assessment, etc.) is critical to measurement accuracy. The following other areas are critical to accuracy among user attributed tracking measurement organizations and are required to be considered:

- Completeness of frame for selection of panelists
- Completeness of assignment data-source (if non-panel)
- Panelist selection procedure
- Panelist characteristic updating
- Panel refresh and turnover-replacement procedures
- Panel cooperation and incentive techniques
- Panel representation versus population (and non-response bias considerations)
- Panel calibration methods
- Measurement coverage issues (inclusive of local considerations where applicable)
- Characteristic assignment techniques, including modeling, ascription, etc.
- In-tabulation qualification rules
- Accuracy of software meters and/or other data collection tools
- Completeness of data collection
- Information processing controls
- Reasonableness and support for data editing, adjustment, modeling and/or ascription techniques
- Reasonableness and support for weighting variables and models
- Appropriateness and quality source of universe estimate data
- Accuracy of data calculations and reporting
- Overall rates of response
- Disclosure of standard errors

If organizations use a data enrichment process to attribute audience, the following additional matters must be considered:

- Completeness
- Coverage of data integration source
- Accuracy of data integration source

- Testing and quality control of data transfer between the measurement service and data integration source
- Privacy considerations
- Assessment of any adjustments, if any, that need to be made of the data integration source data
- Processes for on-boarding and terminating data integration sources as well as disclosing these changes to customers.

Disclosure and auditing is strongly recommended for these complex syndicated measurement organizations.

4.3.5 Data Enrichment Sources and Process

Measurement services often employ techniques for attributing information to measurement data sets from third-party sources (such as in data fusion) or integrating data from one data set with another unrelated data set to expand the amount of information associated with measurement records – therefore possibly improving the usefulness of data to customers. The resulting expanded data attributes may represent targeting attributes or other market/persons breaks that can be used to segment measured activity based on prescribed advertising criteria.

There are many legitimate methods for these types of assignment or integration procedures – however all implementations are “custom” in nature in that they should reflect the specifics of the data involved and the specific objectives of the measurement service. All of these procedures rely on significant research and methodological judgment and accordingly require extensive periodic empirical support for judgments made as well as accurate data processing and quality control procedures. Data fields or variables used as links in the assignment / integration process should have demonstrable power (i.e., a statistically demonstrated ability of the field or variable to explain differences in media consumption behavior), which is sufficient for the process. Empirical analyses should support integration priorities including weights or distance decisions; this is also applicable to variable or on-the-fly methods.

The sources of assignment data as well as data sets involved in data integration processes should be disclosed to measurement service customers in the description of methodology. Changes to these assignment/integration sources should be reflected in customer disclosures on a timely basis. Relevant information to include in methodological disclosures of this type include the following:

- Data Source Organizations
- Frequency of Execution of the Assignment or Integration Processes
- General Description of the Assignment or Integration Methodology
 - A Description of Empirical Support for Methods Chosen; Frequency of Validation Procedures Employed with Latest Validation Results Summarized
 - Including Sample or Test Type
- Ultimately Reported Data Elements, by Source Data Set

- Descriptions of Methods of Collection of Significant Data Fields (e.g., registration or directly gathered, collected from other third-parties)
- Approximate Age of Data Being Used
- Key Linking Data Elements or Integration Dependencies
 - Common Definitions of Linking Data Elements – Definitions should be Sufficiently Comparable and Preferable Identical
 - Extent of Ascription Applied to Data Elements, Pre-Assignment or Integration
 - Extent of Modeling or Other Inferences Made to Data Fields
- Known Population Exclusions from Data Sets Used
 - Magnitude of Exclusions, Where Known
- Key Assignment or Integration Performance Indicators
- Size of Applicable Data Sets in Terms of Relevant Attribute (Households, Persons, Media Devices, Activity Records, etc.) where permissible
 - Nature of Data Overlaps or Commonalities Between Relevant Data Sets where permissible
- Extent of External Auditing or Verification Processes Employed

4.3.5.1 Data Enrichment Methods (including behavioral analysis)

The data assignment or integration methods used by the measurement service should be included in the description of methodology supplied to customers. Changes in assignment/integration methods and/or significant changes to underlying data sets (including those from third parties), especially linking data fields, should be updated timely by the measurement service in the description of methodology where permissible.

Assignment or integration methods should be described from a technical perspective in technical supplements supplied by the measurement service or in customer understandable terms in the description of methodology. A description or summary of validation procedures performed as well as validation performance for the latest round of execution should be included in the customer disclosures. A measurement service using assignment/integration methods must use at least some “truth” information (based on records of sufficient quality obtained directly from people or actually observed data-relationships) as part of its periodic validation procedures, as opposed to solely relying on inferred data or inferred data-relationships.

4.3.5.2 Data Enrichment Quality Checking and Monitoring

The measurement service should at minimum maintain the following ongoing quality control processes and monitoring processes related to the assignment/integration processes performed:

- Maintaining an understanding of data sources, data collection methods, field definitions, age of data, data custody, general processing procedures and data edits applied on a pre-assignment/integration basis; this understanding is required regardless of whether these processes are applied by the measurement service or a third-party.

- Monitoring of the levels of pre-integration ascription, data adjustment or editing applied by the measurement service (or third-party source; may be included as part of partner onboarding and vetting procedures with appropriate periodic monitoring for changes) levels. The volume of this ascription or data adjustment should be minimized where possible. Efforts should be made by the measurement service to reduce the possible bias or distortion introduced by ascription, data adjustments or editing applied.
- Appropriate quality controls over information systems are required in the areas of access controls, systems development and quality testing, controls of periodic systems updates as well as business continuity
- A measurement service should have an ongoing program of methods research to seek quality improvements and maintain an up-to-date assignment/integration process

4.3.6 Registration

The use of registration data may be used to determine audience characteristics. The use of first-party or registration data should be subject to periodic review and update along with appropriate recency or “freshness” rules such as time to live policies. Measurement vendors utilizing registration data are encouraged to employ leading practices suggested by the Council for Research Excellence or CRE (http://researchexcellence.com/files/pdf/2015-02/id97_can_publisher_data_play_a_role_4_3_12.pdf) when designing registration collection and maintenance procedures. Such practices include, but are not limited to:

- Data edits/validations at the time of collection to determine if the response is valid in the context (e.g., a valid ZIP code based on reference to a USPS database).
- Review of declared data for illogical or suspect responses. For example:
 - Selection of 12345, 90210, or other common ZIP codes for location.
 - Selection of the first option in any drop-down selection field, etc.
- Data validation techniques initiated by and focused on user changes to their profile data.
- Cross-validation techniques employing external or alternate data sources.
- Defined process to address data conflicts across collection methodologies and parties.
 - Data quality procedures that pre-identify potential conflicts among multiple sources, and a policy such as a data hierarchy.
- Ability of users to review their collected user data, so they can update or correct it, if necessary or possibly remove it from their profile (maintained by first-party collector).
- A data “Time To Live” (TTL) policy that considers the different data types, association (first or third party sources) and derivation (declared or inferred) for each element and establishes a TTL for that data, at which point the data must either be refreshed or discarded.
- Centralized function to oversee data collection, quality and use across the organization, such as a research or CRM function.

4.3.7 Data Passed in an Ad Request:

Protocols such as OpenRTB may include information about an impression, User or Device.

Further, the type of attribute (method of collection) and relative accuracy and precision can be included and should be factored into audience characteristic determination where available. Ad request data should also be subject to robust validation edit rules/qualifying criteria. The use of multiple data sources to corroborate and inspect ad request data and accuracy/precision parameter requirements is encouraged.

5 Data Preparation and Quality Checking

5.1 Data Collection

Appropriate transaction records should be maintained for audience measurements. Insofar as commercially reasonable, these transaction records should include activity facilitated by transaction partners or facilitators downstream from the content provider (such as third-party or fourth-party servers). These records are an important part of enabling the measurement and filtration procedures described in these Standards and should be retained in a manner that can be accessed by the measurement organization to validate/filter audience activity.

If changes are made to this information through the information processing of the measurement organization, these changes should be documented and care should be exercised to not bias or distort the audience measurement process.

Processing information related to visits (sessions) includes identification of initial user activity and tracking this information during audience activities for that browser or user attributable to the web site or property.

Appropriately controlled data accumulation methods are critical to audience measurements because these measurements are derived using audience activity over the reporting period. Additionally, the foundation for audience measurement is the identification and assignment of activity to an unduplicated user, which requires appropriate identification and flagging of unique instances, and differentiation of these from return visits or other audience activity.

In some cases, these data accumulation methods are applicable across multiple web sites or properties, so this information should be shared across these properties (within the same domain) in a controlled manner with appropriate record-details and time/date information.

5.1.1 Validation Procedures

Measurement vendors should apply robust validation and quality control techniques continuously to collected and reported data including cleaning and editing functionality. Such techniques should be periodically monitored and assessed.

Measurement vendors should consider whether other data validation processes should be included as part of routine and ongoing data inspection, validation and editing. All digital audience measurement data must be subject to invalid traffic filtration as required by the *MRC Invalid Traffic Detection Guidelines* (see Section 6.2 for further details regarding filtration).

5.1.2 Identification and Monitoring of Data Gaps in Transactional Data

The measurement organizations should maintain processes to identify, assess and potentially act-upon for disclosure purposes, situations where underlying transactional measurement data, or the data used in audience assignment or integration processes, has significant gaps or missing intervals for a reporting period. This includes non-reporting or suspect data transfer conditions, data interruptions, natural disasters that may cause data gaps, system failures or other conditions that may suppress normal data acquisition levels. These gaps should be assessed for significance using judgment as to the use and significance of the information from the standpoint of measurement service customers (i.e., which data is important for commerce or other forms of decision making).

Data Gaps should be considered in disclosures of rates of response or cooperation or on the “projection validity” of the research as compared to the population being measured for the reporting period. If a measurement service decides that data gaps are significant enough to curtail measurement reporting for a period or for a geographic area (or if such gaps are assessed and a measurement service decides to report), this decision should be supported by appropriate empirical (preferably statistical) analysis and retained for auditors and later customer review. Specific non-reporting situations should be reported to customers with the underlying empirical support summarized.

5.2 Data Editing

Data editing is a highly critical aspect of a measurement service producing audience currency. Often the underlying measurement transactional data or other data sources for assignment or integration can have underlying problems/situations where individual data elements are suspect, incomplete, corrupt, missing or otherwise outside the boundaries of quality expectations. In these cases, data editing processes are generally used to eliminate, clean or possibly modify these problematic conditions within the data records. Data editing itself is considered a quality control.

Additionally, data editing rules include routine processing rules that are applied to raw collected data in the process of converting that data to useable records for ratings audience estimates. For example, closing gaps in collected data, bridging between data records or crediting broader levels of estimates from more discrete data.

The measurement organization should monitor the extent of data editing applied within reported results. Significant types of data editing should be disclosed with accompanying volumes in reports to customers.

5.2.1 Empirical Support

A measurement service should have appropriate empirical support of data editing rules and decision processes and this support should be periodically challenged and updated to reflect changing conditions. The measurement organizations should have a dedicated data quality function, a key responsibility of which is to determine and monitor the application of data

editing within general measurement, data assignment or data integrations processes. Empirical evidence gathered by the measurement service to support edit rules as required above should at minimum establish that the edit rules do not lead to systematic over- or under-statements of audience.

5.2.2 Documentation and Consistent Application

A measurement organization should have edits documented including an assessment of their impact so that an independent party can determine the purpose and specific operational parameters of the edit being applied. Data edits should be consistently applied between measurement periods and significant changes to editing processes should be disclosed with estimated impacts on reported results.

5.3 Quality Control Over Other Data Sources

All data that is materially relevant to audience measurement, audience assignment or integration processes, regardless of source, should be subject to adequate quality control procedures by the measurement service – specifically a measurement organization does not reduce/eliminate its responsibility for adequate quality control just because another organization is the data source or has earlier custody of the data. These processes can be applied (and updated over time) through periodic direct contact with the data source(s), integrated systems testing/monitoring, or separately maintained lab testing using the source equipment, or preferably a combination of these methods. In these areas, procedural consistency over time is critical and considered an aspect of quality control.

5.4 Data Aggregation Controls

A measurement service should maintain appropriate data aggregation controls to ensure that material information is not lost in the collection process and that no changes to the collected data are made, unless through organizationally authorized editing or data adjustment procedures. These aggregation controls can be real-time run-stream or batch oriented – but they should be periodically tested and monitored by the measurement services. Underlying data aggregation controls and completeness checking statistics should be retained for auditor review for a period of at least 12 months.

5.4.1 Completeness Checks

Individual data collection functions should include data completeness checks that are appropriately structured to minimize data loss, and flag situations where data gaps exist. These controls should be periodically tested and monitored by the measurement service.

5.4.2 Tests of Significance for Missing Data

The measurement service should apply appropriate, preferably statistically based, testing to missing data conditions or data gaps to determine the impact of these situations on reported measurement results.

Missing data or data gaps can be caused by systematic problems (generally recurring issues within the data that persist over time or between similar data records) or they can be one-time data outages or natural disasters. Measurement service processes may vary based on the type of issue encountered.

5.4.2.1 Systematic Data Issues

By their nature, systematic data issues are recurring and they are generally caused by specific conditions within data capture mechanisms or the technical environment at the time of data collection/creation. In general, these are error conditions or failures and most are attributable to mistakes within the software or technical structure of data capture. Systematic data issues should be assessed for materiality based on the nature and extent of their occurrences and the impact of each occurrence.

5.4.2.2 One-time Data Outages or Natural Disasters

By their nature, one-time data outages or natural disasters are not recurring and they are caused by situations largely out of the control of the measurement service (although the extent of data outages can be mitigated by strong collection processes and internal controls). These situations should be assessed individually across the occurrence for materiality and disclosure considerations.

In both cases above (systematic or on-time data outages), where missing data is determined to be immaterial to reported results the evidence of the measurement service assessments of the situation should be retained for later review by auditors for a period of at least one year. In cases where missing data is determined to be material, the measurement service should take actions to appropriately disclose the situation and the impact on reported results. In extreme cases of missing data or gaps, the measurement service may consider withholding the entire measurement report – these situations require thorough and timely disclosure to customers.

Measurement organizations should maintain robust and comprehensive Business Continuity and Disaster Recovery plans and procedures based on organizational risk assessments, and periodically tests these plans and procedures.

6 Enhancing Audience Based Tracking Accuracy

6.1 General

Guidance and requirements of other IAB, MRC, and, where applicable, MMA measurement guidelines are applicable where relevant. These include (but are not limited to) the following impression counting guidance areas:

- Segregation of Pre-fetch / Pre-render Activity
- Auto-Refresh Ads
- Auto-play Ads and Video, Other Non-user Intended Content
- Forced Duration

- Applications On-line vs. Off-line Activity and Other Mobile Application Guidance
- Inactivity Considerations and Limits

6.2 Filtration for Invalid Activity

Filtration of site or ad-serving transactions to remove invalid activity is highly critical for accurate, consistent counting. All metrics subject to audit by MRC will be expected to comply with the *MRC's Invalid Traffic and Filtration Guidelines Addendum*. This includes ad impression metrics, which should be filtered for known General Invalid Traffic as required by those guidelines. Furthermore, while application of Sophisticated Invalid Traffic detection processes is strongly encouraged for monetized traffic, digital audience and persons level measurement requires a higher degree of precision and accuracy. As such, digital audience measurement and reporting requires filtration inclusive of both General and Sophisticated Invalid Traffic.

This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear.

6.3 Privacy

Vendors and publishers must disclose to the end user through the provision of concise, clear privacy policy notices describing how their app products and/or web services use and share data and what the consumer's choices are. In connection with end users who voluntarily disclose data, the use of clear opt-in practices is required and vendors are encouraged to establish first-party relationships for collection of audience data where feasible.

Entities employing mobile web voluntary audience collection must include the functionality to provide prompts when visiting a web site requesting current audience data, with a clear opt-in as well as the website hostname, and the option for the consumer to accept or deny permission. Entities using mobile application services for voluntary audience collection must get the user's permission at application initialization or during use and request this access again each time a user changes the permission in the services setting within the device settings.

A publisher or vendor must clearly state in their privacy policy why they are collecting this information and how it may be shared. If respondents have been led to believe, directly or indirectly, that their anonymity will be protected, their names, addresses and other such identifying information shall not be made known to anyone outside the measurement service organization. Measurement organizations are encouraged to consider additional industry and regulatory guidelines in this area. Specifically:

The IAB's *Mobile Location Data Guide for Publishers*:

(http://www.iab.com/wp-content/uploads/2016/04/IAB_Mobile-Location-Data-Guide-for-Publishers_Feb2016-Revised.pdf)

The *Digital Advertising Alliance's Self-Regulatory Principles*:

(<http://www.aboutads.info/principles>)

The *Network Advertising Initiative's Code of Conduct*:

(<http://www.networkadvertising.org/code-enforcement/code>)

Additionally, measurement organizations seeking MRC accreditation are required to adhere to relevant *MRC Minimum Standards* in this area. Privacy regulations must also be considered. Privacy regulations as they emerge must be monitored and staged for the measurement organization as soon as known.

Finally, if a vendor or application collects data that is intended to be used for behavioral analysis to determine user heuristics, this must be made known to users as part of permissions, terms and conditions and privacy policies. Tracking users throughout a day and combining sessions to determine certain heuristics has privacy implications that must be considered in disclosures and user-facing policies or terms and conditions.

7 Reporting Parameters

7.1 General Parameters

General reporting parameters (dayparts, week parts, time zones, etc.) provide for consistency and comparability. These should be based on the logical application of information about the usage patterns of the medium.

In order to provide for more standardization in digital media measurement reporting, the following general reporting parameters are recommended. Note that these are only several of the possible reporting parameters that may be used. If parameters in addition to these are reported, similar rules should be defined and applied. Many of these have been specified on a consistent basis with prior MRC/IAB measurement guidelines.

7.2 Time

Day — 12:00 midnight to 12:00 midnight

Daypart — Digital media usage patterns need further analysis to determine the usefulness of establishing effective and logical standardized reporting dayparts (such as working hours and non-working hours normalized across time zones). We encourage such analysis to determine the need for standardization of this measurement parameter based on marketplace needs and behaviors.

To the extent that audience measurement is specific to a media vertical (e.g., TV), measurers are encouraged to conform to existing and standardized dayparts (e.g., broadcast day), especially with regard to cross-media comparisons or GRPs. However, it is likely that media-agnostic measurement will need to be further studied to determine traffic and usage patterns. Digital specific dayparts should be supported by empirical traffic analysis. Custom dayparts should be fully disclosed.

Time Zone – Full disclosure of the time zone used to produce the measurement report is required. It is preferable, although not a current compliance requirement, for certified measurement organizations to have the ability to produce measurement reports in a consistent time zone so buyers can assess activity across measurement organizations. For US-based reports it is recommended that reports be available on the basis of the Eastern Time; for non US-based reports this is recommended to be GMT.

Week — Monday through Sunday

Week-parts — M-F, M-Sun, Sat, Sun, Sat-Sun

Month – Three reporting methods: (1) TV Broadcast month definition. In this definition, the Month begins on the Monday of the week containing the first full weekend of the month, (2) 4-week periods – (13 per year) consistent with media planning for other media, or (3) a calendar month. For financial reporting purposes, a month is defined as a calendar month.

7.3 Location

If information about the geographic location of the users is collected and reported, any limitations to the methods used should be disclosed. Location measurement and disclosure should be consistent with MRC location-based advertising guidance where applicable. User/device location may represent point in time location or may be used to determine home location and such distinction should be disclosed to users as part of methodological and definitional disclosures.

The location of media usage should be considered and consistent in cross-media combinations relative to the Universe being measured for both geographic reporting as well as the impact on reported results (for example home-only measurement of media that can be consumed both in home and out of home). Materially complete coverage of possible media usage locations is required for total audience and cross-media measurement. Reported data should be filtered to exclude activity outside of the geographic area intended for measurement.

7.4 Segregation of Ad Activity by Creative

For reporting purposes, measurements should be segregated by the various advertisement types or events included in the campaign (placement). Counts should be reported separately for ads within the campaign of different sizes or functionalities (where known), different lengths, etc.

7.5 Qualification of Data Adjustment Procedures

Section 5 of this document discussed various data preparation and quality checking procedures that may be applied to digital audience-based data. Such procedures may result in Editing or Adjustment to raw data.

Data Editing and Adjustment procedures can be critical to processing digital audience-based measurement data. These procedures can be a part of best practices for ensuring complete and consistent measurement results over time. However, the specific data adjustment and editing parameters used should be supported by empirical justification based on prior study.

The volume/extent of editing and adjustment to originally collected traffic and respondent data should be disclosed, where this volume is material to the total (generally if that exceeds 5% of records). These disclosures should be granular by type and reported on the basis of weighted and reported characteristic.

If editing or adjustment rates are only periodically measured, this measurement should be frequent enough to be pertinent to reported data.

7.6 Minimum Reportability Standards

Measurement vendors must establish empirically supported minimum requirements for reporting (for specific measured properties or metrics) and if established, are required to disclose the minimum requirements.

7.7 Data Retention Requirements

Detailed collected data (pre and post-processing) supporting digital audience-based measurement should be retained for a sufficient period – at least one year after the release of data. Obfuscated or truncated data may be maintained to satisfy this requirement, should there be Personal Identifying Information (PII) or privacy concerns, but should be available in a transparent manner to accreditation/certification auditors and at a detailed level to allow reprocessing of reported estimated where necessary.

Different metric/transaction types and varying risks associated with transaction types should be considered. PII legal restrictions may dictate eliminating one or more of collected fields from retained records or altering the content of fields for identity protection purposes. Further, privacy or contractual restrictions on raw data may stipulate shorter retention periods. Such restrictions may still allow for alternative levels of retention that are still sufficient to support reprocessing of data. In these cases deviations should be supported by the measurement organization's privacy policy and should be available for review by auditors.

8 Disclosure Guidance

Digital audience-based measurement organizations should disclose their audience measurement activity recording process to buyers, sellers and other users of the measurement data. An organization's methodology for accumulating digital advertising audience measurements should be described to users of the data, including methods for calculating unit audiences where applicable. Specifically, the nature of counts and/or measurements, methods of sampling used (if applicable), data collection methods employed, data editing procedures or other types of data adjustment or projection, calculation explanations, reporting standards (if applicable), reliability of results (if applicable) and limitations of the data should be included in the disclosure.

The following presents examples of the types of information disclosed.

Nature of Digital Audience-Based Measurements

- Name/Type of Audience Activity Included in the Measurement
- Name of Measurement Report
- Type of Measurements Reported
 - Time Periods Included
 - Days Included
 - Universe Estimates and Coverage Estimates used for Projection
 - Basis for Measurement (Measurement Unit)
 - Geographic Areas
 - Significant Sub-Groupings of Data
 - Demographic categories
- Formats of Reported Data
- Special Promotions Impacting Measurements
- Auditing Applied and Directions to Access to Audit Report (unless confidential)
- Sampling/Projections Used
 - Sampling Methods Used
 - Explanation of Projection Methods

Data Collection Methods Employed

- Method of Data Collection
 - Cache Busting Techniques Employed
 - Exposure Level Data
 - Audience Data Sources
 - Viewable Criteria Employed, i.e., MRC Viewable Impression Guidelines
 - Audience Qualifiers, Inclusion Specifics, etc.
- Types of Data Collected
 - Census Tagging, Surveys, Diary, Observations, Electronic Measurements, etc.
 - Frequency of Collection

- Procedures to Detect and Report Pre-fetch/Pre-render as well as Auto-Play/Auto-Refresh and Forced Duration (where applicable)
- Contacts with Users (if applicable)
- Research on Accuracy of Basic Data
 - Latency Issues with Periodic Measurement, As Applicable
- Rate of Response (if applicable)

Editing or Data Adjustment Procedures

- Checking Records for Completeness
- Consistency Checks
- Accuracy Checks
- Rules for Handling Inconsistencies
- Circumstances for Discarding Data
- Filtration Procedures
- Handling of Partial Data Records
 - Ascription Procedures

Computation of Reported Results

- Description of How Estimates are Calculated
 - Illustrations are desirable
- Weighting Techniques (if applicable)
- Verification or Quality Control Checks in Data Processing Operations
- Pre-Release Quality Controls
- Reprocessing or Error Correction Rules

Reporting Standards (if applicable)

- Requirements for Inclusion in Reports, Based on Minimum Activity Levels
- Demographic and Geographic Breaks Reported

Reliability of Results

- Sampling Error (if applicable)

Data retention rules

- Maintaining sufficient data or processes that allow for audit trail

Limitations on Data Use

- Non-sampling Error
- Errors or Unusual Conditions Noted in Reporting Period
- Limitations of Measurements

9 Auditing Guidelines

9.1 General

Third party independent auditing is encouraged for all digital audience-based measurements used in the buying and selling process. This auditing is recommended to include counting methods, measurement methods and assignment for audience and processing/controls as follows:

1. **Counting Methods:** Independent verification of activity for a defined period. Counting method procedures generally include a basic process review and risk analysis to understand the measurement methods, analytical review, transaction authentication, validation procedures and measurement recalculations.
2. **Panel/Census/Assignment Methods:** Independent verification of activity to attribute audience. These procedures generally include process reviews, methods to ensure accurate representation, qualifiers applied and testing of application of these qualifiers for inclusion in audiences, transaction authentication, validation of weighting and projection procedures and measurement recalculations.
3. **Processes/Controls:** Examination of the internal controls surrounding all phases of the measurement process. Process auditing includes examination of the adequacy of applied counting and qualification techniques.

Although audit reports can be issued as infrequently as once per year, some audit testing should extend to more than one period during the year to assure internal controls are maintained. Audit reports should clearly state the periods covered by the underlying audit testing and the period covered by the resulting certification.

9.2 U.S. Certification Recommendation

All digital audience-based measurement products used in the buying and selling process are recommended to be certified as compliant with these Standards, at minimum annually. This recommendation is strongly supported by the 4As and other members of the buying community, for consideration of measurements as “currency.”

In addition to MRC, there are a number of other certifiers and types and levels of certification available to organizations involved in media measurement.

A number of digital audience-based products exist in the US and some of these products have had certain aspects accredited by the MRC. Upon finalization of these Standards, in addition to timely evaluation of each of these products for compliance (subject to a grace period of one year from issuance), a reconciliation process will likely need to take place that accounts for the differential data collection, editing and projection techniques employed by the respective vendors and the potential impacts on reported estimates. It remains to be determined whether this reconciliation occurs as part of recurring audit functionality or on a separate formal basis.

Special Auditing Guidance for Advertising Agencies or Other Buying Organizations:

If buying organizations modify or otherwise manipulate measurements from certified digital audience-based audience measurement organizations upon receipt, auditing of these activities should be considered.

9.3 International Certification Recommendation

The MRC encourages non-U.S. measurers of activity to adopt the practices spelled out in these Standards. While certification regimes may vary on a country-by-country basis, we encourage measurers to be audited for compliance annually by independent, third-party auditing organizations.

10 Glossary of Terms

Ad Campaign – A collection of messages from an advertiser or client that is designed to run during a specific interval and / or within a set of media outlets (Source: CIMM Lexicon 3.0).

Asset Identifier – In general, the digital measurement asset used to track unique advertising and content both within digital distribution and in cross-media environments. For digital measurement of advertising this may include a tracking asset such as a tag or other digital measurement method as well as encoding, watermarking or other industry and proprietary identifiers (for both advertising and content). See Sections 4.1.4 for further details and guidance related to asset identifiers that may be used for digital audience-based measurement.

Audience – Audience activity generally consists of counts of Internet users accessing content and/or advertising through one or more Internet applications such as a browser or a browser-equivalent [or mobile application], filtered to remove suspected Invalid Traffic (Source: IAB).

Audience Composition – The audience breakdown of aggregated, segmented characteristics, often reported as a percentage, based on such elements as age, gender, income, education, household characteristics etc. (Source: IAB). In addition to demographic characteristics, Audience Composition may also include behavioral variables such as site visitation, purchase activity, location etc.

Average Audience Rating – The amount of viewing (expressed as a percent) on average, to a program, network, channel, ad, version or time period out of the universe or full population. (Source: CIMM Lexicon 3.0). Based on the average second, 5 second, minute or other time frame (most precise possible granularity is preferred) within the total duration of the ad or program content and may be aggregated by channel or brand.

In TV, average minute audience is often used and represented the average number of individuals viewing a channel. Average minute audience is calculated by averaging the total

minutes viewed divided by the total viewing universe over a specified time or program and may be considered for use in longer format video ads.

Browser (or Web Browser) – A software application for retrieving, presenting, and traversing information resources on the World Wide Web.

Caching – Memory used to temporarily store the most frequently requested content, files or pages in order to speed its delivery to the user. Caches can be local (i.e. on a browser) or on a network (Source: IAB). As discussed in this document, IAB measurement guidelines require certain cache busting techniques designed to minimize the impact on measurement accuracy of cached measurement assets.

Census Data – Measurement designed to represent a complete count of a population of a universe as opposed to a sample or subset.

Compression – The process by which files of data or video content are reduced in size to facilitate fast transmission and requiring less storage space (Source: CIMM Lexicon 3.0).

Client User – A mobile device that interacts with an application, essentially executing or otherwise reviewing the application. The number of Users (people) or the demographic characteristics of the Users interacting with the application through the Client User is not necessarily known.

Cookie – A small piece of information (i.e., program code) that is stored on a browser for the purpose of identifying that browser during audience activity and between visits or sessions. Cookies are typically set to expire. Some cookies are intended to remain on the browser temporarily (for example, during a session) and some are persistent in that they are intended to be retained for longer periods. (Source: IAB)

Coverage – The extent or area covered by sampling or a data source relative to the population measured. Throughout this document coverage is used when discussing projecting audience estimates based on a subset or sample of the measured population as well as the degree to which a particular data set or source represents a measured population.

Data Fusion – Combining data from two or more different sources where the data merges and becomes blended into a new data source (Source: CIMM Lexicon 3.0).

Data Integration – Combining data from two or more different sources while having the data maintain its individual database integrity (Source: CIMM Lexicon 3.0).

Data Normalization (also Calibration) – Where there are two or more disparate data points within a data set, combining them in such a way that maintains data integrity and accuracy while improving usability (Source: CIMM Lexicon 3.0).

Duplication/De-Duplication – The instances where a Unique (Cookie, Browser, Device, Household, Respondent, User or Visitor) is exposed to the same content or advertisement more than once within the same dataset or measurement period. De-Duplication is the data editing technique used to remove Duplication from reported processed data or reported results.

Duration Weighted Viewable Impressions (DWVI) – Viewable Impressions that include duration weighting (total unduplicated viewable duration divided by ad duration or unit length) and are intended for input into cross-media GRP (campaign or creative segregation is required).

Encoding/Watermarking – The process of putting a special code or unique identifier, often a sequence of characters (letters, numbers, punctuation, and certain symbols) into a specialized format for efficient transmission, storage, privacy protection, security or measurement (Source: CIMM Lexicon 3.0).

Forced Duration – The portion or duration of video ads during which a user cannot skip the ad to begin content. Forced duration may be configured to span the entire duration of an ad or only a portion of it and contrasts with the portion or duration of video ads during which the user has the ability to skip the ad (generally referred to as “Organic Duration”).

Frequency – The number of times an ad is delivered to the same Browser (or user) in a single Session or time period (Source: IAB). The average number of times the unduplicated homes [or persons] reached are exposed to a schedule of content whether an ad, a program, a video or a schedule of spots (Source: CIMM Lexicon 3.0).

Duration Weighted Frequency includes duration weighting (total unduplicated viewable time divided by total ad duration or unit length) and is intended for input into cross-media GRP (campaign or creative segregation is required).

Gross Rating Point (GRP) – The sum of all the rating points for a specified advertisement or advertising campaign reported as a gross number. For a given population, Reach multiplied by average Frequency equals Gross Rating Points.

Duration Weighted GRP (DWGRP) includes duration weighting (total unduplicated viewable time divided by total ad duration or unit length) and are intended for input into cross-media GRP (campaign or creative segregation is required).

Impressions – An Ad Impression is generally a measurement of delivery of an ad that meets established minimum thresholds for quality and the terms and conditions established between a seller and a buyer (Source: IAB). Valid Ad Impressions must meet the minimum requirements of the IAB Measurement Guidelines for the applicable creative type (Display, Rich Media or Video) and user environment (desktop browser, mobile web and application environments).

Inactivity – In digital media may refer to specific inactivity rules, by which a user visit is terminated and thus excluded from additional contributions to Time Spent after a pre-

determined level of consecutive minutes of inactivity (Source: *IAB Audience Reach Measurement Guidelines*).

In-Tab – Generally, measured data that is considered and included within reported results (in-tabulation) and not removed for editing purposes or because of noncompliance issues.

Meter – Any automatic recording device or appliance, which may be hardware or software based and which is used to electronically collect measurement data including tuning, Internet activity and other media exposure.

Mobile Application – Mobile In-Application (In-App) refers to content and ads within the native User Interface of an application and not content within either a mobile browser or an embedded browser within an application environment (an instance that is embedded within a native application; typically, this occurs when a user clicks on a URL in a mobile application and the application executes the embedded browser).

Non-Probability Sample – A type of sample that is generally not probabilistic and may or may not be proportionate to a measured universe. An example of a non-probability sample is a convenience sample which includes respondents or data points that may be the easiest to reach or measure and as a result may include certain response and non-response biases.

Non-Response Bias – The lack of or under-representation of a specific segment of the measured audience or the sample which can lead to erroneous research conclusions about overall behavior because the omitted segment has different behaviors or patterns than the rest of the population (Source: CIMM Lexicon 3.0).

Panel Data – A selected cross section of opt-in consumers or viewers [consumers or viewers who agreed to have their behavior and usage measured] whose behavior and usage is measured over a period of time as a group or set of sub groups with the intent to form opinions and trends about their behaviors (Source: CIMM Lexicon 3.0).

Personally Identifiable Information (PII) – Data that can be used to identify a specific individual. This includes names, addresses, email addresses, phone numbers, among others (Source: CIMM Lexicon 3.0). Any information about an individual maintained by an agency, including (1) any information that can be used to distinguish or trace an individual's identity, such as name, social security number, date and place of birth, mother's maiden name, or biometric records and (2) any other information that is linked or linkable to an individual such as medical, educational, financial and employment information (Source: NIST, Guide to Protecting the Confidentiality of PII). Refers to information such as an individual's name, mailing address, phone number or e-mail address (Source: IAB).

Probability Sample – A random selection method to create a sample that is designed to best replicate the greater census or Universe being measured. Each selection in the sample must have the same probability of being chosen within relative sampling strata for sample selection.

Rating – A percentage calculated as: (A) the number of respondents (or projected respondents in a sample or otherwise measured group), filtered for invalid activity that consumed (i.e., represented by the opportunity to see; viewable) an advertisement over a period of time, divided into (B) the total population included in the measured frame (i.e., the Universe Estimate).

Reach – The amount of unduplicated homes or audience, expressed either as a percentage or in thousands who have viewed or tuned [consumed] at least once during a time period or program or any piece of content (Source: CIMM Lexicon 3.0). Unique users that visited the site measured over the course of the reporting period or the total number of unique users who will be served a given ad (Source: *IAB Audience Reach Measurement Guidelines*).

Registration Data – Data collected via a process for site visitors to enter information about themselves. Sites use registration data to enable or enhance targeting of content and ads. Registration can be required or voluntary (Source: IAB).

Return Path Data/Return Path – A communication channel that can be used by a Set-top Box or Smart TV to communicate with the cable headend or a service provider. Some homes and certain types of devices (e.g. non digital Set-top Box) do not have return path capability. Return path communication in Satellite homes is facilitated through landline phone lines or an independent broadband connection. Return Path Data can apply to other devices and digital data paths as well.

Session – A single application-use event that spans an unspecified period of time of constant or ongoing application activity by a User through the Client User. Sessions are terminated by User actions indicating the closing of the application, or by inactivity levels that meet or exceed defined thresholds. Sessions are generally applicable to the calculation of reach metrics (Source: *IAB Audience Reach Measurement Guidelines*).

Targeting – A technique used by online publishers and advertisers to increase the effectiveness of their campaigns based on behavior or demographic characteristics [by focusing advertising impressions against a pre-determined sub-set of the universe or the “target”; targeting may be based on demographics, behavior, or other measurable characteristics]. Behavioral targeting uses information collected on an individual’s web browsing behavior such as the pages they have visited or the searches they have made to select which advertisements to be displayed to that individual (Source: IAB).

Time Spent/Dwell Time/Duration – The amount of elapsed time from the initiation of a visit to the last audience activity associated with that visit. Time spent can be reported on the basis of cookied browsers, registration or panel participation, but in concept should represent the activity of a single cookied browser or user for a single access session to the web-site or property. (Source: *IAB Audience Reach Measurement Guidelines*)

Unique (Various; Source *IAB Audience Reach Measurement Guidelines*):

Machine-Based Measures:

Unique Cookies – A count of unique identifiers (Cookies) that represents unduplicated instances of Internet activity to Internet content or advertising during a measurement period.

Unique Browsers – An identified and unduplicated Cookied Browser that accesses Internet content or advertising during a measurement period.

Unique Devices – An unduplicated computing device that is used to access Internet content or advertising during a measurement period.

People-Based Measures:

Unique Users or Visitors (both terms are acceptable and equivalent) – An identified and unduplicated individual Internet user who accesses Internet content or advertising during a measurement period.

While the IAB Audience Reach Measurement Guidelines establish certain levels of unique measurement, digital audience assignment should only be done at the unique device or, more preferably, unique user level. As a result, a digital audience measurement vendor must have a robust methodology to identify and deduplicate unique devices and/or users for such assignment.

Universe – The total population included in the measured frame.

Viewable Impression – An Ad Impression that meets certain pixel and time thresholds (generally 50% of the ad’s pixels for 1 or 2 continuous seconds for display and video, respectively) in order to qualify as a Viewable Impression. These thresholds are designed to add greater assurance that there was an “opportunity to see” the ad by the user beyond assurance that the ad was properly served and rendered by the device. See the *MRC Viewable Impression Measurement* and *MRC Mobile Viewable Impression Measurement Guidelines* for guidance on Viewable Impressions.

Weighting – The statistical application that creates stronger or lesser impact on parts of a sample or a subset of a data set to help the entire sample results better conform to the universe it is projecting to measure (Source: CIMM Lexicon 3.0).

11 Supporting Associations and Participating Organizations

About the Media Rating Council (MRC)

The Media Rating Council is a non-profit industry association established in 1963 comprised of leading television, radio, print and digital media companies, as well as advertisers, advertising agencies and trade associations, whose goal is to ensure measurement services that are valid, reliable and effective. Measurement services desiring MRC accreditation are required to disclose to their customers all methodological aspects of their service; comply with the MRC *Minimum Standards for Media Rating Research* as well as other applicable industry measurement guidelines; and submit to MRC-designed audits to authenticate and illuminate their procedures. In addition, the MRC membership actively pursues research issues they consider priorities in an effort to improve the quality of research in the marketplace. Currently approximately 110 research products are audited by the MRC. Additional information about MRC can be found at www.mediaratingcouncil.org

About the Interactive Advertising Bureau (IAB)

The Interactive Advertising Bureau (IAB) empowers the media and marketing industries to thrive in the digital economy. It is comprised of more than 650 leading media and technology companies that are responsible for selling, delivering, and optimizing digital advertising or marketing campaigns. Together, they account for 86 percent of online advertising in the United States. Working with its member companies, the IAB develops technical standards and best practices and fields critical research on interactive advertising, while also educating brands, agencies, and the wider business community on the importance of digital marketing. The organization is committed to professional development and elevating the knowledge, skills, expertise, and diversity of the workforce across the industry. Through the work of its public policy office in Washington, D.C., the IAB advocates for its members and promotes the value of the interactive advertising industry to legislators and policymakers. There are 42 IABs licensed to operate in nations around the world and one regional IAB, in Europe. Founded in 1996, the IAB is headquartered in New York City and has a West Coast office in San Francisco.

Participating Working Group Organizations:

4As	FOX	Nielsen
A+E Networks	FOX News	Nielsen Audio
A+E Ole Communications	FOX TV Stations	NY Times
Abbott	FreeReach	P&G
ABC	FreeWheel	Pandora
ABC Disney	General Motors	PGA Tour Digital
ABC Group	GfK MRI	Pixalate
ABC Owned Stations	Google	PointRoll
Alliance for Audited Media (AAM)	Graham Media Group	Publicis
AMC Networks	GroupM	PwC
Annalect	HBO	Quantcast

Are You A Human	Hearst Digital Media	Radio Research Consortium
ASI Conferences	Hearst Television	Raycom Media
Audit Bureau of Circulations (ABC UK)	Horizon Media	RealVu
BPA Worldwide	Hulu	Reuters
BrightRoll	IAB	Sony TV Pictures
Campbell-Ewald	IAB Canada	Standard Media Index
CBS	iHeartMedia	Starcom MediaVest Group
CIM	Index Exchange	Symphony Advanced Media
CIMM	Initiative	Televisa
Community Newspaper Holdings	InsightExpress	tenthavenue
comScore	InteractiveOne	Tremor Video
Conde Nast	ITN Networks	Tribune
Conversant Media	L'OREAL Paris	Triton Digital
Cox Media Group	Lake5Media	Turner Broadcasting
Cox Media Group Digital	Management Science Assoc.	TW Cable
CW Network	Mansueto Ventures	Undertone
DataXu	Mbooth	Univision
Deloitte & Touche	MEC	Univision Radio
Digital Content Next	Meredith Corp.	Viacom Media Networks
Discovery	Microsoft	Visible Measures
Discovery Communications	MMA	Wall Street Journal
ESPN	MSNBC	WBEB
EW Scripps	NAA	Weigel Broadcasting
ExtremeReach	NAB	WhiteOps
EY	NBC Owned Stations	WPLG (Berkshire Hathaway)
Facebook	NBC Universal	xAd
Fleishman Hillard	NCC Media	Yahoo!
Flipboard	News Inc.	
Forbes Media	NGS	

12 Contact Us

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A. Appendix: Calculation/Reporting

Section 2 of this document provides descriptions and formulae for various digital audience metrics and provides requirements for cross-media and duration weighted video reporting. This section serves to provide an illustrative example of these calculations and respective reporting of them using mock data to facilitate a deeper understanding of these requirements.

The following data example includes mock data of a single campaign that includes placements of different sizes on different platforms, display and video elements and cross-media (OTT) placements.

For the purpose of the example calculations on the following pages (and for simplicity), the measured population (Universe/Target) is assumed to be 500.

Data Example:

Campaign ID	Placement ID	Platform Type	Date	Browser /Platform	Ad Type	Placement Size	Video Length (s)	Imp.	Viewable Imp.	Unique VI	Viewable Duration (s)
Campaign 1	Placement A	Desktop	9/1/17	IE	Display	300 x 250		50	25	20	100
Campaign 1	Placement A	Desktop	9/1/17	Safari	Display	300 x 250		50	25	20	100
Campaign 1	Placement B	Desktop	9/2/17	Chrome	Display	728 x 90		50	25	20	250
Campaign 1	Placement B	Desktop	9/2/17	Firefox	Display	728 x 90		50	25	20	250
Campaign 1	Placement C	Mobile Phone	9/3/17	Unknown	Display	160 x 600		50	25	20	750
Campaign 1	Placement C	Mobile Phone	9/3/17	Unknown	Display	160 x 600		50	25	20	750
Campaign 1	Placement D	OTT	9/4/17	Unknown	Display	300 x 250		50	25	20	125
Campaign 1	Placement D	OTT	9/4/17	Unknown	Display	300 x 250		50	25	20	125
Campaign 1	Placement E	Desktop	9/1/17	IE	Video	In-Stream Video	5	50	25	20	100
Campaign 1	Placement E	Desktop	9/1/17	Safari	Video	In-Stream Video	5	50	25	20	100
Campaign 1	Placement F	Desktop	9/2/17	Chrome	Video	In-Page Video	15	50	25	20	250
Campaign 1	Placement F	Desktop	9/2/17	Firefox	Video	In-Page Video	15	50	25	20	250
Campaign 1	Placement G	Mobile Phone	9/3/17	Unknown	Video	In-Stream Video	30	50	25	20	750
Campaign 1	Placement G	Mobile Phone	9/3/17	Unknown	Video	In-Stream Video	30	50	25	20	750
Campaign 1	Placement H	OTT	9/4/17	Unknown	Video	In-Stream Video	30	50	25	20	125
Campaign 1	Placement H	OTT	9/4/17	Unknown	Video	In-Stream Video	30	50	25	20	125

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The following table represents the results of the calculation examples presented in the following sections, with column references to each calculation section included in this Appendix.

Campaign ID	Placement ID	Ad Type	DWVI (A)	Reach (B)	Frequency (C)	DW Frequency (C)	GRP (E)	DWGRP (E)
Campaign 1	Placement A	Display	N/A	--	--	N/A	--	N/A
Campaign 1	Placement B	Display	N/A	--	--	N/A	--	N/A
Campaign 1	Placement C	Display	N/A	--	--	N/A	--	N/A
Campaign 1	Placement D	Display	N/A	--	--	N/A	--	N/A
Campaign 1	Placement E	Video	40	--	--	--	--	--
Campaign 1	Placement F	Video	33.33	--	--	--	--	--
Campaign 1	Placement G	Video	50	--	--	--	--	--
Campaign 1	Placement H	Video	8.33	--	--	--	--	--
Campaign 1	Display Total	Display	N/A	32	1.25	N/A	40	N/A
Campaign 1	Video Total	Video	131.67	32	1.25	0.82	40	26.33*
Campaign 1	Total	N/A	N/A	64	N/A	N/A	N/A	N/A

Note: Population/universe/target assumed to be 500.

--: Individual Placement calculations not present (beyond DWVI); totals presented only for illustrative purposes.

N/A: The use of Duration Weighted Viewable Impressions is required only for input into cross-media video measurement. Duration weighting is not required for digital display ad audience measurement due to the absence of maximum creative length, although average unduplicated viewable duration is required.

Calculations:

A. Duration Weighted Viewable Impressions (DWVI; required for cross-media video)

Are calculated as:

$$(\sum \text{Viewable Duration}) \div (\text{Ad Unit Length})$$

The use of Duration Weighted Viewable Impressions is required only for input into cross-media video measurement. Duration weighting is not required for digital display ad audience measurement due to the absence of maximum creative length, although average unduplicated viewable duration is required.

Examples:

(data below drawn from the placements noted in the chart on first page of Appendix):

For video placements:

Placement E (50 Viewable Impressions) = (100s +100s) ÷ (5s)
= 200s ÷ 5s
= 40 DWVI

Placement F (50 Viewable Impressions) = (250s +250s) ÷ (15s)
= 500s ÷ 15s
= 33.33 DWVI

Placement G (50 Viewable Impressions) = (750s +750s) ÷ (30s)
= 1,500s ÷ 5s
= 50 DWVI

Placement H (50 Viewable Impressions) = (125s +125s) ÷ (30s)
= 200s ÷ 5s
= 8.33 DWVI

**Video Campaign Total (200 Viewable Impressions) = (40 + 33.33 + 50 + 8.33)
= 131.67 DWVI**

B. Reach

Is calculated as:

$$[(\Sigma \text{ Unique Audience with a Viewable Impression}) \div (\text{Measured Population, Universe or Target})] \times 100$$

Examples:

(data below drawn from the placements noted in the chart on first page of Appendix):

For display placements*:

$$\begin{aligned} \text{Placements A, B, C, D (200 Viewable Impressions)} &= [(40 \text{ Unique VI} * 4) \div (500)] \\ &= (160 \div 500) \times 100 \\ &= \text{Reach of 32} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

For video placements*:

$$\begin{aligned} \text{Placements E, F, G, H (200 Viewable Impressions)} &= [(40 \text{ Unique VI} * 4) \div (500)] \\ &= (160 \div 500) \times 100 \\ &= \text{Reach of 32} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

C. Frequency

Is calculated as:

$$(\Sigma \text{ Viewable Impressions}) \div (\Sigma \text{ Unique Audience with a Viewable Impression})$$

Examples:

(data below drawn from the placements noted in the chart on first page of Appendix):

For display placements*:

$$\begin{aligned} \text{Placements A, B, C, D (200 Viewable Impressions)} &= (200 \text{ VI} \div 160 \text{ Unique VI}) \\ &= \text{Frequency of 1.25} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

For video placements*:

$$\begin{aligned} \text{Placements E, F, G, H (200 Viewable Impressions)} &= (200 \text{ VI} \div 160 \text{ Unique VI}) \\ &= \text{Frequency of 1.25} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

Duration Weighted Frequency (required for cross-media video)

Is calculated as:

$$(\Sigma \text{ Duration Weighted Viewable Impressions}) \div (\Sigma \text{ Unique Audience with a Viewable Impression})$$

For video placements*:

$$\begin{aligned} \text{Placements E, F, G, H (200 Viewable Impressions)} &= (131.67 \text{ DWVI} \div 160 \text{ Unique VI}) \\ &= \text{DW Frequency of 0.82} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

D. Rating

Is calculated as:

$$[(\Sigma \text{ Viewable Impressions}) \div (\text{Measured Population, Universe or Target})] \times 100$$

Examples:

(data below drawn from the placements noted in the chart on first page of Appendix):

For display placements*:

$$\begin{aligned} \text{Placements A, B, C, D (200 Viewable Impressions)} &= (200 \text{ VI} \div 500) \times 100 \\ &= \text{Rating of 40} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

For video placements*:

$$\begin{aligned} \text{Placements E, F, G, H (200 Viewable Impressions)} &= (200 \text{ VI} \div 500) \times 100 \\ &= \text{Rating of 40} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

Duration Weighted Rating (required for cross-media video)

Is calculated as:

$$(\Sigma \text{ Duration Weighted Viewable Impressions}) \div (\text{Measured Population, Universe or Target}) \times 100$$

For video placements*:

$$\begin{aligned} \text{Placements E, F, G, H (200 Viewable Impressions)} &= (131.67 \text{ DWVI} \div 500) \times 100 \\ &= \text{DW Rating of 26.33} \end{aligned}$$

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

E. Total GRP (Gross Rating Points)

Is calculated as:

$$\Sigma \text{ Gross Rating Points}$$

Or

$$\text{Reach} \times \text{Frequency}$$

Or

$$[(\Sigma \text{ Viewable Impressions}) \div (\text{Measured Population, Universe or Target})] \times 100$$

Examples:

(data below drawn from the placements noted in the chart on first page of Appendix):

For display placements*:

Placements A, B, C, D (200 Viewable Impressions) = Rating of 40
= (Reach of 32 x Frequency of 1.25)
= (200 VI ÷ 500) x 100
= GRP of 40

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

For video placements*:

Placements E, F, G, H (200 Viewable Impressions) = Rating of 40
= (Reach of 32 x Frequency of 1.25)
= (200 VI ÷ 500) x 100
= GRP of 40

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

Total Duration Weighted GRP (DWGRP; required for cross-media video) is calculated as:

Σ Duration Weighted Gross Rating Points

Or

Reach x Duration Weighted Frequency

Or

$[(\Sigma \text{ Duration Weighted Viewable Impressions}) \div (\text{Measured Population, Universe or Target})] \times 100$

For video placements*:

Placements E, F, G, H (200 Viewable Impressions) = DW Rating of 26.33
= (Reach of 32 x DW Frequency of 0.82)
= (131.67 DWVI \div 500) x 100
= DWGRP of 26.33**

**Calculations for Individual Placements not shown; placement group totals are presented for illustrative purposes.*

***Calculations may differ slightly due to rounding.*

Reporting:

As discussed throughout this document, for digital audience measurement, average unduplicated viewable duration reporting is required. Further, for input into cross-media video Frequency and GRP, the use of Duration Weighted Viewable Impressions is required, along with campaign or creative segregation. Digital only audience measurements not intended for cross-media combinations do not require duration weighting, but average unduplicated viewable duration reporting is required. Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations. Duration weighting is not required for digital display ad audience measurement, although average unduplicated viewable duration is required.

This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear disclaimer.

Measurement of an advertising campaign must, at minimum, be segregated by the various types of ads included in the campaign for digital audience reporting and cross-media combinations. For instance, counts should be reported separately for ads (by placement) within the campaign of different lengths (specifically with regard to duration weighting of video creative), sizes or functionalities (where known). Audience measurement may be aggregated at the platform level (desktop, mobile web and in-app) and within format (display and video), along with the minimum segregated reporting (placement) discussed above. Further, total time spent across ads of differing length within the same format is permissible in addition to appropriate granular creative-level reporting. Finally, total impressions delivered (Reach) across display and video formats within a campaign may be reported; however, combined display and video format audience (demographic or otherwise assigned segmented audience) measurement is allowable but not a requirement of this Standard due to differing viewability and (in cross-media) duration weighting requirements by ad format.

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The following is an example of reporting following the requirements stated above using the mock example data used throughout this Appendix (shaded columns represent data presented in the chart on the first page of the Appendix, and un-shaded columns represent metrics that were calculated in examples that followed). Please note that this specific reporting layout is only presented for illustrative purposes; alternate formatting and presentation are permissible.

Campaign ID	Placement ID	Ad Type	Video Length (s)	Viewable Duration (s)	Imp.	Viewable Imp.	Unique VI	DWVI	Reach	Frequency	DW Frequency	GRP	DWGRP
Campaign 1	Placement A	Display	N/A	200	100	50	40	N/A	8	1.25	N/A	10	N/A
Campaign 1	Placement B	Display	N/A	500	100	50	40	N/A	8	1.25	N/A	10	N/A
Campaign 1	Placement C	Display	N/A	1,500	100	50	40	N/A	8	1.25	N/A	10	N/A
Campaign 1	Placement D	Display	N/A	250	100	50	40	N/A	8	1.25	N/A	10	N/A
Campaign 1	Placement E	Video	5	200	100	50	40	40	8	1.25	1	10	8
Campaign 1	Placement F	Video	15	500	100	50	40	33.33	8	1.25	0.83	10	6.64
Campaign 1	Placement G	Video	30	1,500	100	50	40	50	8	1.25	1.25	10	10
Campaign 1	Placement H	Video	30	250	100	50	40	8.33	8	1.25	0.21	10	1.68
Campaign 1	Display Total	Display	N/A	2,450	400	200	160	N/A	32	1.25	N/A	40	N/A
Campaign 1	Video Total	Video	N/A	2,450	400	200	160	131.67	32	1.25	0.82	40	26.33*
Campaign 1	Total	N/A	N/A	N/A	800	N/A	N/A	N/A	64	N/A	N/A	N/A	N/A

Note: Population/universe/target assumed to be 500.

**Calculations may differ slightly due to rounding.*

N/A: The use of Duration Weighted Viewable Impressions is required only for input into cross-media video measurement. Duration weighting is not required for digital display ad audience measurement due to the absence of maximum creative length, although average unduplicated viewable duration is required.

B. Appendix: Digital Audience Vendor Implementation Checklist

- **Use Viewable Impressions as Digital Audience Qualifier:** MRC standard Viewable Impressions are the minimum required qualifying measurement unit for digital audience measurement including digital and cross-media Reach, Frequency and GRP. This Standard requires Digital Audience measures that are based on Viewable Impressions, with filtration inclusive of General and Sophisticated Invalid Traffic as well as Cross-Media video measures that incorporate duration weighting. However, Digital Audience and Cross-Media measures that do not incorporate one or more of these required components may be reported with proper labeling, segregated reporting and clear disclaimer.
- **Report Average Unduplicated Viewable Duration:** For digital audience measurement, average unduplicated viewable duration reporting is required.
- **Use Duration Weighting for Cross-Media Video:** The use of Duration Weighted Viewable Impressions is required for digital video audience measurement when used for input into cross-media video Frequency and GRP. Audience measurements that do not include duration weighting are required to be reported in addition to required duration-weighted estimates in cross-media video comparisons or combinations. Duration weighting for digital-only video audience measurements is encouraged.
- **Report Placement Level Granularity:** Creative (placement) level minimum reporting granularity is required within campaigns. Audience measurement may be aggregated at the platform level (desktop, mobile web and in-app) and within format (display and video), along with the minimum segregated reporting (placement). Finally, total impressions delivered (Reach) across display and video formats within a campaign may be reported; however, combined display and video format audience (demographic or otherwise assigned segmented audience) measurement is allowable but not a requirement of this Standard due to differing viewability and (in cross-media) duration weighting requirements by ad format.
- **Consider Presence of Audio:** Measurement organizations are encouraged to separately report Viewable video duration that is also audible (non-mute or non-zero) for device/hardware volume. Measurement organizations should separately report and consider duration that is audible for player volume where known. Cross-media audience combinations require the same audible criteria.
- **Utilize Proper Universe and Consider Coverage:** The Universe used for calculating a GRP must be based on the total audience (or selected demographic/target) measured, must be appropriate for the measurement and be fully disclosed to users. The coverage of, and material limits or exclusions to, coverage of digital audience measurement are

required to be described by the reporting entity and the impact of these on reported measurement should also be estimated and disclosed.

- **Measure Duration with Second Level Granularity:** Duration measurement for digital ads should be based on at least second-level time granularity (although crediting can be on less granular levels such as minute level as long as cross-media combinations include the same crediting basis). Periodic collection or transmission of measurement data does not need to be as granular as actual measurement (data may be batched for efficiency).
- **Assign Audience at the Unique Device or User Level:** Digital audience assignment should only be done at the unique device or, more preferably, unique user level. A digital audience measurement vendor must have a robust methodology to identify and deduplicate unique devices and/or users for such assignment. In no instance may a census measurement organization report Unique Users purely through algorithms or modeling that is not at least partially traceable to information obtained directly from people, as opposed to browsers, computers, or any other non-human element
- **Maintain Strong Panel Controls:** Panel sources should be congruent with the *MRC Minimum Standards for Media Rating Research* and are strongly encouraged to be part of an audited and accredited service. In addition to the *Minimum Standards for Media Rating Research* (and supplemental guidance for those practitioners using non-probability techniques or large transactional data sets), other industry measurement guidance as well as the MRC's guidelines for data integration are likely applicable to use of panel data for digital audience-based measurement.
- **Maintain Strong Data Enrichment and Integration Disclosures and Control:** The sources of assignment data as well as data sets involved in data integration processes should be disclosed to measurement service customers along with a description of methodology. Empirical analyses should support data integration priorities including weights or distance decisions. A measurement service using assignment/integration methods must use at least some "truth" information as part of its periodic validation procedures, as opposed to solely relying on inferred data or inferred data-relationships.
- **Monitor, Disclose and Periodically Study Edit Rules:** The measurement organization should monitor the extent of data editing applied within reported results. Significant types of data editing should be disclosed with accompanying volumes in reports to customers. A measurement service should have appropriate empirical support of data editing rules and decision processes and this support should be periodically challenged and updated to reflect changing conditions.
- **Apply SIVT to Digital Audience Measurement:** While application of Sophisticated Invalid Traffic detection processes is strongly encouraged for monetized traffic, digital audience and persons level measurement requires a higher degree of precision and accuracy.

Digital audience measurement and reporting requires filtration inclusive of both General and Sophisticated Invalid Traffic.

- **Provide Users with Detailed Disclosures:** An organization's methodology for accumulating digital advertising audience measurements should be described to users of the data, including methods for calculating unit audiences where applicable. Specifically, the nature of counts and/or measurements, methods of sampling used (if applicable), data collection methods employed, data editing procedures or other types of data adjustment or projection, calculation explanations, reporting standards (if applicable), reliability of results (if applicable) and limitations of the data should be included in the disclosure.