NEW OMC CURRENCY

OOH Audience Research Methodology

Release 2024.4

New OMC Currency Overview (2024.4)

Introduction

Out-of-home (OOH) audience research consists of various components with all the elements needing to be well connected and compatible.

In comparison to other media, OOH is exposed to audiences mainly in public spaces. Public spaces are the media which makes the measurement of ratings very complex. Anybody in a public space is part of the OOH audience; anybody has an opportunity to see OOH. To take this opportunity or not is based on the visibility conditions of OOH constructions but the main driver is the advertising content itself.

Ipsos' OOH audience solution is a model based on the best possible evaluation of the technical viewability of OOH constructions converted into a realistic opportunity to see (ROTS). It then includes another level of visibility adjustment converted into a probability. It combines the best available knowledge of **traffic volumes and travel survey habits** which are converted into gross Visibility Adjusted Contacts (VAC) and nett (REACH) volumes of audience.

The data is based on existing travel surveys.

- The latest release includes data collected for the periods
    - January – December 2017, 2018, 2019;
    - January – March 2020;
    - *There was no fieldwork from April 2020 to 2022 due to the Covid 19 pandemic.*
    - January – May 2022 and 2023
    - January – May 2024
- The combined dataset 2017/18/19/20/22/23/24 provides a sample size of around 71,000.

In the subsequent Release 2024-4, substantial enhancements were made to the OOH model. This included the integration of a new Travel Survey and updated HERE geometry. The new fused Travel Survey incorporates data from the 2024 ROAD study conducted by Ask Afrika, offering a broader and more in-depth understanding of travel habits. This improved model allowed for a more accurate representation of traffic volumes and travel habits.

An important enhancement in Release 2023-3 was the modality adjustment based on a multi-parameter filtration system. As a result of this adjustment, a significant number of trips were transitioned from pedestrians to the vehicular modality, thereby enhancing the overall accuracy of the models. This continues to be applied to the 2024-4 release. This modality adjustment, combined with other improvements, symbolizes a commitment to continually refining the models and methodologies to provide the most accurate and comprehensive data possible.

Each release is thoroughly analysed against the latest available set of OMC member's inventory and the most recent traffic and mobility data. This systematic approach allows IPSOS to maintain a consistent research methodology and ensures that the data stays current with the latest trends and developments in the field.

This strategy is implemented to guarantee that reliable and accurate results are delivered.

An overview of the approach

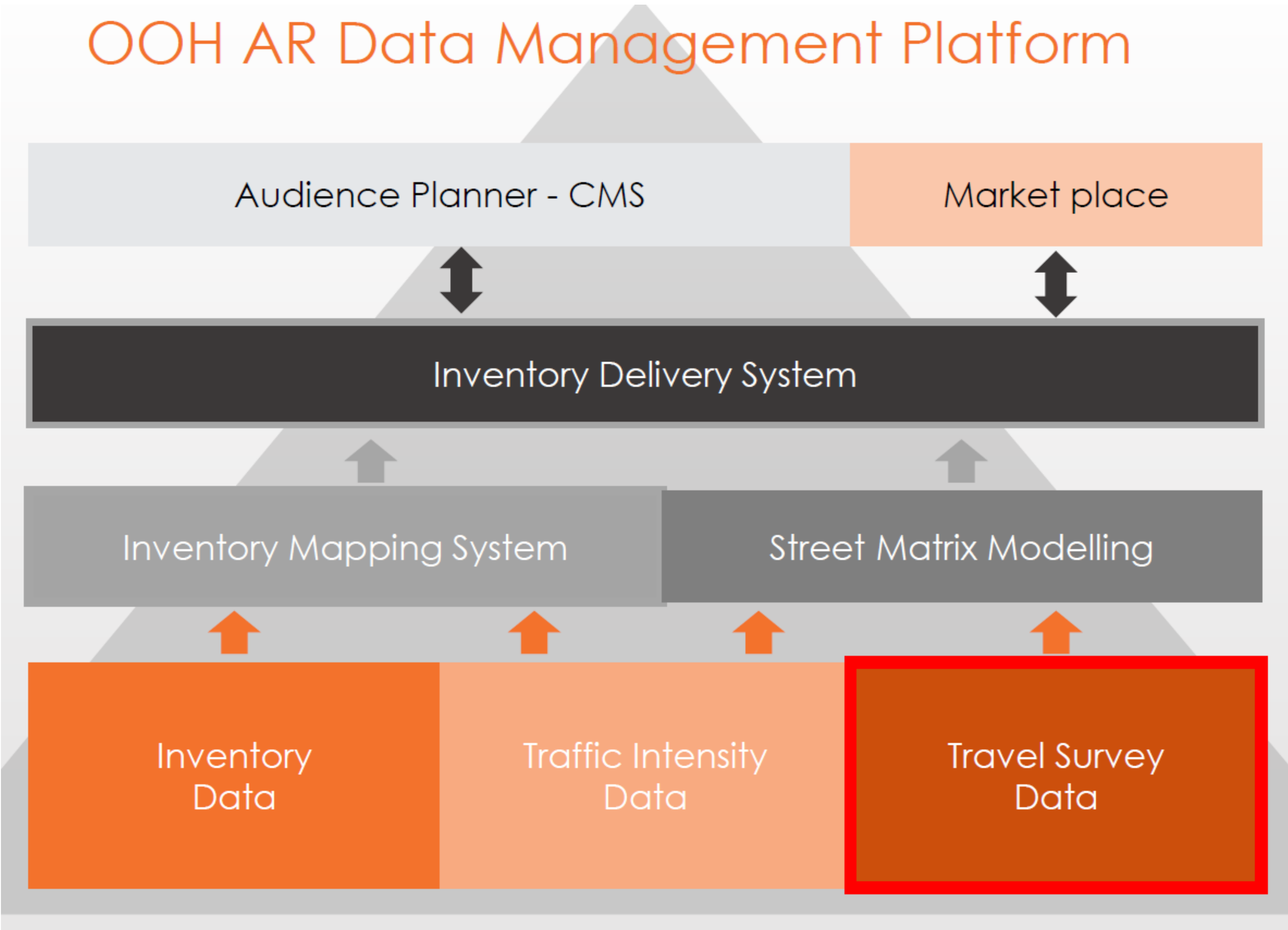
Broadly, the approach consists of four parts:

I. An **Inventory Mapping System (IMS)**, which houses all necessary details on the location and physical characteristics of the panels to be measured.

II. A **Travel Habit Survey**, to give us a picture of people's journeys outside of their homes. The existing Travel Surveys will be used to provide an update to the latest HERE maps and latest geocoding and routing of trips.

III. A **Traffic Intensity Model**. This enables us to combine data from the Travel Survey to generate estimates of the number of people passing within view of each panel. New granular speed profiles as well as weekly hourly volumes are the latest enhancement to support conversion from classic OOH to DOOH for roadside panels. The main deliverables are audience volumes.

IV. An **Inventory Delivery System (IDS)** allows users to evaluate frames, packages, networks and line by line campaigns, for classic and digital, against targets markets.



OMC partners

Ask Afrika	Travel survey fieldwork and processing
Kuper Research	Technical oversight of all data
Ipsos	Data modelling and fusion of all sources to provide probable audiences for each panel.
	Providers of Inventory Mapping Software (IMS) and Inventory Delivery System (IDS) for campaign reach and frequency planning

Processes

This a list of all processes identified in the OOH ROAD Research for the OMC:

1 <u>Travel survey</u>

1.1 <u>Sample (provided by AskAfrica)</u>

1.1.1 Planning and Selection

1.2 <u>Field work (provided by AskAfrica)</u>

1.2.1 Recruiting, interviewing, placement, collection

1.3 <u>Measurement (provided by AskAfrica)</u>

1.3.1 Face to face and small online data collection

1.3.2 Fieldwork monitoring

1.3.3 Data storage and top line reporting

1.4 <u>Respondent validation (provided by AskAfrica)</u>

1.4.1 Validation and checks

1.4.2 Delivery of final respondent list and assignment of respondent population weights

1.4.3 Definition of trips based on origin and destination and related attributes.

1.5 <u>Modelling</u>

1.5.1 Geocoding of addresses

1.5.2 Routing by using origin and destination

1.5.3 Processing respondent frame level consolidated contact file (CCF)

1.5.4 Weekly hourly indexes and daily seasonality indexes

1.5.5 Processing final Consolidated Contact File (CCF) for IDS

2 <u>Frame adjustment</u>

2.1 Initial setup and configuration

2.2 HERE map load and connection

2.3 Initial inventory import

2.4 Inventory adjustment and link assignments

2.5 Auditing and validation

2.6 Frame/face level classification (online, release)

2.7 Reporting face level results

3 <u>Traffic data integration</u>

3.1 Initial travel survey data aggregation

3.2 Synthetic model setup and calibration

3.3 Modelling vehicles

3.4 Modelling pedestrians

4 <u>Release processing</u>

4.1 New travel survey data integration (if any)

4.2 New traffic data integration (if any)

4.3 Application of fixes of missing traffic data (if any)

4.4 New or changed frame classification (if any)

4.5 Reporting at face level

4.6 Updating official networks

4.7 Reporting new release

1. The Travel Habit Survey

One of the key components in the Out-of-Home Measurement model is the Travel Habit Survey (THS).

The Travel Survey gives us a picture of people's journeys outside of their homes.

The purpose of this study is to map out the travel habits of the South African population in terms of:

- Demographics
- Origins and destinations
- Transportation method
- Frequency of visits
- Types of trips taken

The Travel Survey is supplied by Ask Afrika.

All origins and destinations are geocoded on the digital map.

Technical info for 2024:

1. Random probability national representative sample
2. Sample: Age 15+ in communities of 8,000+ (38 district municipalities) – excludes deep rural areas
3. Sample size: Size 71,019 respondents for the periods 2017/18/19/20/22/23/24
4. Universe: The data is weighted up to represent 28 million adults 15+ in "urban" areas
    1. Methodology: Total sample for 2024, is 7,499 with 6,991 face-to-face surveys and 508 online surveys to collect data among residents in hard-to-reach complexes and estates.

Note: Due to Covid 19 the fieldwork in 2020 was terminated in March 2020. Data collection resumed infield in February 2022.

2. Traffic Intensity Modelling (TIM)

Overview

In a perfect audience measurement system for Out of Home media, it would be possible to collect detailed counts of all kinds of vehicle and pedestrian traffic, both on the street and inside shopping centres and other environments where poster frames are displayed. Ideally, this information would be collected continuously, so that potential audience levels could be understood by day and time of day. However, this level of perfection does not exist in any country, so some degree of modelling is necessary.

The TIM modelling computes frame level analytics using a set of variables describing single frame audience volumes. It is based on the **HERE digital map**. The map is the source of important attributes about traffic rules and restrictions. Another input is traffic counts, where available, which are connected to the map. Traffic intensity modelling then combines map features with attributes and traffic counts into resulting traffic intensity estimates.

The main objective is to estimate **traffic intensity = volumes = frequency** on all road links and especially on links enabling frame visibility.

The reason for this is that traffic volumes, then in combination with frame visibility adjustment can help to quickly compute visibility adjusted contacts (VAC) = Impacts for each frame/face.

The TIM enables us to combine data from the Travel Survey with multiple external data sources (if available) to generate estimates of the number of people passing within view of each panel.

The main deliverables are audience volumes - the TIM is the main source for VACs (the new official currency for OOH measurement)).

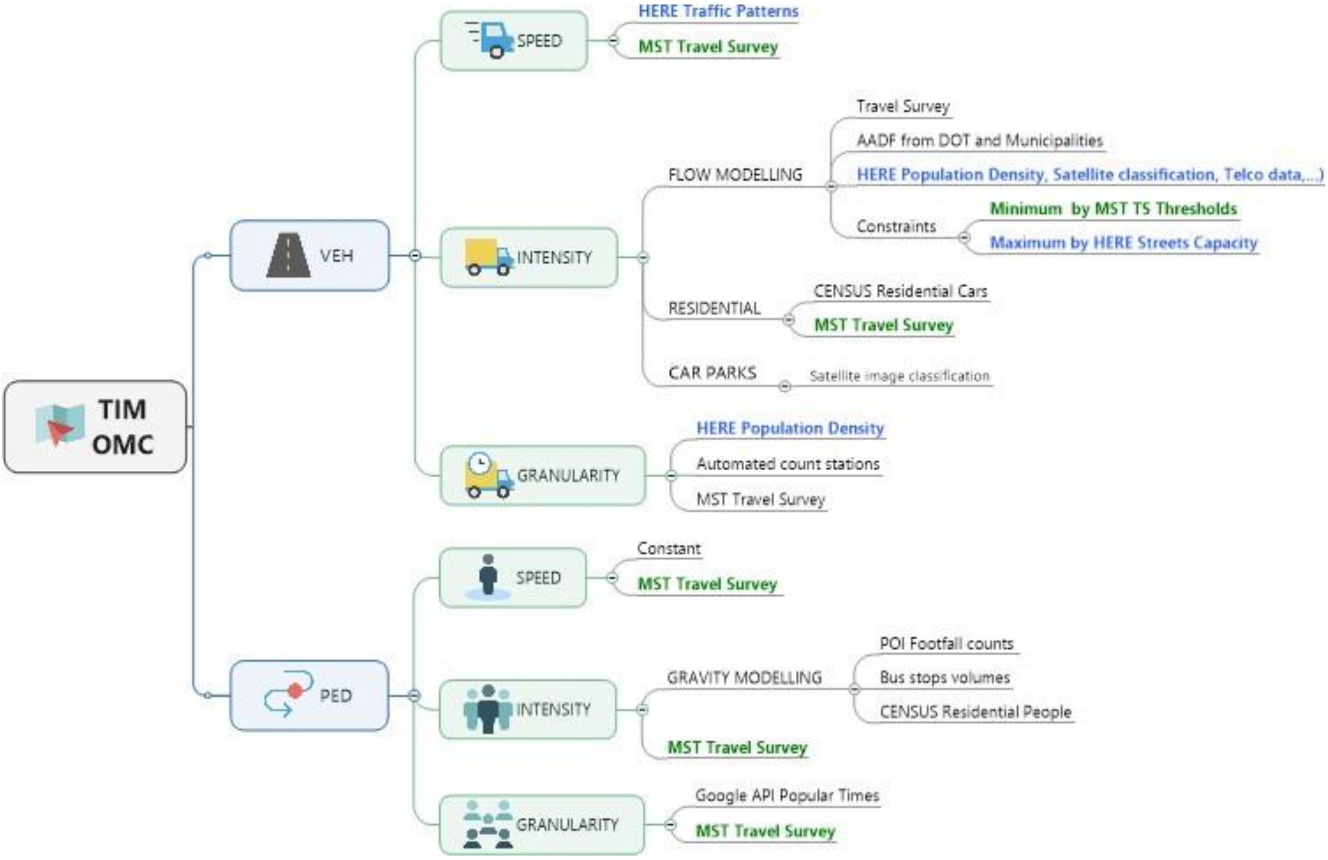
The model is split into 2 main modes of transport; vehicles and pedestrians.

Data sources:

It is important to build a system which allows us to continually add new sources of insight when they become available. It is a dynamic and continually evolving and improving modelling process.

All possible data sources are layered onto the HERE street network which forms the basis of the Traffic Intensity Model.

TIM VEHICLE and PEDESTRIAN data schematic



The TIM provides the following:

1. Traffic flow estimates for each road segment link
2. An assessment of the reliability of each estimate used in the modelling process
3. The ability to update the estimate when new or updated data is available

2.1 Data infrastructure

The data infrastructure is based on the following parts:

1. HERE MAPS (geometry, topology, and attributes)
2. TRAFFIC MODALITIES AND INPUT DATA
3. TRAFFIC DISTRIBUTION MODEL

These are all explained below

2.1.1 HERE Maps

HERE Maps are a commercial product licensed from the company HERE (former NAVTEQ). It consists of individual map layers.

The ROAD release 2024-4 is based on the 2024q2 Version of HERE Maps.

The following layers are converted and used for classification purposes:

- HERE Streets
- HERE Turn restrictions
- HERE Administration boundaries
- HERE Speeds
- HERE Points of interest

Besides these original layers, secondary layers have been built using HERE geometry and attributes:

- **Street matrix** topological model (combining streets and turn restrictions)
- Realistic roadside visibility buffers (polygons representing the street corridor using streets and attributes describing the width of the street and the sidewalk parts)

<u>StreetMatrix</u>

- StreetMatrix is a solution developed by IPSOS, based on a routing processor and a detailed spatial street network database.
- It is built on top of the street coverage used as part of the panel database and Inventory Mapping System.
- It also considers various traffic and infrastructure attributes. Routing processes are designed to build direct connections and alternatives using a complex routing algorithm.
- StreetMatrix is an important component in the model. It allows us to calculate not just the quickest or shortest route but also to calculate alternative routes using the road infrastructure. A weight or probability of travelling along different routes can also be calculated.
- Input is an Origin-Destination matrix with addresses or coordinates, notes to transport mode preferences or restrictions based on the travel survey.
- The output is a sequence of sorted and oriented street links connecting Origin with Destination and journey attributes (length, duration, mode of transport) along a range of calculated alternative routes.
- The next step in processing (which takes place after the imputation of missing data from the panel and after adjustment has been made for Realistic Opportunities to see and Visibility) is to overlay frames on the digital framework.
- This establishes a real-world co-ordinate relationship between participant's travel and frames. Contacts with frames are identified to produce a consolidated contact file.
- As new frames are added, or old frames are removed, an updated contact file is produced, ensuring that contacts are determined regardless of the Travel Habit Survey completion dates. It is this file that forms the basis for the next stage of modelling.

Speed

- Speed is a critical component in calculating the visibility of contact (i.e. clearly, the faster traffic moves past any given poster frame, the lower the quality of contact and, potentially, the greater the volume of traffic that will pass over a given period).

- Therefore, to cover all streets and modalities HERE Traffic Patterns are used.
- This system enables us to look at relative traffic flows for every street in hourly and 15-minute time slots.
- The standard approach is to use 12 months of data and to generate 168 weekly speeds by hour alongside speed factors, taking into account seasonality by month and other periods matching to the sales and posting calendar.

The two layers on HERE maps:

1. The original one which consists of HERE links
2. A second layer which consists of links manually digitized

Original HERE data are not just graphics on the map, they include important attributes and characteristics associated with each link.

Beside attributes describing the real world it also includes attributes enabling routing and flow modelling. This is technically referred to as the network topology.

The data layers

The first layer:

- A digital map of South Africa.
- This is licensed from HERE Technologies.
- All roads and pedestrian areas are represented in the HERE database.
- Every road on this map consists of what are called **links, sub-links, and nodes**
    - A link is a section of road.
    - A sub-link is a smaller section of a road.
    - A node is the start or end of a link.

Links are classified into five types, each of which has different levels of traffic importance:

1. Motorways:	roads with few, if any, speed changes, controlled access, high volume, maximum speed travel between areas
2. Major highways:	roads with few, if any, speed changes, high volume, high speed
3. Non-primary A roads:	Roads that connect roads at a high volume with lower mobility
4. B roads:	High volume traffic movement at moderate speeds between neighbourhoods
5. All other roads:	Local roads

The second layer:

- A series of characteristics associated with each of these links
- These include
    - the road type,

        - motorways, major highways, as above
    - buses on the road,
    - parking places,
    - traffic rules or restrictions
        - is it a one-way or two-way street?
        - the speed limits
        - any other restrictions

All this information enables directed graphs to be built to understand the way the traffic flows, e.g. one or two way road.

2.2 Traffic modalities and input data

Traffic volumes are primarily identified and aggregated from the travel survey.

Traffic volumes are generated for two different modalities:

- VEH (drivers and passengers in motorized vehicles both individual and service/public)
- PED (pedestrians and any type of soft modalities for example bicycles)

The first part of processing includes formatting and overlaying on to HERE maps and adjustments of measured values.

Traffic volumes are representing an ANNUAL AVERAGE DAILY FREQUENCY = AADF.

2.3 Configuration of main settings in 2024-04

2024-04 modelling uses the following settings:

2.3.1 Traffic intensity modelling processes

The Traffic Intensity Model (TIM) for vehicles (VEH) means:

- Traffic flow estimates of
    - people inside vehicles for each street link in the network with no access restriction for cars
    - people while walking on each street link in the network with no access restriction for pedestrians
- Description of data source types and methods used for processing these estimates

2.3.2 Modelling processes

2.3.2.1 Travel survey aggregation

- In this step all the respondents' weekly trips connecting origins and destinations are aggregated on the street links.
- Around all origins and destinations connected by vehicles or by walking random links for short pedestrian trips representing the short walking before and after any longer trip are also connected.
- Firstly, the unweighted respondents' trips are aggregated, and then respondents represented by their population weight.
- By this an initial traffic intensity model based only on travel survey volumes is received.
- From the total of 4.3 million street links more than 1 million are covered by the travel survey population who are driving and 1.3 million by people while walking.

2.3.2.2 Synthetic traffic and threshold values for vehicles

- In this step the travel survey aggregations are expanded to the rest of the street links and to links where traffic is below road capacity.
- **Road capacity** is the most important traffic parameter.
- This parameter defines the maximum number of cars passing through in free flow mode.
- Capacity depends on speed, number of lanes, complexity (crossings), urban and non-urban surroundings, traffic lights etc.
- All these attributes are included in the HERE original data set.
- In the case of regular and healthy traffic infrastructure and similar driving regulations, habits and mentality, vehicle types and presence of other traffic modalities there is no difference between similar roads in different regions or cities.
- Similar roads by construction transport similar number of cars (and number of people inside).
- There are two possible applications of road capacity:
    1. To generate synthetic counts on roads which are not covered by sourced data and where the initial model has low reliability.
    2. To apply caps on modelling results which are higher than the capacity.
- Application of synthetic counts in South Africa is an important part of the modelling. It is based on road classes with true ground counts based on the travel survey defined by the same set of HERE capacity attributes.
- This unique data selection consists of 0.7 million sourced roads. HERE attributes are then an ideal level to transpose traffic volumes to similar roads without measurements.
- All final counts are also checked against the maximum construction capacity, and no new traffic volume exceeding it were found. So, no caps were applied to regulate the modelling results in South Africa.

Contact Redistribution Approach used to distribute the synthetic audiences

- The primary driver limiting reach and frequency analysis at an individual panel level is the limited actual contact data with frames. This means that there are always some panels for which no contacts are recorded in the travel survey because no respondents happened to have made trips that would have passed a particular panel.

- Ipsos’ method extrapolates travel behaviour over a larger population, creating ‘synthetic’ participants.
    - This is a 3-step method:
        - Creating a virtual (or ‘synthetic’) database
        - Modelling the trips from a travel survey
        - Developing a mobility model
- The standard approach segments and weights frames at 16 levels, uniquely classifying the mode of transport, day type and daypart combinations. Regardless of sample size, there will always be low audience frames with zero actual contacts.
- However, it is actual contacts that will form the basis for determining reach and groups of frames are relied on to ensure reach is robustly calculated at an aggregated level. If part of this calculation was moved upstream and it was embedded in the outputs, it would be possible to calculate reach and frequency on smaller campaign sizes.

Data Sources

- One of the key learnings of the OOH measurement experience is that it is important to build a system which allows us to continually add new sources of insight when they become available. More data is almost always better.
- Other data sources will be explored and, if accessible, will be used in the project:
- All possible data sources will be layered onto the HERE street network which forms the basis of the Traffic Intensity Model

Release 2024-4 TIM specification and modifications

The 2024-4 version of the Traffic Intensity Model builds upon the foundational version from 2023-3, integrating it with the updated HERE 2024q2 geometry. The foundational model utilizes data from the 2024-4 Travel Survey data from AskAfrika, which included a significant number of unusually long trips within the pedestrian modality. The 2024 ROAD study, however, provided a more accurate reflection of the modalities.

By combining these versions, at a total of 750,576 trips are calculated. Among these, 53,481 were transitioned from the pedestrian to the vehicular modality. This transition was based on a multi-parameter filtration system. The key parameters of this filtration were:

- Trip length – namely 7 – 50 km long trips
- Road type – trips following restricted road segments

In addition, the model included updates to the road links, incorporating new pedestrian restrictions. These restrictions prevented the pedestrian modality from accessing highways and other high-speed, high-capacity parts of the road network. These restrictions were later fine-tuned according to OMC's specifications and understanding of the local environment. This resulted in the prohibition of pedestrians from arterial roads within cities, while lifting the restriction on regional and inter-urban parts of the road network.

3. Frame level analytics

3.1.1 The role of the Inventory Mapping System (IMS)

Ipsos' Inventory Mapping System (IMS) provides the foundation of the OOH measurement approach.

- Each frame is positioned according to its co-ordinates and orientation (angle) to the road.
- The system automatically generates a 'Cone of Visibility', based on the maximum distance from which the frame is visible and the furthest angle from which it can be seen.
- Any permanent obstacles (such as buildings and the width of street) are considered in re-sizing the cone to a realistic one, within which the frame can be seen.

The Inventory Mapping System allows for the following processes:

1. Initial loading of inventory data provided by media owners
2. Adjustment of each panel to its correct position and orientation
3. Assignment of each panel to a street segment on a digital map
4. Visibility adjustment

- The two core **outputs** of this system are:
  - Visibility Adjustment = VA.
  - This combines with ROTS (Realistic Opportunity to See) from the traffic intensity model resulting in audience counts (GRPs) and VACs (Visibility Adjusted Contacts) by panel.
  - The Cone of Visibility, which depicts the area from which a panel can be seen.

HERE maps and Google Street View images allow us to examine panel locations on road networks.

All panel sites are classified using variables of relevance to audience measurement, particularly those required for calculating the visibility adjustment factors. They include:

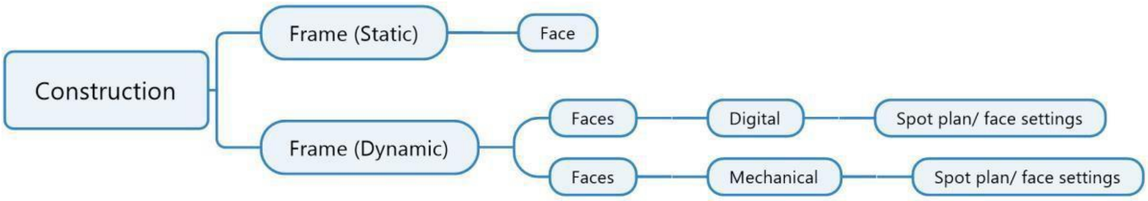
- GPS co-ordinates
- The size and format of the panel
- Whether static, rotating, or digital
- Height from the ground
- Whether illuminated or not illuminated
- Distance from road and angle to the road
- Obstacles

3.2 Roadside

3.2.1 Frame Adjustment

Frame adjustment is mandatory for all frames located on roads or sidewalks getting audience from people using cars, public transport or walking by (open sky environments).

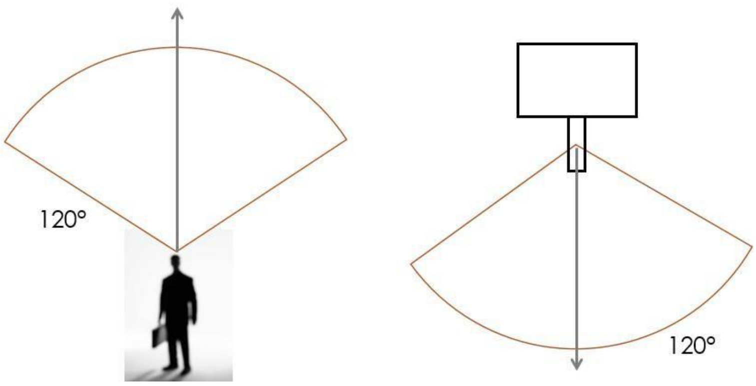
Hierarchy of inventory terms is as follows:



Frame adjustment settings:

- A frame is represented by a geographical object.
- This **cone of vision** is a polygonal object.
- The initial part is a line which represents the frame width.
- This line is placed and rotated to fit the frame position and orientation.
- Each end of this line is extrapolated in an angle of 60 degrees to each side.
- The closing part is a circular arc build in a constant distance from the centre of the initial line:

<u>Visibility adjustment:</u> Observation angle x Cone of vision



The size (maximum distance from the initial line) of this object is based on the frame square area (width x height).

The current method for calculating visibility adjusted scores for frames involves several phases including the following:

- Calculation of the Cone of Visibility using rules
- Working out which HERE links are within the cone and which of them are within the line of

sight of the panel

- The result of frame adjustment and links assignments is a series of oriented street links with a defined maximum visibility point (Emax) and minimum visibility point (Emin).
  Emax = where the frame is more than 50% visible
  Emin = a point where the distortion is out of limit

- Links are then tested with regards to the presence of obstructions and with regards to the frame construction height (distance between the street and the lower edge of the frame)

  - Working out a series of combinations of flows using these links to produce a Realistic Opportunity to See (ROTS) for each flow

  - Calculating the Visibility Adjusted Contact (VAC) for each flow using the agreed formula for calculation. This VAC is capped at 1.0*

- On top of this, the VA for DOOH can be calculated using the AM4DOOH methodology (based on client selection).

*** *Visibility Adjusted Contact (VAC)***

Unlike other media, OOH is an attention-based currency, meaning that it does not operate on an *'opportunity to see'* basis for advertising, but instead adjusts audiences based on the probability of seeing the ads which people are exposed to.

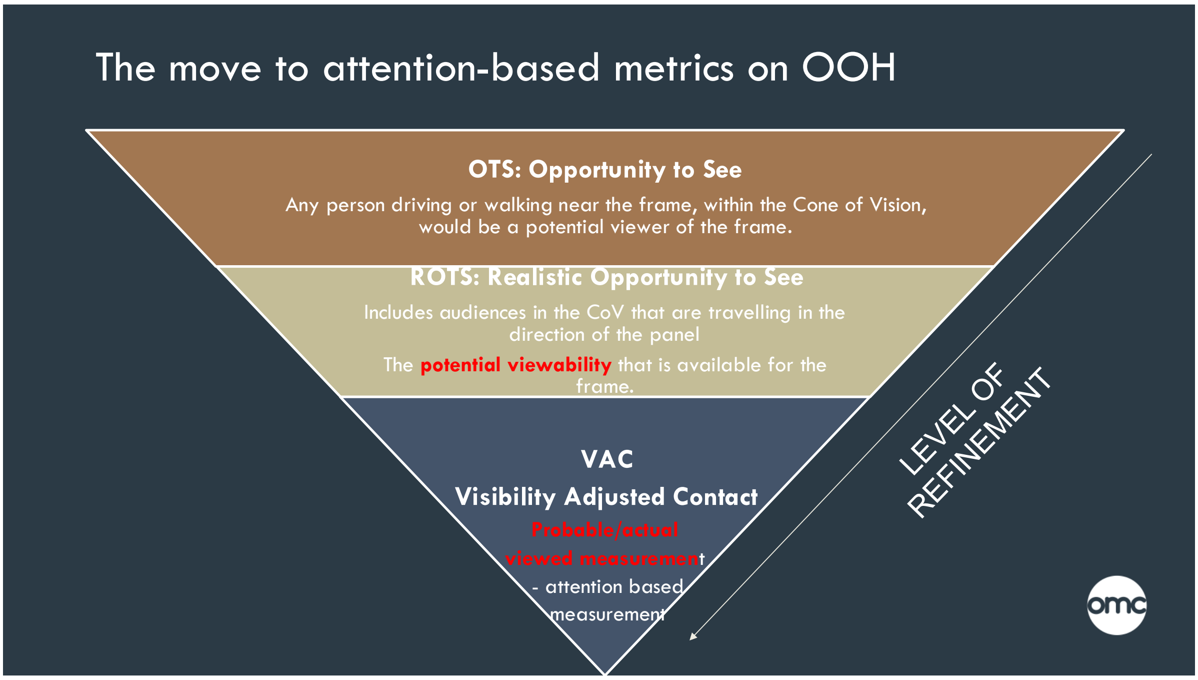
This is done through the implementation of a visibility adjustment algorithm which itself is derived from a variety of eye tracking research studies conducted over a period of 25 years+.

According to the **ESOMAR** guidelines for out-of-home audience measurement:
"*Visibility adjustment is derived from research in cognitive psychology and estimates the probability that an individual who has an opportunity to contact a panel is likely to have looked at the advertising message on the panel. This is an adjustment applied to the opportunity to contact audience estimates based on elements such as direction and speed of travel, the size of the panel, the citing of the panel, the extent to which the panel is obscured as the individual passes it, frequent automated changes in the message displayed and the visual complexity of surroundings.* ***The purpose is to get as accurate an estimate as possible of the number of individuals who look at the advertising, rather than the total number passing a panel*****".**

What this gives us
This gives us a measure that goes beyond 'impressions' and allows us to determine not just how many ads are displayed on OOH screens, nor a count of those exposed to the ads, but instead it is a measure of those who actually see the ads which they are exposed to.

Why is this important?

This gives advertisers the truest measure of their advertising audience. It offers transparency in terms of the audience numbers. Advertisers can have confidence in the number of people who actually see their ads, rather than have a chance to see them.



3.2.2 Frame Status in IMS

IMS uses Status as description of frame adjustment quality and preparedness for Classification and next Release.

This is the agreed OMC Status numbering and meaning:

- STATUS 0 initial version from Publishers
- STATUS 1 version prepared in IMS by Publishers
- STATUS 2 Status 2 version is where Publishers are still busy with the frame and information is missing, they need to go back and complete the upload by adding in the missing information.
- **STATUS 3 version adjusted and approved by IPSOS -> READY FOR RELEASE**
    - ***These panels will be reflected in IDS within 24-48 hours from approval***
- STATUS 4 version is where Ipsos has rejected the panel because of issues. Publishers to check in the IMS comments for the panel for an explanation of the issue.

Continuous updating has been implemented between IMS and IDS. This allows for continual updating of IDS when panels are added, changed or deleted in IMS. Generally it will take between 24 to 48 hours to reflect in IDS.

3.2.3 Frame Classification

- Frame classification process uses the results of the frame adjustment and then combines this with traffic volumes (TIM) on links.
- The classification process uses all the links intersecting the cone of vision to build flows and to extract flows with the basic realistic opportunity to see.
- The VA (Visibility Adjustment), established by Route, is then applied on each flow to deliver an accumulated VA. The final product of the frame classification process is the frame level **VAC** which is a sum of the ROTS x VA.

Terminology

ROTS: How many people have a realistic opportunity to see a face?
(They must travel within the Cone of Vision and must be travelling in the direction of the panel).

VA: What is the probability to have an opportunity to see a face?

VAC: What is the performance of a face?

VAC = VA x ROTS

3.2.4 Realistic Opportunity To See

The definition of ROTS is simple: it is the number of impressions with VA > 0. It includes all impressions made in a valid visibility direction under conditions with positive non-zero probability.

ROTS are used as part of the VAC calculation and are not released as a separate metric.

3.2.5 Visibility Adjustment

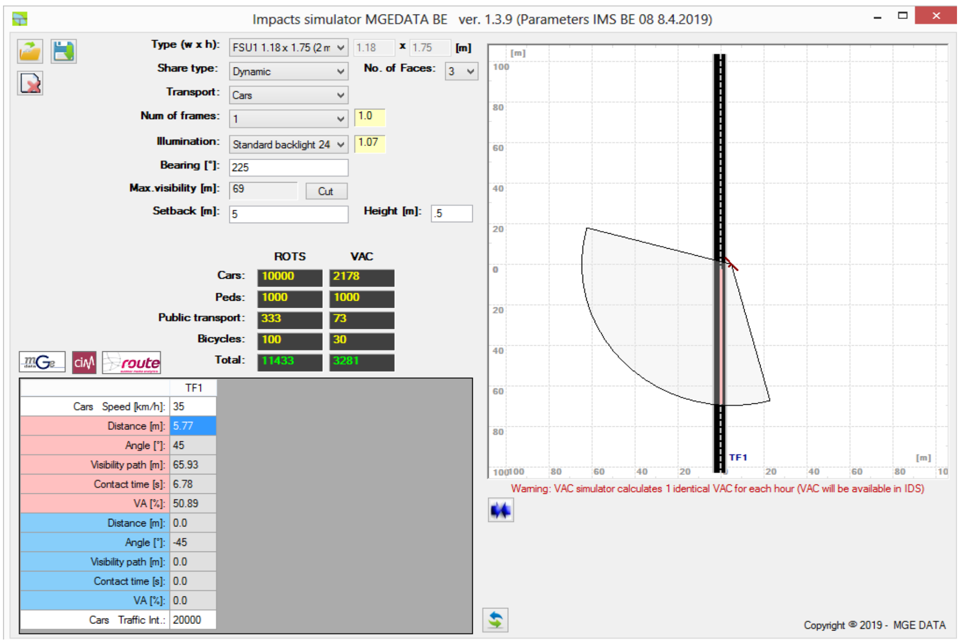
- The main classification unit is a Frame.
- Faces are then classified in a second step.
    - Single static faces are getting the same visibility results as the frame.
    - Dynamic or digital faces are evaluated by using a special additional computing process.
- **Visibility Adjustment** means a probability calculation which takes ROTS on ROTS flows and all the important characteristics of the visibility of a frame exposed to that flow.
- These characteristics include for example:
    - Passage length
    - Setback
    - Construction height

- Frame size
- Frame angle to the true north where north is 0°
- Flow direction angle to the true north
- Speed
- Maximum visibility distance
- Minimum visibility distance

Globally applied quality of contact

The method for calculating visibility adjusted scores for frames involves a number of phases:

1. Calculation of the Cone of Visibility using rules set out by Route UK on their definition.
2. Working out which links are within the cone and which of them are within the line of sight of the panel.
3. Working out a series of combinations of flows using these links to produce a Realistic Opportunity to See (ROTS) for each flow.
4. Calculating the Visibility Adjusted Contact (VAC) for each flow using the agreed formula for calculation.
5. This VAC maxes at 1.0 once full visibility is reached.

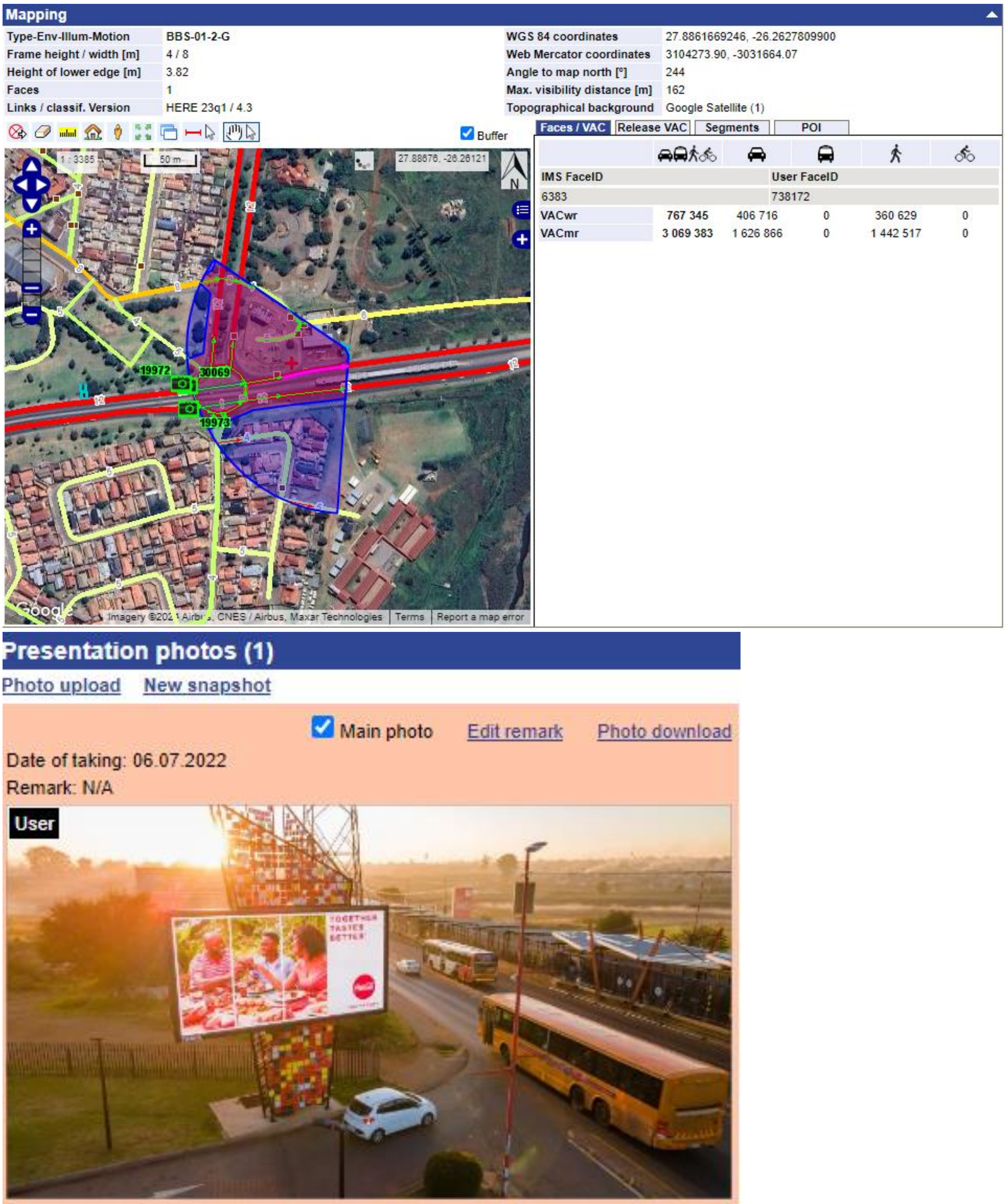


2.3.2.3 Inputs to the calculation algorithm

The visibility model includes the following variables and are collected and stored in IMS and combined with audience and participant flows:

- Frame Size
- Illumination (both frame's and day/night illumination)

- Maximum visibility distance
- Angle of panel to north
    - Distortion
- Setback from kerb
    - Eccentricity
- Contact time (a function of speed and passage length)
- Construction height above the ground
- Number of traffic lanes
    - Determine road width

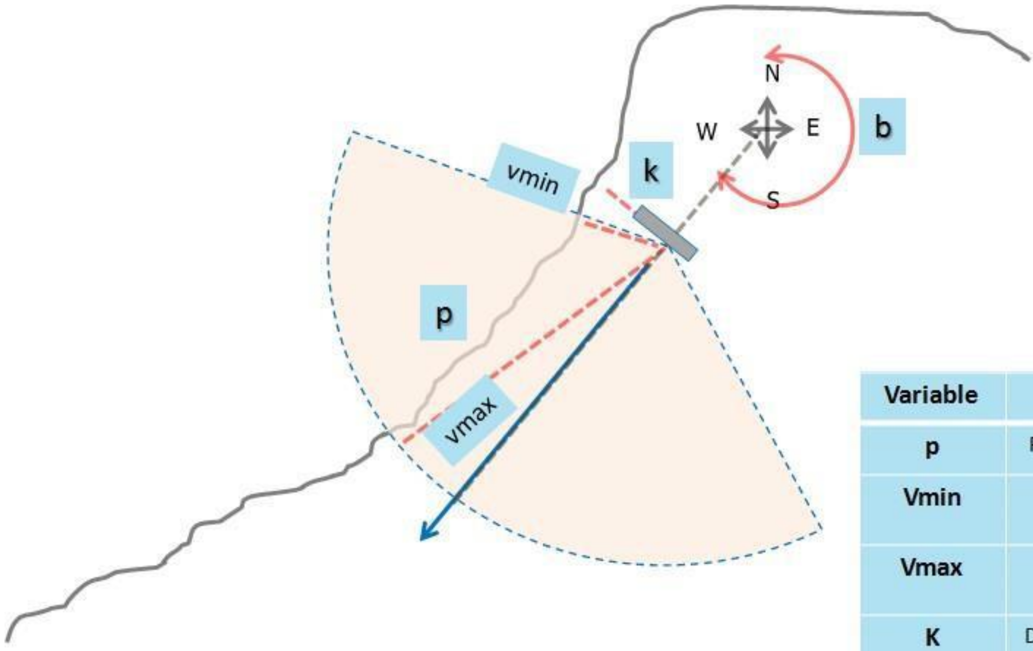


2.3.2.4 Visibility adjusted contacts

These variables determine whether there is a realistic opportunity to see (ROTS):

- The distance of the Maximum Visibility Point (MVP) and minimum visibility distance
- The visibility angle
- The speed or speed category of assigned links / the contact time duration of the intersection

The diagram shows an example of the actual passage made by a participant, which the calculation of visibility is based on:



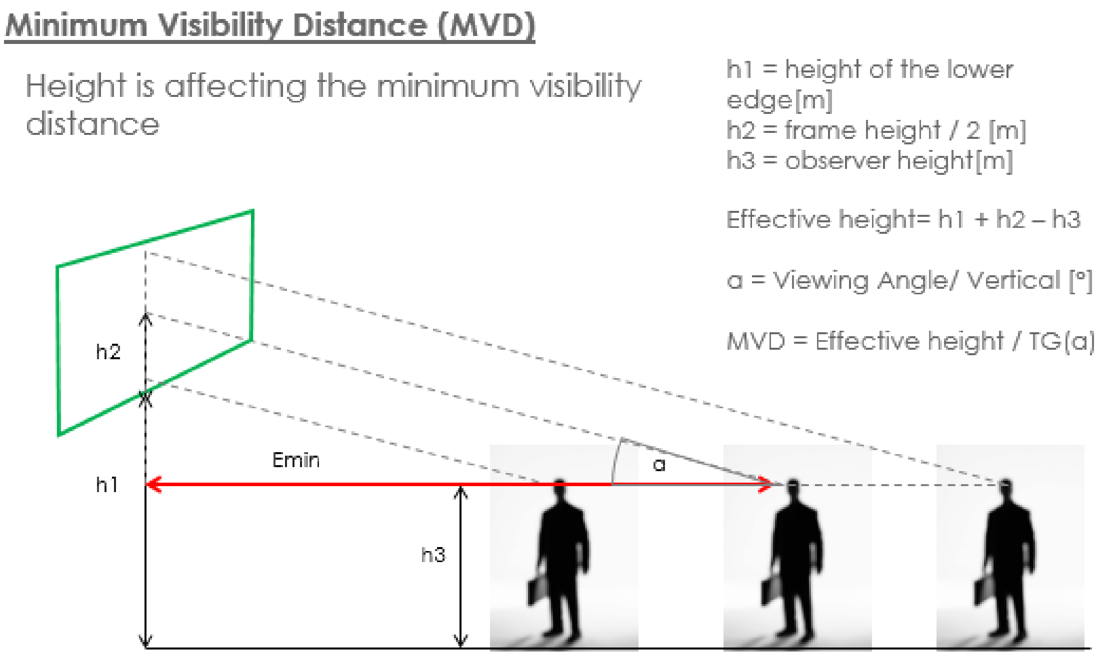
Variable	Name
p	Passage Length
Vmin	Minimum Visibility
Vmax	Maximum Visibility
K	Distance to Kerb
a	Relative bearing
b	Azimuth bearing

Add ons to the VA:

1) Construction height
2) Illumination

Construction height

- Construction height is a special add-on. It was built in the standard VA.
- It was agreed by the OMC to use it because in South Africa there are OOH constructions with different heights above the terrain.
- The construction height is critical especially in the near position as it affects the part of the visibility path which has the highest probability of an impression.
- It was integrated in a similar way as the set back.
- Set back is a critical factor too. A frame far from the street side is not visible as quickly as a frame closer to the street side. After several test it was confirmed that it is the same with construction height.



4. Granularity

- The new OMC data brings a greater level of granularity.
- This is based on multiple data sources.
- And it expands the resolution of the currency in many different directions.

There are other levels of granularity included:

- Illumination index
- Traffic index
    - Seasonality traffic
    - Weekdays and holidays
    - Weekly hours

4.1.1 Illumination index

South Africa has a moderate difference in day light duration from South to North.

To determine daylight variation, used: https://www.timeanddate.com/

For non-illuminated frames, an average Index of 0.9 was applied, which means the volume of traffic at day light time limited by civil twilight.

Illuminated frames are not affected by any illumination index.

4.1.2 **Traffic index**

4.1.2.1 Seasonality Traffic

Traffic index describes the split of traffic by different time units. In the research different sources are used.

In release 2024-04 all code tables and settings for seasonality application were prepared.

But because of lack of data all periods are producing the same annual average.

4.1.2.2 Weekly hours

Roadside weekly hours

Weekly hours are important for DOOH only. It is about hourly variations. In R3 for roadside standard roadside split is used which is based on an aggregation of HERE traffic patterns and generalized count collected from the official traffic sources.

For Release 2024-4 the global traffic intensity curve from measured location was used.

5. Digital Frames

For 2024-04 the **FEPE/WOO** method – AM4DOOH was applied.
The AM4DOOH methodology document is available on request.

5.1.1 Digital inventory in IMS and IDS

5.1.1.2 IMS

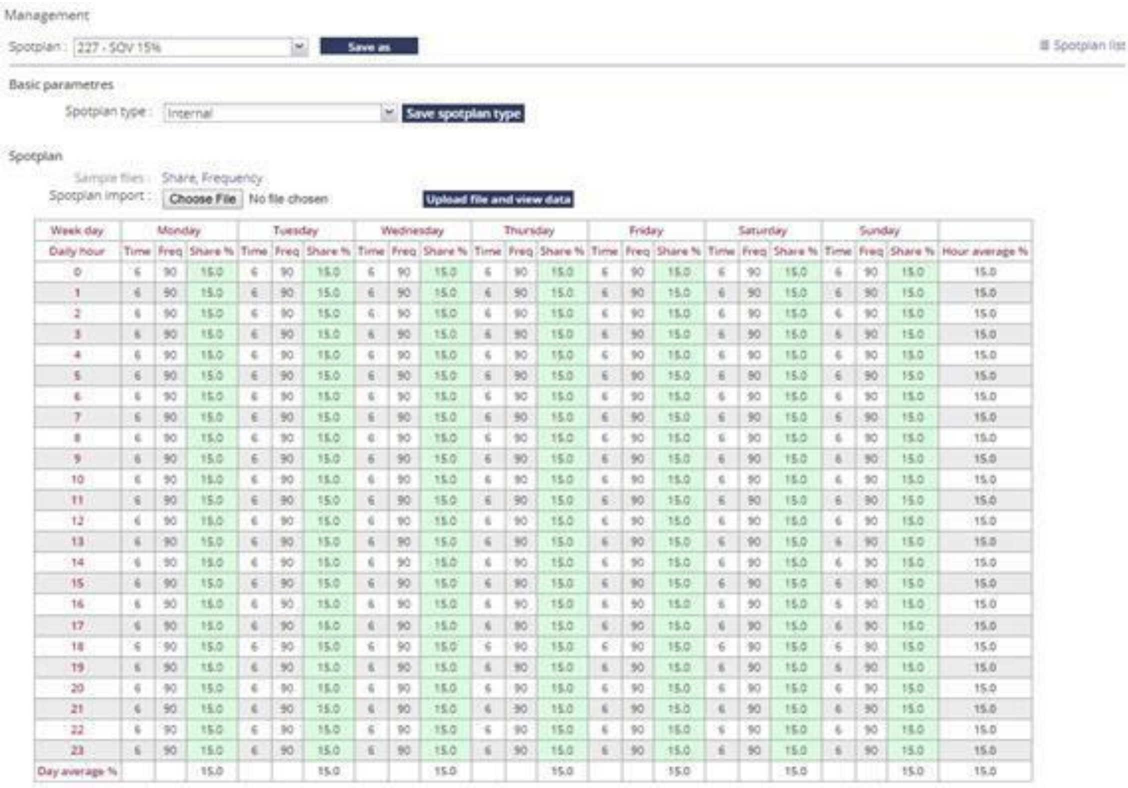
In IMS the DOOH VAC is calculated based on a 5” spot in a 60” loop for one face on each digital frame

5.1.1.3 IDS

IDS is more flexible for digital frames, and it allows different settings of spot length and loop length defined in spot plans.

However, it must be noted that when looking at all frames, the same DOOH VAC of 5” in a 60” loop will be reflected. The defined spot plans will only amend the VACs in the Media Plan.

Spot plan example:



Week day	Monday			Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			
Daily hour	Time	Freq	Share %	Time	Freq	Share %	Time	Freq	Share %	Time	Freq	Share %	Time	Freq	Share %	Time	Freq	Share %	Time	Freq	Share %	Hour average %
0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
1	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
2	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
3	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
4	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
5	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
6	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
7	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
8	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
9	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
10	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
11	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
12	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
13	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
14	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
15	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
16	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
17	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
18	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
19	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
20	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
21	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
22	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
23	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	6	90	15.0	15.0
Day average %			15.0			15.0			15.0			15.0			15.0			15.0			15.0	15.0

5.1.2 Rotating inventory

In Release 3, a new feature was included for the management of rotating sites.

These constructions, composed of two faces – one digital and one static – positioned in opposite directions that rotate once a day to capture maximum traffic with their digital sides. To accurately quantify the performance of this setup two additional panel types were introduced, namely BB_AM and BB_PM.

For each rotating site, a total of four faces were created. These include one digital and one static face on each side of the construction.

By utilizing these new panel types, it is now possible to accurately define the duration for which each side captures traffic from the appropriate direction. The overall performance of the static side can then be calculated by including both the PM and AM sides in an IDS campaign.

This same principle applies to the digital sides of these constructions. However, with digital sides, there is an added flexibility that allows the parameters of the used advertisement to be set up with Spotplans.

6. Network level analytics

6.1 The Reach and Frequency Model for Outdoor Advertising in South Africa

6.1.1 Introduction

- The need for a R&F model is driven by the fact that respondent x frame contact data are collected from each travel survey respondent.
- Media owners and advertisers also need to know what exposure will be generated over different time periods, such as one week, four weeks or longer.
- Exposure may be expressed as:
    - total contacts (projected to population),
    - and also, as the constituent statistics: number of unique viewers (reach)
    - and the number of contacts per viewer (frequency).
- Projecting these to different time periods also requires modelling.
- Respondent visits are projected into an average week of the year.
- IMPACTS are built based on a simple sum of contacts.
- REACH is based on negative probability combining VA of each contact.
- The resulting Consolidated Contact File (CCF) is then the foundation for computing of multiple connected weeks and weeks starting on a specific date in the year connected to difference based on the seasonality.

7. Target Groups of Release 3

The the following groups and targets are available in order to create detailed demographic target markets in Release 3

PERSONAL

- Exact age
- Gender
- Race
- Marital status
- Marital status grouped
- Home language
- Highest completed school education
- Highest education level grouped
- Work status
- Work status grouped

ECONOMY

- Household income
- HH income grouped
- Personal Income
- Personal income grouped
- LSM classifications
- LSM grouped
- SEL
- SEM
- SEM clusters
- SEM supergroups

8. Conclusion

OOH audience research combines different research branches including geo spatial and mapping, traffic engineering, psychology, mathematics, and statistics. The main objective is to define conditions and probabilities of having an impact based on visual contact while out-of-home and to convert this into a currency compatible and competitive to other media.

In this OMC study there has been a strong endeavour to combine the highest accuracy digital maps and statistics to describe the mobility behaviour and opportunity to see out-of-home advertising constructions.

This process did not start from scratch. Thanks to development in other European countries, results from UK, Germany and other similar OOH markets to South Africa were available to be adopted.

Using the South African field work team and local traffic sources adjustments were implemented considering the specs of the South African infrastructure and habits.

The last 2024-04 version delivers reliable results without underestimating or overestimating the performance of out-of-home in South Africa. The resulting efficiency and performance are comparable to similar markets in European countries.

The current set of data has a limited lifetime. South Africa is changing and improving traffic infrastructure every year, and this means huge impacts on out of home audience. The only possibility to keep the new currency up to date is to continue to measure mobility and project components without any interruption.

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