the Advertising Research Foundation

AUDIENCE xSCIENCE 2024

Optimizing Big Data + Panel Measurement Through Calibration

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Optimizing Big Data + Panel Measurement through Calibration

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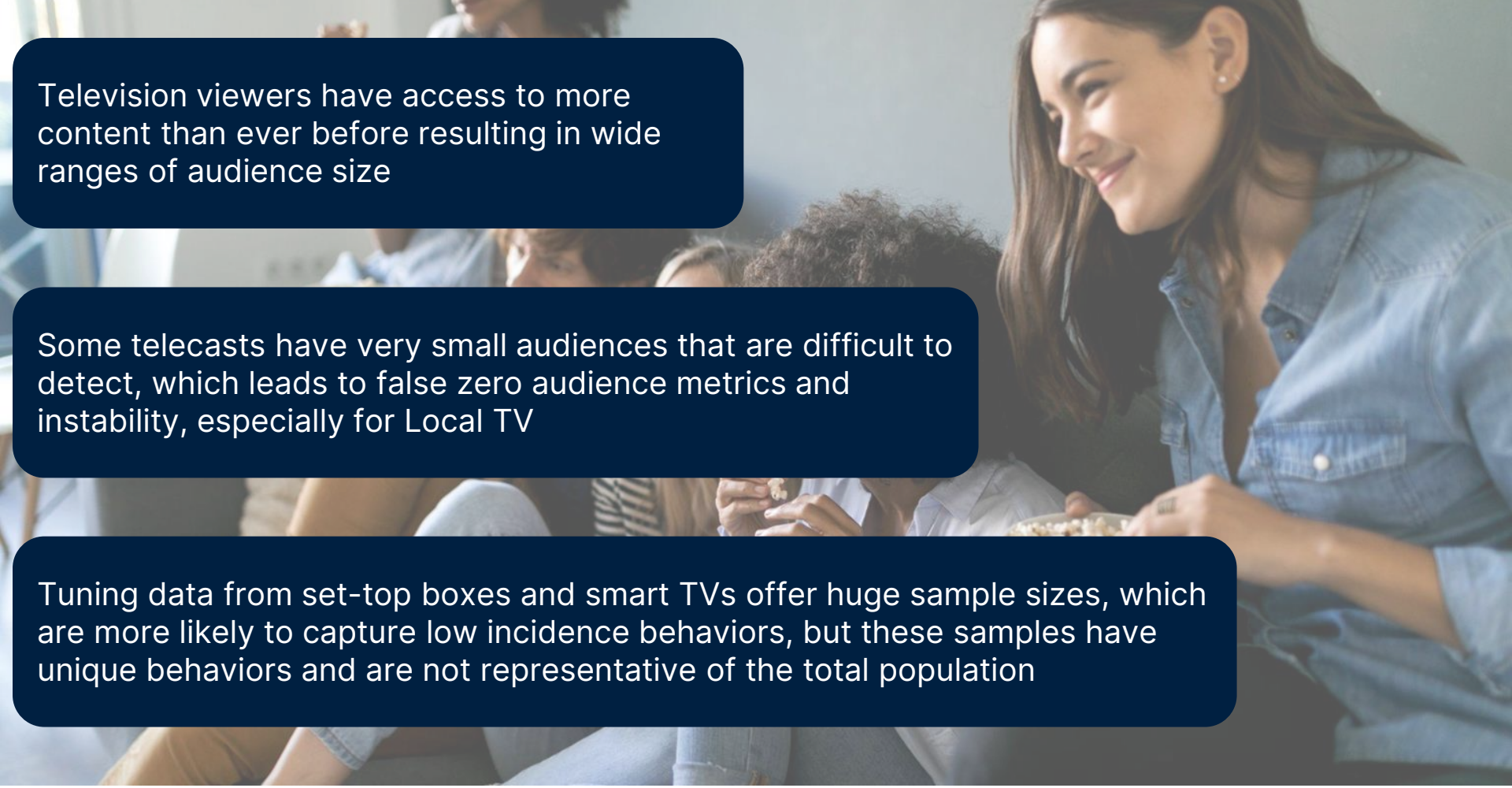

Television viewers have access to more content than ever before resulting in wide ranges of audience size

Some telecasts have very small audiences that are difficult to detect, which leads to false zero audience metrics and instability, especially for Local TV

Tuning data from set-top boxes and smart TVs offer huge sample sizes, which are more likely to capture low incidence behaviors, but these samples have unique behaviors and are not representative of the total population

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Evolution of Local TV Measurement

- Accuracy
- Stability

- Panel measures everyone

- Accuracy
- Stability

- Big data measures itself
- Panel measures everyone else

- Accuracy
- Stability

- Audience levels informed by big data + panel
- Audience flows influenced by big data

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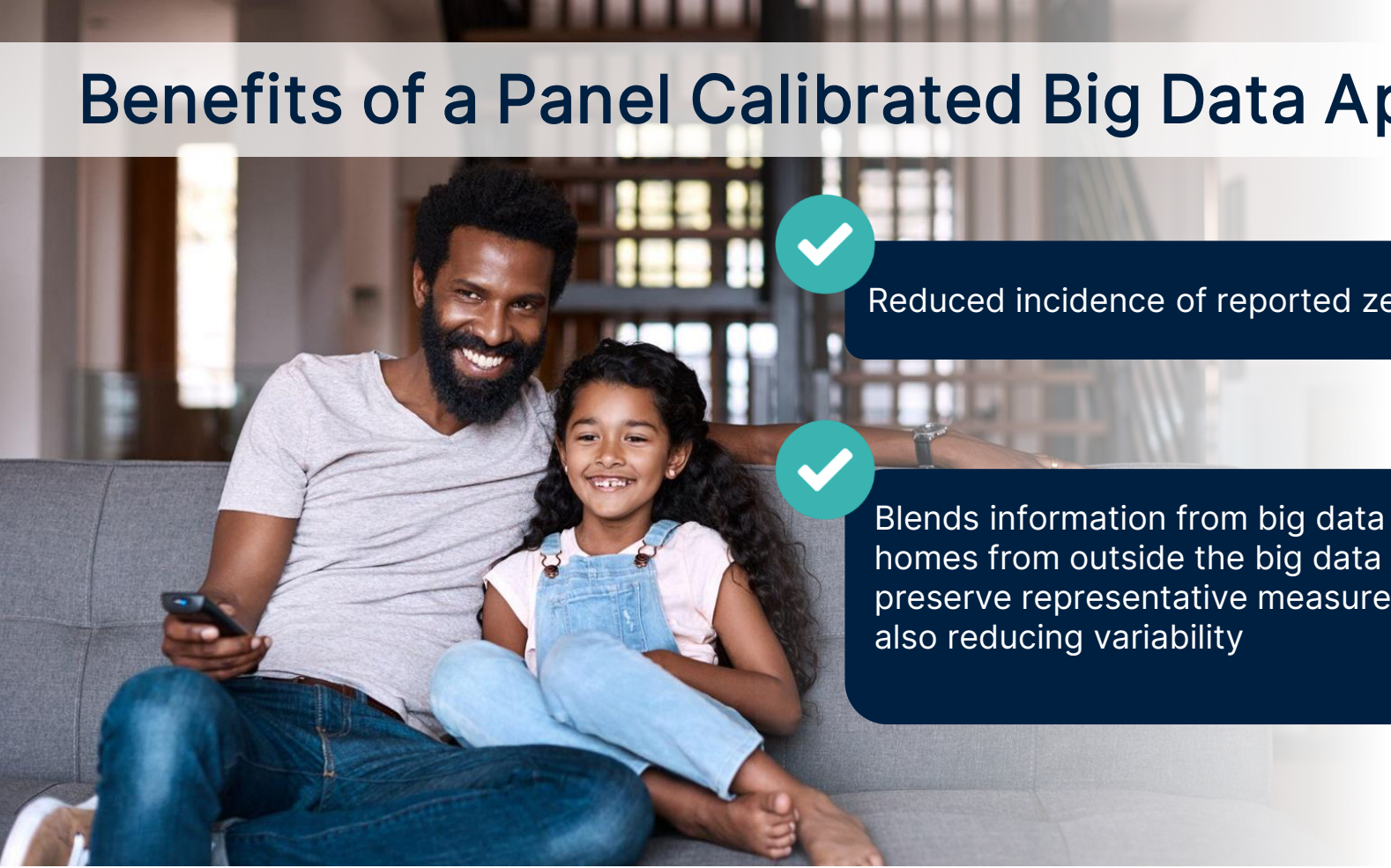
Benefits of a Panel Calibrated Big Data Approach



- Reduced incidence of reported zero audiences
- Blends information from big data and panel homes from outside the big data footprint to preserve representative measurement while also reducing variability

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Calibration is more than just Projection

Simply projecting big data beyond its footprint can also drastically increase effective sample size and stability

However, projection without calibration relies on the incorrect assumption that big data is representative of the total TV owning population

Calibrating the big data to a probabilistic panel controls for biases in the big data population that cannot be accounted for by weighting alone

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The Panel is critical to accurate calibration

Big data homes have unique viewing behaviors compared to non-big data homes that cannot be accounted for with weighting alone

The Nielsen panel provides representation for non-big data enabled homes including streaming only, OTA and other providers

The panel provides accurate and unbiased measurement at aggregate levels while big data provides greater coverage of granular behavior

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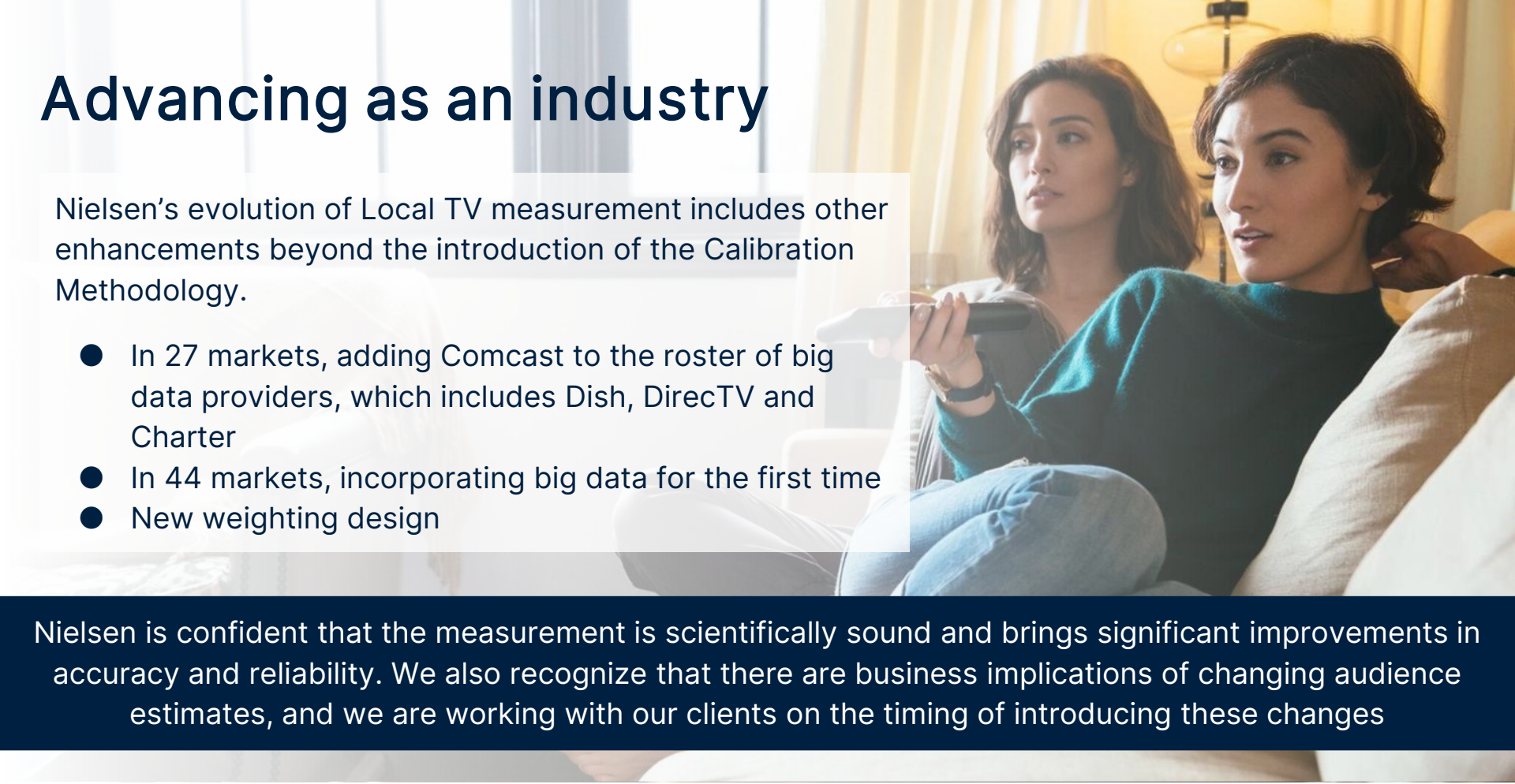
Advancing as an industry



Nielsen's evolution of Local TV measurement includes other enhancements beyond the introduction of the Calibration Methodology.

- In 27 markets, adding Comcast to the roster of big data providers, which includes Dish, DirecTV and Charter
- In 44 markets, incorporating big data for the first time
- New weighting design

Nielsen is confident that the measurement is scientifically sound and brings significant improvements in accuracy and reliability. We also recognize that there are business implications of changing audience estimates, and we are working with our clients on the timing of introducing these changes

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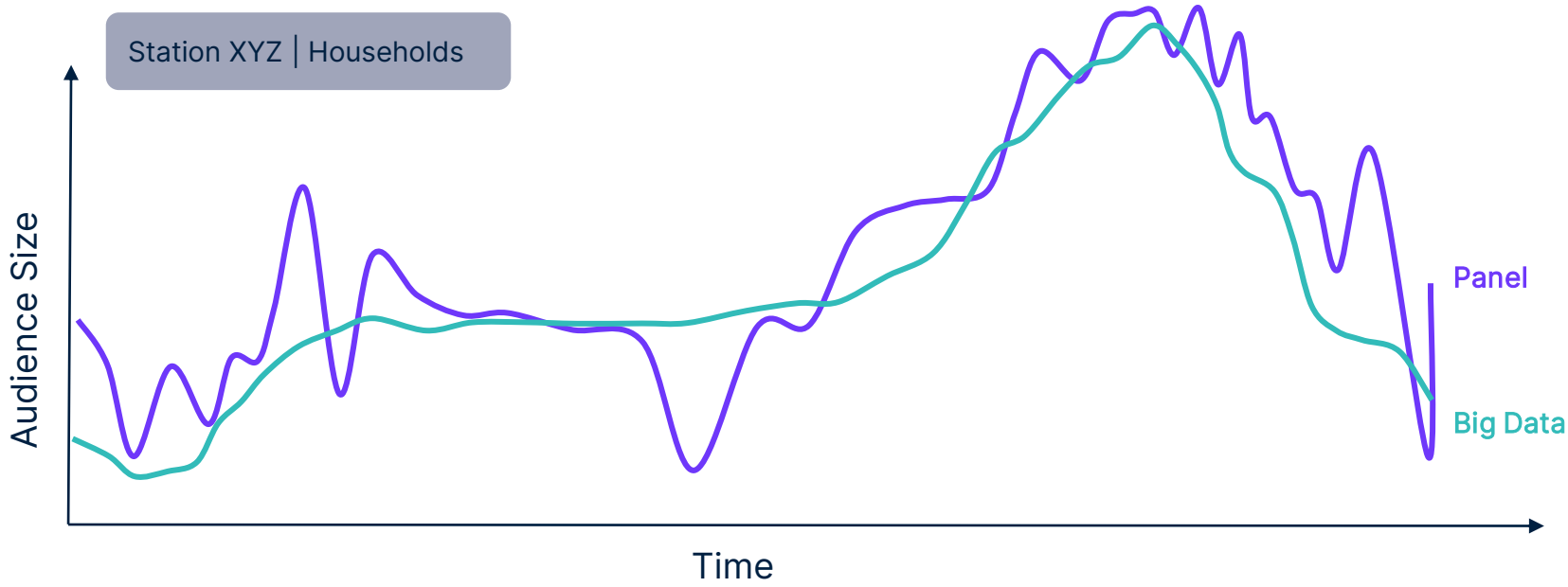
Mock Example

After demographics and viewers are modeled for Big Data, **Big Data is used to measure itself**.

Outside the Big Data footprint, both the Big Data and Panel are weighted to the population outside the Big Data footprint.

The difference between these projections at the aggregate level informs the calibration factors.



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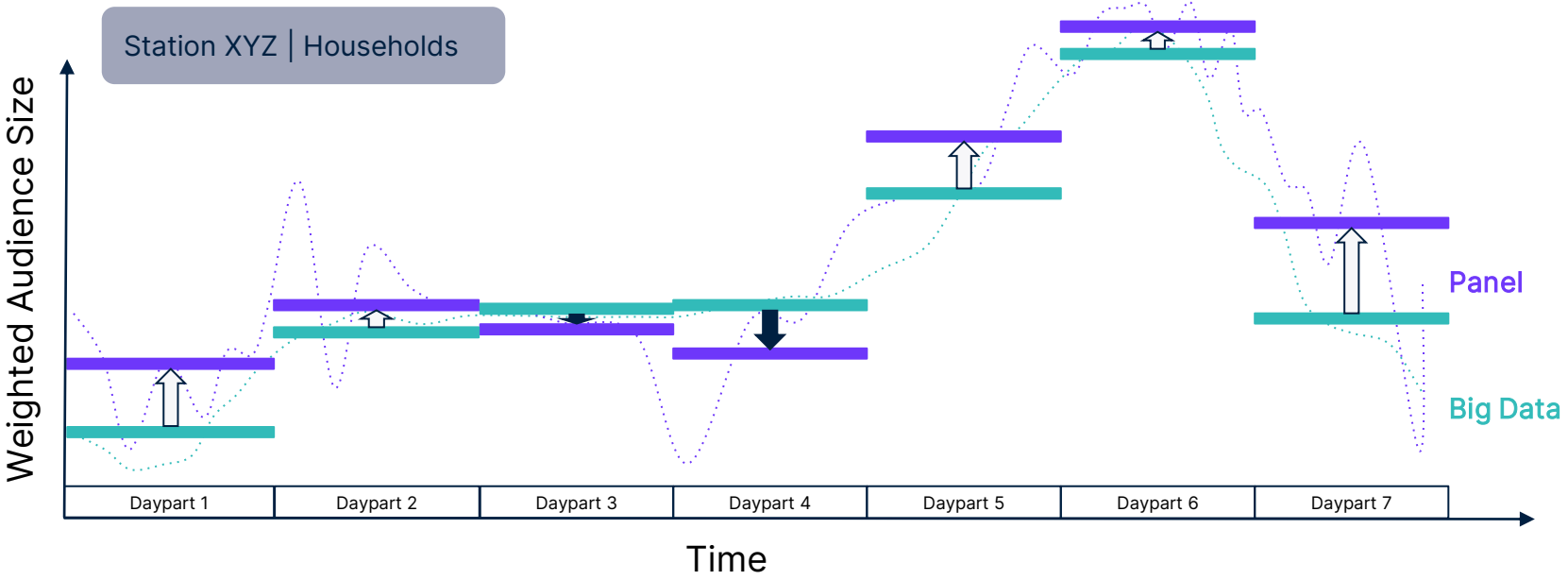
Calibration factors calculate the scale of the difference between Panel and Big Data at a station/ daypart/ demo level:

Non-provider panel weights / Non-provider RPD weights



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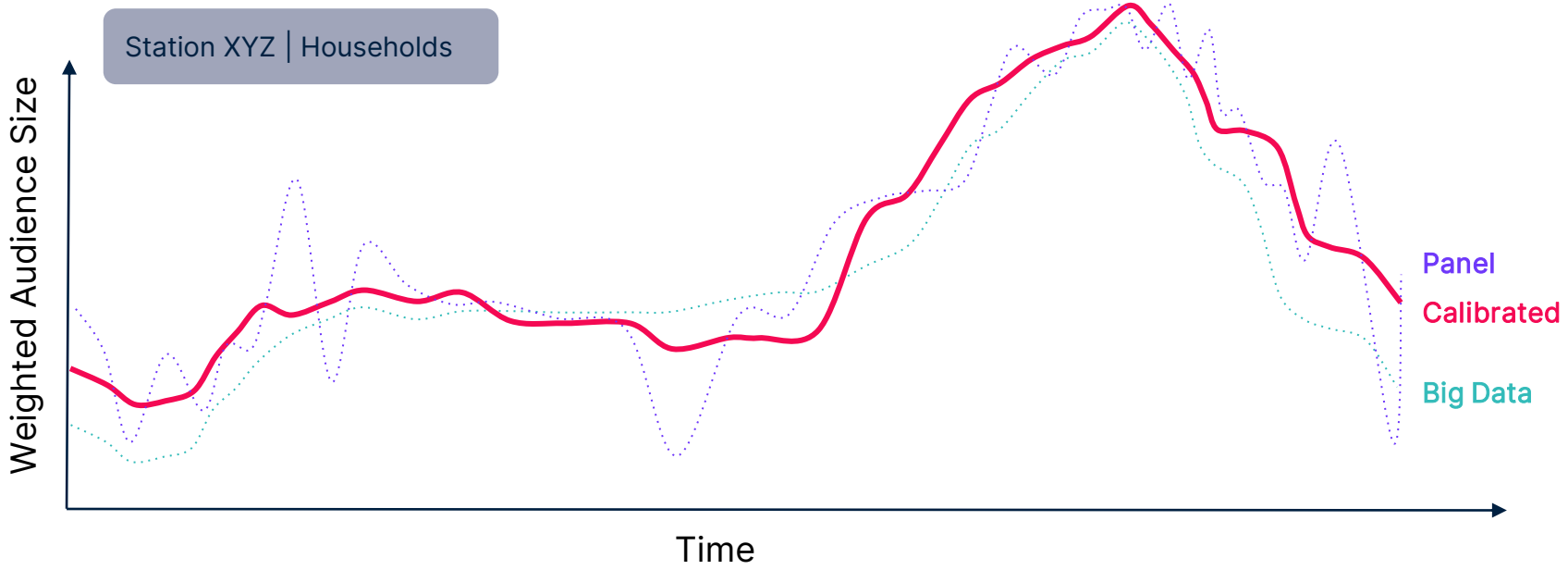
Calibration factors are applied to each program within a daypart which **maintains the flows of Big Data** while bringing the **aggregate audience in line with the Panel** at the station/ daypart/ demo level.



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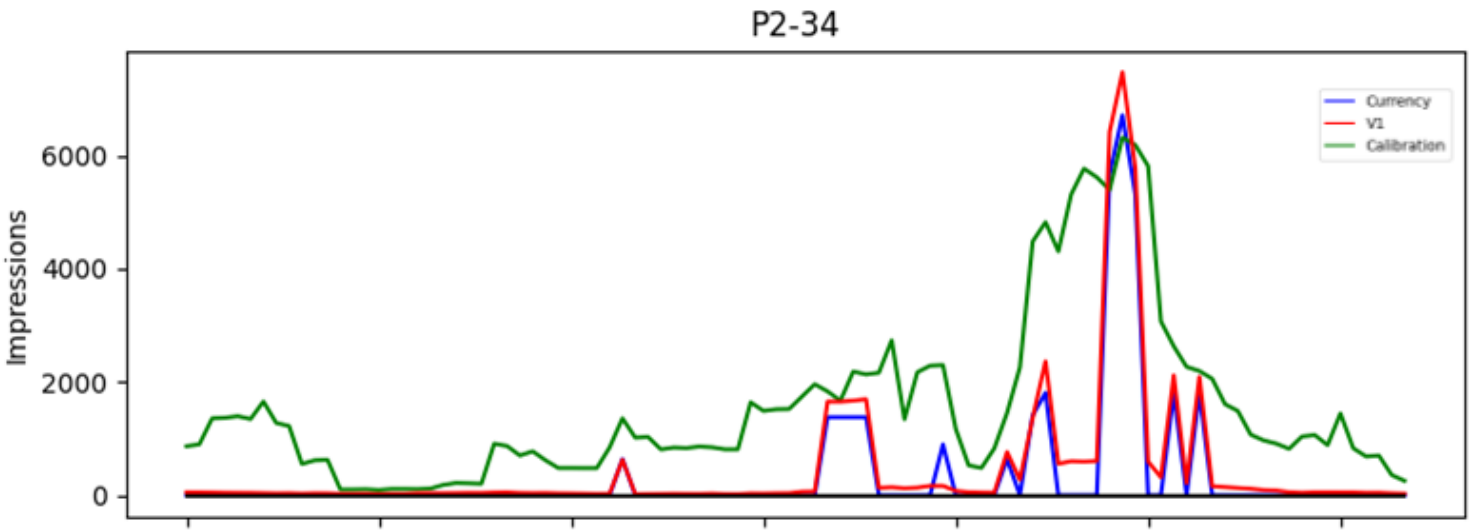
Below is an example of what this Calibration looks like on live data from a Secondary Station in New York.

- Fewer zero ratings
- Smoother trends



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Case Study: New York

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100% reduction in zero-rated quarter hours for all major Broadcasters & Cable Networks

Relative error **decreased** for every Daypart

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Average Relative Error Assessment

New York Market by Daypart

Average Relative Error			
Daypart	Panel Only Currency	Big Data + Panel Calibration	Diff (Calibration - Currency)
11:30P-5A	32.2%	24.0%	-8.2%
5A-8A	33.6%	24.6%	-8.9%
8A-1P	25.3%	18.6%	-6.7%
1P-5P	26.4%	21.2%	-5.2%
5P-8P	22.3%	20.2%	-2.1%
8P-11:30P	20.0%	15.3%	-4.7%

Relative error decreases with the Calibration Method compared to Panel Only Currency

Weight averaged based on rating level, Stream: Live+SD | Stations: all cable and all broadcast stations from DMA of origin whose Currency P2+ average ratings were 0.05+ who were also carried on RPD provider(s) = 53 stations | Time Periods: April 26, 2023 – May 25, 2023 | Dayparts (6): 11:30P-5A, 5A-8A, 8A-1P, 1P-5P, 5P-8P, 8P-11:30P | Demos (5): HH, P2+, P2-24, P25-54, P55+

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Total Error Assessment

New York Market by Daypart

MSE Difference		
Demo	% Positive	% Negative
11:30P-5A	87.8%	8.6%
5A-8A	88.5%	7.3%
8A-1P	88.9%	7.1%
1P-5P	89.2%	6.9%
5P-8P	89.5%	6.8%
8P-11:30P	88.9%	7.6%

A positive MSE Diff implies that there is more error for Currency which implies that adopting the Calibration methodology is preferable

Stream: Live+SD | Stations: all cable and all broadcast stations from DMA of origin whose Currency P2+ average ratings were 0.05+ who were also carried on RPD provider(s) = 53 stations | Time Periods: April 26, 2023 – May 25, 2023 | Dayparts (6): 11:30P-5A, 5A-8A, 8A-1P, 1P-5P, 5P-8P, 8P-11:30P | Demos (5): HH, P2+, P2-24, P25-54, P55+

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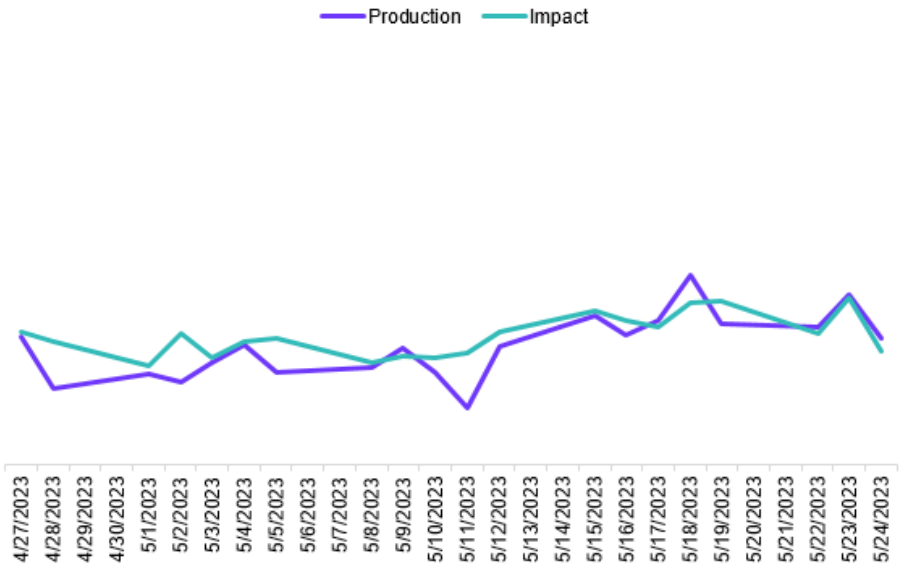
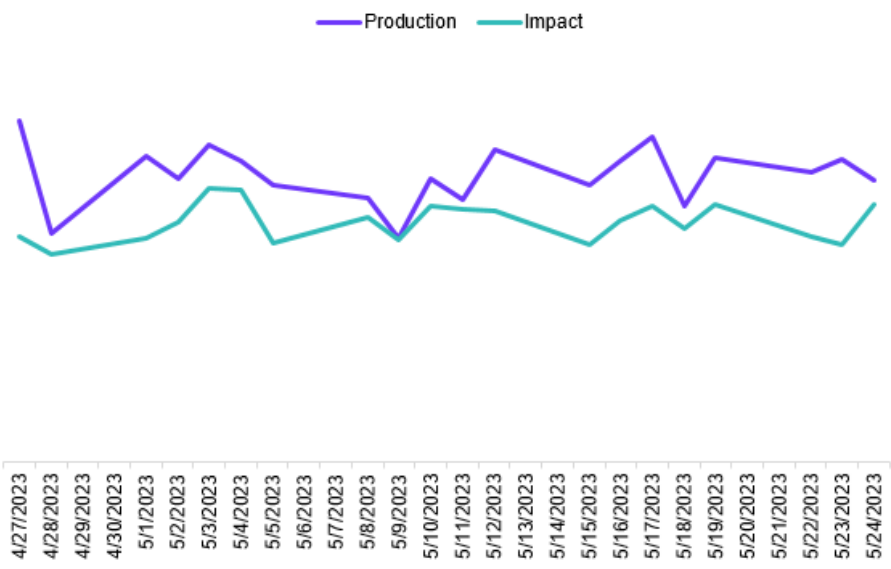
Increased Stability in 6 AM Local News Programs

Broadcast Example 1



36% decrease in standard deviation from 7.2K to 4.6K impressions

Broadcast Example 2



36% decrease in standard deviation from 6.7K to 4.3K impressions

Source: NLTV Program, Live+SD, P25-54, May'23 Production, May'23 Impact, Local News programs, Daily impressions, Programs are M-F 6-7a

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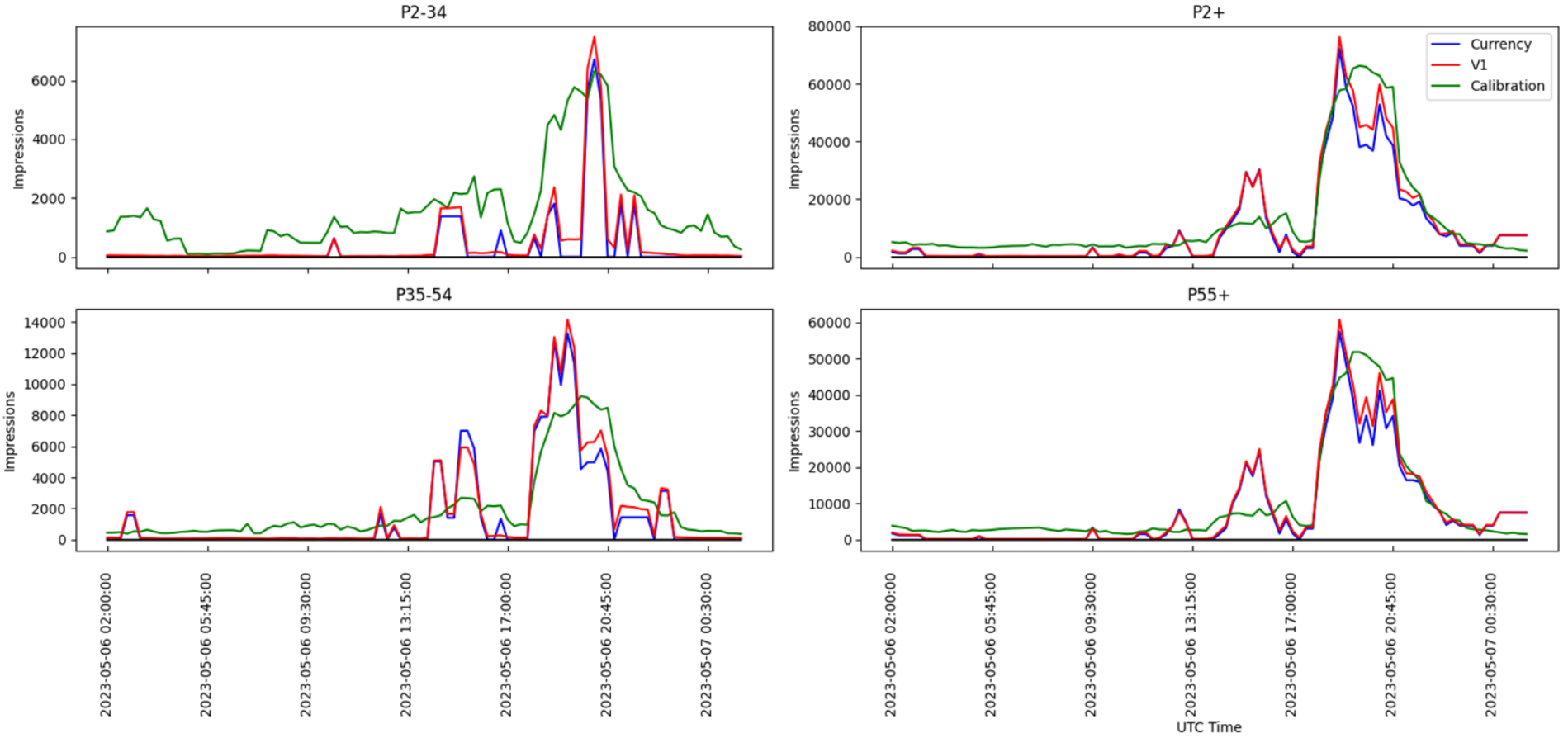
Example: Saturday | Secondary Station

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