

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Amendment of Part 74 of the Commission's Rules)	MB Docket No. 18-119
Regarding FM Translator Interference)	

COMMENTS

**Beasley Media Group, LLC
Cox Media Group, LLC
Gradick Communications, LLC
iHeartCommunications, Inc.
Neuhoff Corp.
Radio One Licenses, LLC/Urban One, Inc.
Withers Broadcasting Companies**

August 6, 2018

SUMMARY

The Joint Commenters here support many of the initiatives of the Commission's Notice of Proposed Rulemaking ("*NPRM*") *In the Matter of Amendment of Part 74 of the Commission's Rules Regarding FM Translator Interference*, MB Docket No. 18-119.

Specifically, the Joint Commenters support the Commission's first four reforms, "(1) allowing FM translators to resolve interference issues by changing channels to any available frequency using a minor modification application; (2) requiring a minimum number of listener complaints to be submitted with any FM translator interference claim; (3) standardizing the information that must be included within such a listener complaint; (4) streamlining and expediting interference complaint resolution procedures." These reforms, spearheaded by the National Association of Broadcasters and with wide backing, are well supported in the record.

However, the Joint Commenters caution the Commission against establishing an outer contour limit for which listener complaints of interference from FM translator stations would not be actionable. In particular, the 54 dB μ contour limit proposed in the *NPRM*, "would fundamentally change the existing balance of equities between translators and other broadcast stations and affect the listening options for listeners outside the other broadcast station's protected contour" to the detriment of the public and full-service FM stations, which are not, in contrast to FM translator stations, repeater stations.

If, after the adoption of the *NPRM* reforms, with the experience gained thereunder, the Commission still finds a need to consider further changing the balance between full-power FM stations and FM translators, any action by the Commission to limit the protections against interference from FM translators afforded the listeners of full-service

FM stations based on an outer contour limit must be taken only upon a firm, empirical foundation.

These Comments present an empirical study of distant listening, as measured in the real world by Nielsen Audio, tied to the listeners' home zip codes and the stations' F(50,50) predicted contours, which document that across all Nielsen PPM/Diary-measured Metros (43 Metros), a significant number and percentage of listeners reside outside the average station's 54 dB μ contour. Moreover, a commissioned Nielsen survey of radio listeners establishes the close ties between at-home listening and away listening, with 82% of respondents agreeing or strongly agreeing that "I usually listen to the same radio stations while I am away from my home that I listen to while I am at home."

Specifically, for all 43 Metros, the analysis documents that *each* FM radio station has an average of 25,872 Nielsen-measured listeners residing outside the station's 54 dB μ contour. By percentage of total listeners to each station, on average, 13.4% of the listeners to each FM radio station reside outside the station's 54 dB μ contour. When at-home Nielsen data is analyzed, on average, 29.8% of the at-home listeners to each FM radio station reside outside the station's 54 dB μ contour.

In any market, rated FM radio stations will range from powerhouse Class Cs or Bs to small Class As or modestly-powered noncommercial FM stations. Thus, any individual station could have significantly more Nielsen measured listeners outside the marked contours than the averages documented by the study. Examples of Metros where measured listenership exceeds the averages are illuminating. For example, in the Baltimore, Maryland Metro, 26.2% of the listeners to each FM radio station reside outside the station's 54 dB μ contour.

Indeed, it is not until the 39 dB μ contour is studied that the All Metros percentage of listeners outside that contour dips below two percent (the interference level adopted by the Commission for the development of DTV). Even then, the average number of Nielsen-measured listeners residing outside the station's 39 dB μ contour is 2,432 listeners per station.

These Comments also present the results of a Nielsen survey of radio listening at-home and near-home, which establish the strong tie between at-home listening and listening outside the home. The Nielsen Survey statistically confirms the common-sense expectation that at-home radio listening forms the foundation of out-of-home radio listening, and if a radio signal is interfered with at the home base, the typical radio listener will, both at-home and out-of-home, tune elsewhere. Moreover, most of the out-of-home radio listening occurs within 5 miles of home, and most listeners tune into the same station when they leave home, again underscoring that at-home listening is foundational.

The Joint Commenters urge the Commission to adopt the consensus reforms of the *NPRM*, and to gauge the impact of those reforms before undertaking any fundamental change between full-service FM and FM translator stations based on an outer contour limit. The empirical data demonstrate that the proposed 54 dB μ contour limit would allow significant numbers and percentages of current listeners of full-service FM stations to be subject to interference from FM translators without remedy, and thus would be contrary to the public interest.

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COMMENTS

The undersigned radio broadcasters (the “Joint Commenters”) hereby submit these Comments in response to the Commission’s Notice of Proposed Rulemaking in the above-captioned proceeding.¹

In the *NPRM*, the Commission seeks comments on six areas of potential changes to the Commission’s rules and process in handling complaints of interference to the reception by the public of FM radio service from the operation of FM translator stations.² The Joint Commenters support the Commission’s tentative conclusions for the first four reforms: “(1) allowing FM translators to resolve interference issues by changing channels to any available frequency using a minor modification application; (2) requiring a minimum number of listener complaints to be submitted with any FM translator interference claim; (3) standardizing the information that must be included within such a listener complaint; (4) streamlining and expediting interference complaint resolution procedures.”³ These reforms are well supported in

¹ *In the Matter of Amendment of Part 74 of the Commission’s Rules Regarding FM Translator Interference*, Notice of Proposed Rulemaking, FCC 18-60, MB Docket No. 18-119 (rel. May 10, 2018) (“*NPRM*”). The Joint Commenters are long standing FM radio broadcasters via full-service FM radio stations, as well as, for certain of the Joint Commenters, FM translator stations.

² *NPRM* at ¶ 1.

³ *Id.* To the extent there is a change in Section 74.1203(a)(3), the Joint Commenters also concur with the sixth proposal: “(6) modifying the scope of interference complaints permitted to be filed by affected stations at the application stage” *id.*, to conform Section 74.1204(f) to

the Petition for Rulemaking of the National Association of Broadcasters (“NAB”)⁴ and previously filed comments in that rulemaking docket.⁵

The Joint Commenters focus here is on the fifth proposal explored in the *NPRM*: “(5) establishing an outer contour limit for the affected station beyond which listener complaints would not be considered actionable.”⁶

The Commission has always emphasized the secondary status of FM translators vis-à-vis full-service FM stations. As stated in the *NPRM*: “[u]nder the rules, FM translators must not cause either predicted or actual interference to any authorized broadcast station.... Because of their potential negative impact on full service FM stations, translators are authorized on a secondary basis only.... This secondary status represents a balance between expanding local listener options and the ‘technical degradation to the overall broadcasting system that could result from a proliferation of translator stations.’”⁷

Yet, in this time of exponential “proliferation of translator stations,” the Commission has put forth a proposed modification of Section 74.1203(a)(3) of its rules “to state that no complaint of actual interference will be considered actionable if the alleged interference occurs outside the desired station’s 54 dBμ contour.”⁸ In the *NPRM*, the Commission observes that such a rule modification “would fundamentally change the existing balance of equities

Section 74.1203(a)(3). However, as detailed herein, the designation of the 54 dBμ contour of the desired station for Section 74.1203(a)(3) would not serve the public interest. Therefore, the proposed modification of Section 74.1204(f) in the *NPRM* likewise would not promote the public interest.

⁴ National Association of Broadcasters, Petition for Rulemaking, RM-11787 (Apr. 20, 2017).

⁵ See, e.g., Alpha Media LLC, Beasley Media Group, LLC, iHeartMedia + Entertainment, Inc., and KMMY, Inc., Statement in Support of Petition for Rulemaking, RM-11787 (May 30, 2017).

⁶ See *NPRM* at ¶ 1.

⁷ See *id.* at ¶ 2 (footnotes omitted).

⁸ See *id.* at ¶ 28.

between translators and other broadcast stations and affect the listening options for listeners outside the other broadcast station's protected contour" and "[w]e are concerned that setting an outer limit for listener interference complaints at the affected station's protected contour would be inconsistent with translators' role as a secondary service."⁹ Yet, the Commission also desires "to promote greater certainty and stability for translator licensees."¹⁰

The Joint Commenters respectfully urge the Commission to promote greater certainty and stability for translator licensees via adoption of *NPRM* proposals 1, 2, 3 and 4, that is, channel changes for FM translators causing interference as minor modifications, and adoption of the interference complaint process reforms recommended by NAB with industry consensus, as fine-tuned in the *NPRM*. The channel change relaxation and the complaint process reforms should go a very long way towards promoting the Commission's certainty and stability goals for FM translators, while preserving the primary status of full-service stations and their established listeners. The Commission should evaluate the impact of these reforms on the FM translator interference compliant resolution process, while maintaining the appropriate protection of full-service FM stations, which, in contrast to FM translators, are not repeater outlets.

If, after the adoption and implementation of the *NPRM* reforms, with the experience gained thereunder, the Commission still finds a need to consider further changing the balance between full-power FM stations and FM translators, any action by the Commission to limit the protections against interference from FM translators afforded the listeners of full-service FM stations based on an outer contour limit must be taken only upon a firm, empirical foundation.

⁹ See *NPRM* at ¶ 26.

¹⁰ See *NPRM* at ¶ 27.

There is no such empirical foundation for selecting the 54 dB μ desired-station contour as an outer contour limit for actionable interference complaints against FM translator operations. That contour level may feel more generous to full-service stations than the 60 dB μ desired-station contour limit proposed by some,¹¹ but as documented here, a 54 dB μ contour limit would, in fact, subject significant numbers and percentages of Nielsen-measured listeners to unmediated interference from secondary-service FM translators. That not only would hurt current listeners, but also, by creating more interference on the FM band, would help drive those established listeners to non-broadcast venues.

Specifically, the Joint Commenters are supplying here data-driven evidence that should strongly caution the Commission against the adoption, even down the road, of a 54 dB μ contour limit for FM translator interference complaints. As detailed in the attached Declaration (the “Declaration”) of Jeff Littlejohn, Executive Vice President-Engineering & Systems Integration of iHeartCommunications, Inc. (“iHeart”), one of the Joint Commenters here, in order to provide the Commission with hard data as to real world listening by the public to FM radio stations at various signal strengths, iHeart obtained measured-audience data from Nielsen Audio.¹² iHeart employed an industry-standard computer program to associate, for the analyzed markets, each station’s Nielsen audience data (reported by home zip code) with the

¹¹ See Rulemaking Docket RM-11786.

¹² Nielsen Audio employs Portable People Meters (“PPMs”) in most of the largest radio markets in the United States. Participants from the public (called “panelists”), who must be unaffiliated with all in-market radio stations, carry their PPMs throughout the day, and the PPMs log the audio the panelists are exposed to. Nielsen also employs paper listening logs, whereby diary panelists record their listening manually. Nielsen uses the PPM and diary data to produce local ratings reports for each radio market. Nielsen data is used by the radio industry and advertisers to make programming and advertising-placement decisions.

predicted F(50,50) contours of that FM radio station to determine where, by contour strength,¹³ that station's current FM listeners reside, based on the panelists' home zip codes.¹⁴ These results were imported to a Microsoft Excel pivot table and then collated into charts (attached to the Declaration), providing graphic documentation of audience distribution at a continuum of signal strengths. As discussed in more detail below, a commissioned Nielsen Study of at-home and near-home radio listening establishes the close ties between at-home listening and away listening. For example, 82% of respondents agree or strongly agree that "I usually listen to the same radio stations while I am away from my home that I listen to while I am at home." Consequently, the Nielsen-Comstudy data detailed in the attached charts, which are based on the zip codes of the measured audience's residences, plotted against predicted contour signals, serve as the best current measure available as to radio listening at various contour strengths.

As the data presented here makes clear, there is extensive FM radio listening by the public, both as measured by numbers and by percentages, well past the proposed 54 dBμ contour cut-off.¹⁵

¹³ For each radio station within the data set, the industry-recognized software program "ComStudy 2.2" by RadioSoft was used to calculate the various signal strength contours of each station, and to generate a list of all zip code centroids contained inside of each such contour. The data was then summed by station for listening (derived from the panelists' home zip codes) occurring outside of each contour value studied.

¹⁴ Because Nielsen audience data provides the zip codes of the panelists' residences, zip code centroid location data was used for the analysis here.

¹⁵ This analysis is based on Nielsen data for Fall 2017, PPM/Diary Combined DMA areas, Monday-Sunday 6a-6a, Persons Age 12+. The analyzed Nielsen data covers all 43 markets for which Nielsen publishes PPM/Diary Combined data sets (the "Analyzed Markets"). Nielsen provided CUME Persons data detailing listening to each station in the Analyzed Markets by the panelists' home zip codes. (CUME Persons is defined by Nielsen as "[t]he total number of different persons who tune to a radio station during the course of a daypart for at least five minutes" as measured weekly.) Only data regarding full power domestic stations in the FM broadcast band were included; stations that were reported at the time as being part of a simulcast (programming duplicated on additional channel(s) in the same or nearby areas) were excluded.

The first three charts attached to the Declaration reflect the data for all 43 Metros in the Nielsen data set (“All Metros”). The subsequent charts (Charts #4-15) reflect data for individual Metros (from the 43 Metros), and demonstrate vividly that in many Metros, there is even more substantial distant measured-audience than is evident from the All Metro averages. Key to understanding the charts, is that, while the listed figures are averages, those *averages reflect the Nielsen-measured audience for each radio station in the Metro rated with a Nielsen audience share*. In any market, rated stations will range from powerhouse Class Cs or Bs to small Class As or modestly-powered noncommercial FM stations. Thus, any individual station could have significantly more Nielsen measured listeners outside the marked contours than the averages shown on the charts.

Chart #1, “All Metros/Average Station CUME” is the presentation of this data combined and averaged for all the Analyzed Markets. The horizontal values are the signal strength contours, and the vertical values are the average number of Nielsen-measured listeners per radio station residing outside each signal strength level (as determined by FCC F(50,50) methodology per ComStudy 2.2). For example, when Chart #1 is viewed at the 54 dB μ marker, it shows that, on average, *each* FM radio station in the study has 25,872 Nielsen-measured listeners residing outside the measured station’s F(50,50) 54 dB μ contour. At the 51 dB μ marker, the average number of measured listeners residing outside each station’s 51 dB μ contour is 16,869 listeners per station. At the 48 dB μ marker, the average number of measured listeners residing outside each station’s 48 dB μ contour is 11,053 listeners per station. At the 45 dB μ marker, the average number of measured listeners residing outside the station’s 45 dB μ contour is 6,917 listeners per station. At the 42 dB μ marker, the average number of measured listeners residing outside the station’s 42 dB μ contour is 4,338 listeners per station. At the 39 dB μ

marker, the average number of measured listeners residing outside the station's 39 dBμ contour is 2,432 listeners per station. At the 37 dBμ marker, the average number of measured listeners residing outside the station's 37 dBμ contour is 1,688 listeners per station. And so on.

Chart #2, "All Metros/Percentage of Total CUME" is the presentation of the same data as Chart #1, except that the measured average number of listeners outside of each contour goalpost is presented as a *percentage* of total listeners to each station. For example, when Chart #2 is viewed at the 54 dBμ marker, it shows that, on average, 13.4% of the listeners to each FM radio station in the study reside outside the measured station's F(50,50) 54 dBμ contour. Moving to the right, on average, 9.1% of the listeners to each FM radio station in the study reside outside the station's 51 dBμ contour; 6.2% of the listeners reside outside the station's 48 dBμ contour; 4.0% of the listeners reside outside the station's 45 dBμ contour; 2.6% of the listeners reside outside the station's 42 dBμ contour; 1.7% of the listeners reside outside the station's 39 dBμ contour; 1.2% of the listeners reside outside the station's 37 dBμ contour; and so on. As with the data presented on Chart #1, the data is for the average of all the stations in all the Analyzed Markets, and therefore any individual station could have a significantly greater percentage of measured listeners outside the marked contours than the averages presented.

Chart #3, "All Metros/Percentage of at HOME CUME" shows the average percentage of listeners that are listening at home, outside of each contour, as a percentage of listeners to each station, like Chart #2, but limited to *only listening that occurs at home* (as detected by the PPM in-home beacon device or as self-reported for those respondents that are not PPM panelists).¹⁶ For example, when Chart #3 is viewed at the 54 dBμ marker, it shows that, on

¹⁶ As explained in the Declaration, PPMs are designed to reliably detect the presence of Bluetooth™ enabled beacons that are placed by panelists in their households. Nielsen has validated, with rigorous lab and field testing, together with real world use in Nielsen's panels,

average, 29.8% of the at-home listeners to each FM radio station in the study reside outside the measured station's F(50,50) 54 dB μ contour. Moving to the right, on average, 20.5% of the at-home listeners reside outside the station's 51 dB μ contour; 14.0% of the at-home listeners reside outside the station's 48 dB μ contour; 9.2% of the at-home listeners reside outside the station's 45 dB μ contour; 6.6% of the at-home listeners reside outside the station's 42 dB μ contour; 3.2% of the at-home listeners reside outside the station's 39 dB μ contour; 2.3% of the at-home listeners reside outside the station's 37 dB μ contour; and so on. Again, these are averages and an individual station may have greater percentages of at-home listenership outside the marked contours.

As noted above, Charts #1-3 present averages for all the stations with Nielsen-measured listeners in all the Analyzed Markets. As examples as to how measured listenership can depart from these averages, Charts #4-15 present the data documented in Chart #2 – measured average listeners residing outside of each contour as a *percentage* of total listeners to each station – but exclusively for individual Nielsen Metros.

For example, Chart #4 documents that, on average for the stations in the Austin, Texas Metro, 11.5% of the listeners to each FM radio station reside outside the measured station's F(50,50) 54 dB μ contour; 8.7% of the listeners reside outside the station's 51 dB μ contour; 7.1% of the listeners reside outside the station's 48 dB μ contour; 4.1% of the listeners reside outside the station's 45 dB μ contour; 3.2% of the listeners reside outside the station's 42 dB μ contour; 2.3% of the listeners reside outside the station's 39 dB μ contour; 1.9% of the listeners reside outside the station's 37 dB μ contour; and so on.

that the PPM can reliably detect the presence of the beacons either in the home itself or within a reasonably close proximity. Moreover, Nielsen has confirmed that the long term use of PPM in home beacons provides a solid basis for detecting and measuring in and out of home exposure.

The Baltimore, Maryland Metro data details even stronger distant listening.

Chart #5 documents that, on average for the stations in the Baltimore Metro, 26.2% of the listeners to each FM radio station reside outside the measured station's F(50,50) 54 dBμ contour; 12.7% of the listeners reside outside the station's 51 dBμ contour; 9.5% of the listeners reside outside the station's 48 dBμ contour; 7.2% of the listeners reside outside the station's 45 dBμ contour; 4.4% of the listeners reside outside the station's 42 dBμ contour; 1.3% of the listeners reside outside the station's 39 dBμ contour; 0.8% of the listeners reside the station's 37 dBμ contour; and so on.

The individual Metro Charts document that if listener complaints were excluded outside of the desired station's 54 dBμ contour, on average in each Metro, these percentages of listeners per station would be excluded from interference remediation: 26.2% in Baltimore; 25.8% in Providence; 19.9% in Memphis; 19.4% in Hartford; 17.6% in Raleigh; 16.0% in Philadelphia; 15.9% in Phoenix; 14.1% in Orlando; 12.4% in Charlotte; 11.5% in Austin; 11.4% in Detroit; and 10.6% in San Antonio. As noted above, across all Metros in the Analyzed Markets (Chart #2), on average, 13.4% of the listeners reside outside the station's 54 dBμ contour. In contrast, when the Commission adopted a *de minimis* interference standard for the development of DTV allotments/assignments, modifications could not result in more than a two percent increase in interference to the population served by another station.¹⁷

Even if the benchmark for interference remediation was the desired station's 42 dBμ contour, on average in each Metro, these percentages of listeners per station would be excluded from interference remediation: 4.4% in Baltimore; 4.0% in Providence; 3.4% in

¹⁷ See *Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, 13 FCC Rcd 7418, 7450 [¶ 80] (1998).

Memphis; 5.2% in Hartford; 4.2% in Raleigh; 5.3% in Philadelphia; 4.1% in Phoenix; 4.1% in Orlando; 4.3% in Charlotte; 3.2% in Austin; 3.0% in Detroit; and 3.1% in San Antonio.¹⁸

Further, if the benchmark for interference remediation was the desired station's 39 dBμ contour, on average in each Metro, these percentages of listeners per station would be excluded from interference remediation: 1.3% in Baltimore; 2.2% in Providence; 1.6% in Memphis; 3.3% in Hartford; 2.7% in Raleigh; 3.0% in Philadelphia; 3.2% in Phoenix; 3.1% in Orlando; 3.5% in Charlotte; 2.3% in Austin; 1.8% in Detroit; and 1.6% in San Antonio.¹⁹

To supplement the Nielsen Audio-based findings detailed above, a Nielsen Study of at-home and near-home FM radio listening was commissioned by the Joint Commenters (the "Nielsen Study").²⁰ The Nielsen Study found that:

- The vast majority (82%) of the surveyed radio listeners agree or strongly agree that "I usually listen to the same radio stations while I am away from my home that I listen to while I am at home."
- For most of the surveyed radio listeners (61%), more than half of their radio listening time occurs at home or within 5 miles of home.
- Even more of loyal station followers' time spent listening to radio (75%) occurs at home or within 5 miles of home.
- Radio station listeners prioritize their listening to their favorite station even after leaving their home, with 82% trying to listen to the same FM radio station when they leave their home.

¹⁸ As noted above, across all Metros in the Analyzed Markets (Chart #2), on average, 2.6% of the listening occurs outside the station's 42 dBμ contour.

¹⁹ As noted above, across all Metros in the Analyzed Markets (Chart #2), on average, 1.7% of the listening occurs outside the station's 39 dBμ contour.

²⁰ The Nielsen Study surveyed 1,000 radio listeners who listened to radio two or more hours in the past week, aged 18 and older (randomly-selected from prior Nielsen panelists), about their FM radio listening habits. The Nielsen Study results are presented in an attachment to the Declaration.

- Most listeners would be forced to find a new FM station if a translator causes interference at home, with 81% very likely or somewhat likely to find another similar FM station to listen to at home if they could not listen to their favorite FM radio station at home because the audio could not be heard clearly.

Thus, the Nielsen Study statistically confirms the common-sense expectation that in-home FM radio listening forms the foundation of FM radio listening, with listeners' favorite radio stations remaining consistent whether they are at home or away from home. Indeed, 82% of these listeners try to listen to the same FM radio station when they leave their home. Moreover, for 61% of respondents, more than half of their radio listening time occurs at home or within 5 miles of home, which is amplified for loyal station followers (75% of loyalists' time spent listening to radio occurs at home or within 5 mile of home). Furthermore, the Nielsen Study establishes that if a radio signal is interfered with at the home base, the typical radio listener will tune elsewhere, again underscoring that at-home listening is foundational.

In sum, the empirical data establishes that the proposed 54 dBμ contour limit on actionable interference from FM translators would allow significant numbers and percentages of current listeners of full-service FM stations to be subject to interference from FM translators without remedy. Accordingly, the Joint Commenters urge the Commission to adopt the consensus reforms of the *NPRM*, and to gauge the impact of those reforms before undertaking any fundamental change in the balance between full-service FM stations and FM translator stations via an outer contour limit on actionable interference complaints.

Respectfully submitted,

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August 6, 2018

DECLARATION

I, Jeff Littlejohn, hereby declare under penalty of perjury that:

1. I am Executive Vice President-Engineering & Systems Integration of iHeartCommunications, Inc. (“iHeart”).

2. iHeart is joining with other radio broadcasters in submitting comments (the “Joint Comments”) to the Federal Communications Commission (the “FCC”) on its Notice of Proposed Rulemaking in the Matter of Amendment of Part 74 of the Commission’s Rules Regarding FM Translator Interference, MB Docket No. 18-119 (May 10, 2018) (the “*NPRM*”).

3. As part of the *NPRM*, the Commission is considering “establishing an outer contour limit for the affected station beyond which listener complaints [of interference from an FM translator station] would not be considered actionable.” *See NPRM* at ¶ 1. Specifically, the *NPRM* tentatively proposes the designation of the 54 dBμ contour of the “desired station” as the outer contour limit for actionable listener complaints. *See id.* at ¶ 28.

4. To provide the FCC with hard data as to real world listening by the public to FM radio stations at various signal strengths, iHeart obtained audience data from Nielsen Audio for presentation here. As described further below, iHeart employed an industry-standard computer program to associate, for the analyzed markets, each station’s Nielsen audience data (reported by home zip code) with the predicted F(50,50) contours of that FM radio station to determine where, by contour strength, that station’s current FM listeners reside, based on the panelists’ home zip codes. These results were imported to a Microsoft Excel pivot table and then collated into charts (attached), providing graphic documentation of audience distribution at a continuum of signal strengths. As is clear from the attached charts, there is extensive FM radio listening by the public, both as measured by numbers and by percentages, well past the proposed 54 dBμ contour cut-off.

5. As to the data source, Nielsen Audio employs Portable People Meters (“PPMs”) in most of the largest radio markets in the United States. Participants from the public (called “panelists”), who must be unaffiliated with all in-market radio stations, carry their PPMs throughout the day, and the PPMs log the audio the panelists are exposed to. *See* <http://www.nielsen.com/us/en/solutions/capabilities/audio.html>. Nielsen also employs paper listening logs, whereby diary panelists record their listening manually. Nielsen uses the PPM and diary data to produce local ratings reports for each radio market. *See* <http://www.nielsen.com/us/en/solutions/capabilities/audio.html>. Nielsen data is used by the radio industry and advertisers to make programming and advertising-placement decisions.

6. For the study here, Nielsen data for Fall 2017, PPM/Diary Combined DMA areas, Monday-Sunday 6a-6a, Persons Age 12+ is the basis for analysis. The analyzed Nielsen data covers all 43 markets for which Nielsen publishes PPM/Diary Combined data sets (the “Analyzed Markets”). Nielsen provided CUME Persons data detailing listeners to each station in the Analyzed Markets by the panelists’ home zip codes. (CUME Persons is defined by Nielsen as “[t]he total number of *different* persons who tune to a radio station during the course

of a daypart for at least five minutes” as measured weekly.) Only data regarding full power domestic stations in the FM broadcast band were included; stations that were reported at the time as being part of a simulcast (programming duplicated on additional channel(s) in the same or nearby areas) were excluded.

7. Next, for each radio station within the data set, the industry-recognized software program “ComStudy 2.2” by RadioSoft (<http://www.radiosoft.com/index.php?id=983>) was used to calculate the various signal strength contours of each station, and to generate a list of all zip code centroids contained inside of each such contour. The data was then summed by station for listeners (derived from the panelists’ home zip codes) residing outside of each contour value studied. (Out of an abundance of caution, only zip codes that were determined by the ComStudy program to be inside the 27 dB μ contour of the station were considered in the sums, that is, a “doughnut” of listeners between the outer (larger 27 dB μ) and the inner (smaller) contour of interest were considered and summed.) These results were then imported to a Microsoft Excel pivot table for further analysis.

8. Next, for each Metro for which Nielsen PPM/Diary data was provided, the CUME Persons of all stations reported by Nielsen Audio was then averaged at each studied signal level increment to obtain the Average CUME Persons per station for such level. (Nielsen Metros generally correspond to the Metropolitan Statistical Areas (MSAs) defined by the U.S. Government’s Office of Management and Budget.) Average CUME Persons for each signal level also has been expressed as a percentage of the Average CUME Persons at each signal strength. The resulting data was then plotted to line charts for presentation. These charts are attached.

9. Chart #1, “All Metros/Average Station CUME” is the presentation of the foregoing data combined and averaged for all the Analyzed Markets. The horizontal values are the signal strength contours, and the vertical values are the average number of measured listeners per radio station outside each signal strength level (as determined by FCC F(50,50) methodology per ComStudy 2.2). For example, when Chart #1 is viewed at the 54 dB μ marker, it shows that, on average, *each* FM radio station in the study has 25,872 Nielsen-measured listeners residing outside the measured station’s F(50,50) 54 dB μ contour. At the 51 dB μ marker, the average number of measured listeners residing outside each station’s 51 dB μ contour is 16,869 listeners per station. At the 48 dB μ marker, the average number of measured listeners residing outside each station’s 48 dB μ contour is 11,053 listeners per station. At the 45 dB μ marker, the average number of measured listeners residing outside the station’s 45 dB μ contour is 6,917 listeners per station. At the 42 dB μ marker, the average number of measured listeners residing outside the station’s 42 dB μ contour is 4,338 listeners per station. At the 39 dB μ marker, the average number of measured listeners residing outside the station’s 39 dB μ contour is 2,432 listeners per station. At the 37 dB μ marker, the average number of measured listeners residing outside the station’s 37 dB μ contour is 1,688 listeners per station. And so on. Note that Chart #1 presents the average of all the stations in all the Analyzed Markets, from powerhouse Class Cs or Bs to small Class As or modestly-powered noncommercial FM stations. Thus, any individual station could have significantly more measured listeners outside the marked contours than the averages shown on the chart.

10. Chart #2, “All Metros/Percentage of Total CUME” is the presentation of the same data as Chart #1, except that measured average listeners residing outside of each contour goalpost is presented as a *percentage* of total listening to each station. For example, when Chart #2 is viewed at the 54 dBμ marker, it shows that, on average, 13.4% of the listeners to each FM radio station in the study reside outside the measured station’s F(50,50) 54 dBμ contour. Moving to the right, on average, 9.1% of the listeners to each FM radio station in the study reside outside the station’s 51 dBμ contour; 6.2% of the listeners reside outside the station’s 48 dBμ contour; 4.0% of the listeners reside outside the station’s 45 dBμ contour; 2.6% of the listeners reside outside the station’s 42 dBμ contour; 1.7% of the listeners reside outside the station’s 39 dBμ contour; 1.2% of the listeners reside outside the station’s 37 dBμ contour; and so on. As with the data presented on Chart #1, the data is for the average of all the stations in all the Analyzed Markets, and therefore any individual station could have a significantly greater percentage of measured listeners outside the marked contours than the averages presented.

11. Chart #3, “All Metros/Percentage of at HOME CUME” shows the average listeners outside of each contour as a percentage of listeners to each station, like Chart #2, but limited to *only listening that occurs at home* (as detected by the PPM in-home beacon device or as self-reported for those respondents that are not PPM panelists). (PPMs are designed to reliably detect the presence of Bluetooth™ enabled beacons that are placed by panelists in their households. Nielsen has validated, with rigorous lab and field testing, together with real world use in Nielsen’s panels, that the PPM can reliably detect the presence of the beacons either in the home itself or within a reasonably close proximity. Moreover, Nielsen has confirmed that the long-term use of PPM in home beacons provides a solid basis for detecting and measuring in and out of home exposure.) When Chart #3 is viewed at the 54 dBμ marker, it shows that, on average, 29.8% of the at-home listeners to each FM radio station in the study reside outside the measured station’s F(50,50) 54 dBμ contour. Moving to the right, on average, 20.5% of the at-home listeners reside outside the station’s 51 dBμ contour; 14.0% of the at-home listeners reside outside the station’s 48 dBμ contour; 9.2% of the at-home listeners reside outside the station’s 45 dBμ contour; 6.6% of the at-home listeners reside outside the station’s 42 dBμ contour; 3.2% of the at-home listeners reside outside the station’s 39 dBμ contour; 2.3% of the at-home listeners reside outside the station’s 37 dBμ contour; and so on. Again, these are averages and an individual station may have greater percentages of at-home listenership outside the marked contours.

12. As noted above, Charts #1-3 present averages for all the stations with Nielsen-measured listeners in all the Analyzed Markets. As examples as to how measured listenership can depart from these averages, Charts #4-15 present the data documented in Chart #2 – measured average listeners residing outside of each contour as a *percentage* of total listeners to each station – but exclusively for individual Nielsen Metros.

13. For example, Chart #4 documents that, on average for the stations in the Austin, Texas Metro, 11.5% of the listeners to each FM radio station reside outside the measured station’s F(50,50) 54 dBμ contour; 8.7% of the listeners reside outside the station’s 51 dBμ contour; 7.1% of the listeners reside outside the station’s 48 dBμ contour; 4.1% of the listeners reside outside the station’s 45 dBμ contour; 3.2% of the listeners reside outside the station’s

42 dBμ contour; 2.3% of the listeners reside outside the station's 39 dBμ contour; 1.9% of the listeners outside the station's 37 dBμ contour; and so on.

14. The Baltimore, Maryland Metro data details even stronger distant listening. Chart #5 documents that, on average for the stations in the Baltimore Metro, 26.2% of the listeners to each FM radio station reside outside the measured station's F(50,50) 54 dBμ contour; 12.7% of the listeners reside outside the station's 51 dBμ contour; 9.5% of the listeners reside outside the station's 48 dBμ contour; 7.2% of the listeners reside outside the station's 45 dBμ contour; 4.4% of the listeners reside outside the station's 42 dBμ contour; 1.3% of the listeners reside outside the station's 39 dBμ contour; 0.8% of the listeners reside outside the station's 37 dBμ contour; and so on.

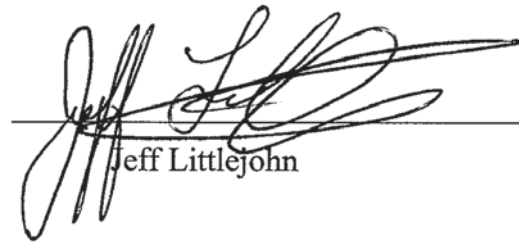
15. The individual Metro Charts document that if listener complaints were excluded outside of the desired station's 54 dBμ contour, on average in each Metro, these percentages of listeners per station would be excluded from interference remediation: 26.2% in Baltimore; 25.8% in Providence; 19.9% in Memphis; 19.4% in Hartford; 17.6% in Raleigh; 16.0% in Philadelphia; 15.9% in Phoenix; 14.1% in Orlando; 12.4% in Charlotte; 11.5% in Austin; 11.4% in Detroit; and 10.6% in San Antonio.

16. In contrast, if the benchmark for interference remediation was the desired station's 42 dBμ contour, on average in each Metro, these percentages of listeners per station would be excluded from interference remediation: 4.4% in Baltimore; 4.0% in Providence; 3.4% in Memphis; 5.2% in Hartford; 4.2% in Raleigh; 5.3% in Philadelphia; 4.1% in Phoenix; 4.1% in Orlando; 4.3% in Charlotte; 3.2% in Austin; 3.0% in Detroit; and 3.1% in San Antonio.

17. Further, if the benchmark for interference remediation was the desired station's 39 dBμ contour, on average in each Metro, these percentages of listeners per station would be excluded from interference remediation: 1.3% in Baltimore; 2.2% in Providence; 1.6% in Memphis; 3.3% in Hartford; 2.7% in Raleigh; 3.0% in Philadelphia; 3.2% in Phoenix; 3.1% in Orlando; 3.5% in Charlotte; 2.3% in Austin; 1.8% in Detroit; and 1.6% in San Antonio.

18. To supplement the Nielsen Audio data detailed above, a Nielsen survey of radio listening at-home and near-home was commissioned by the Joint Commenters (the "Nielsen Study"). The radio listening habits of 1,000 U.S. radio listeners aged 18 and over who listened to radio two or more hours in the past week (randomly-selected from prior Nielsen panelists) were queried by Nielsen. The Nielsen Study (presentation attached) found: (i) the vast majority (82%) of the surveyed radio listeners agree or strongly agree that "I usually listen to the same radio stations while I am away from my home that I listen to while I am at home" (Nielsen Study at 4-6); (ii) for most of the surveyed radio listeners (61%), more than half of their radio listening time occurs at home or within 5 miles of home (Nielsen Study at 8, 10, 11); (iii) even more of loyal station followers' time spent listening to radio (75%) occurs at home or within 5 miles of home (Nielsen Study at 9); (iv) radio station listeners prioritize their listening to their favorite station even after leaving their home, with 82% trying to listen to the same FM radio station when they leave their home (Nielsen Study at 13-15); and (v) most listeners would be forced to find a new FM station if a translator causes interference at home, with 81% very likely or somewhat likely to find another similar FM station to listen to at home if they could not listen

to their favorite FM radio station at home because the audio could not be heard clearly (Nielsen Study at 17-19).

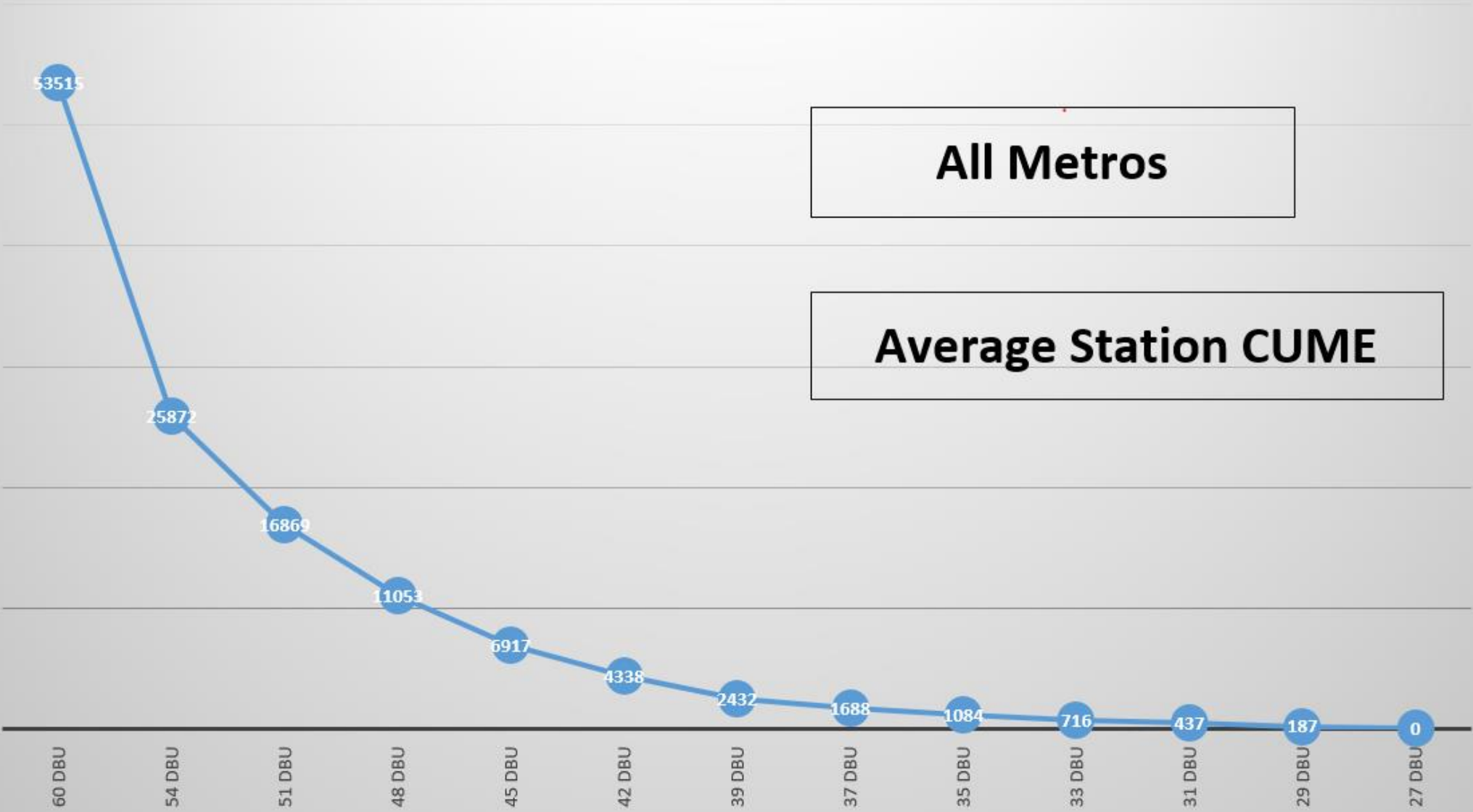


Jeff Littlejohn

Dated: August 6, 2018

60 dBu 54 dBu 51 dBu 48 dBu 45 dBu 42 dBu 39 dBu 37 dBu 35 dBu 33 dBu 31 dBu 29 dBu 27 dBu

Audience Distribution at Various Signal Levels



Values

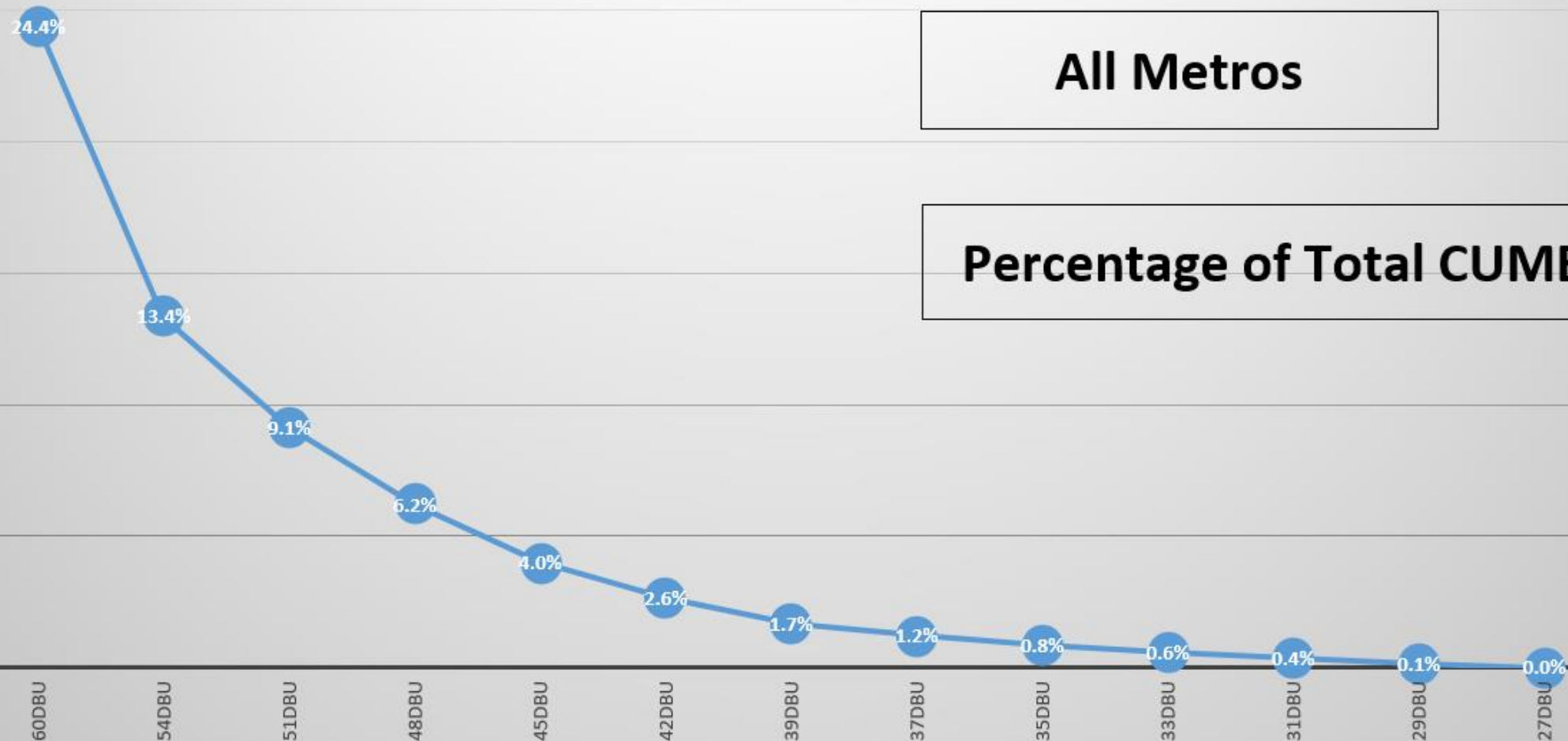
Market ▾

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

All Metros

Percentage of Total CUME



Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

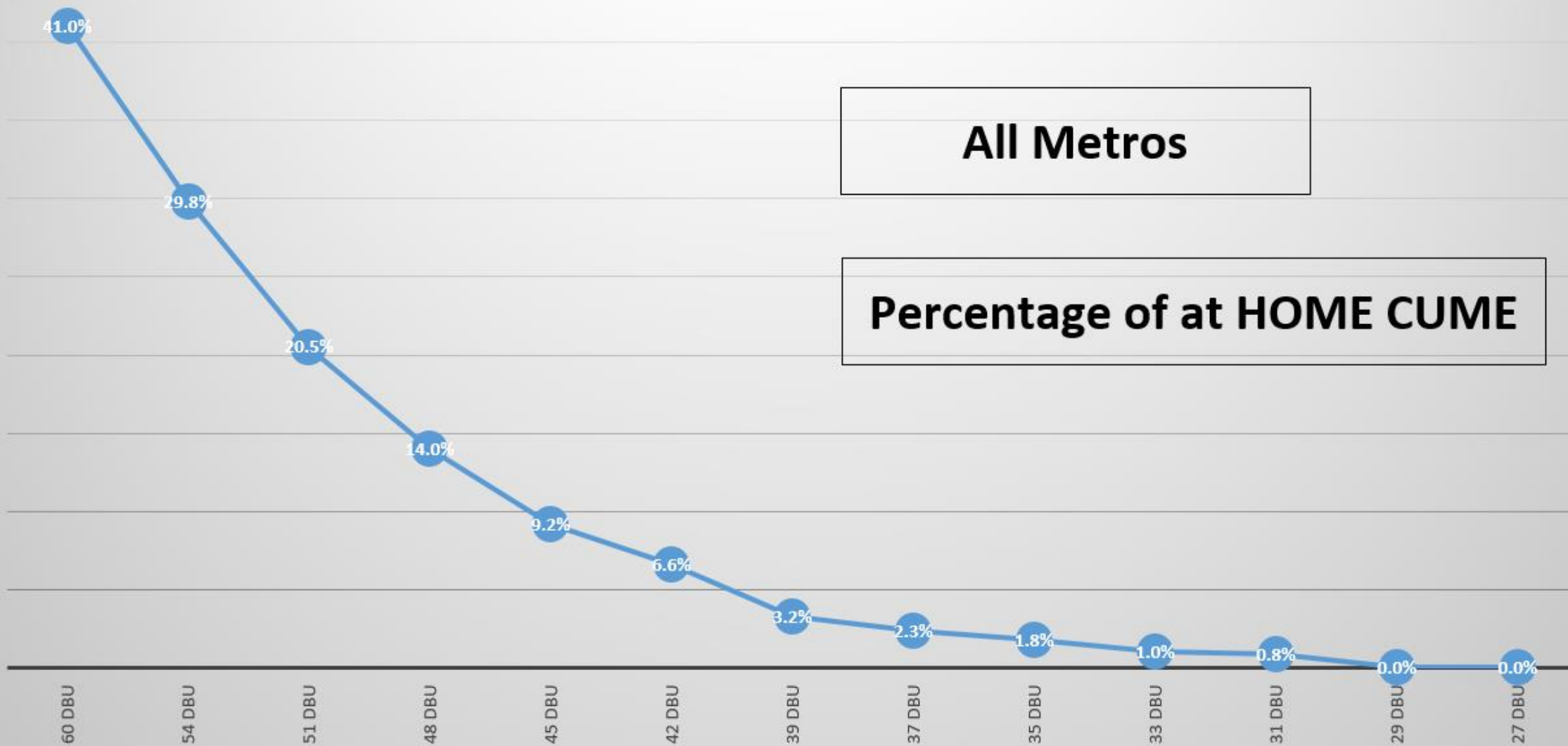
Values


60 dBu 54 dBu 51 dBu 48 dBu 45 dBu 42 dBu 39 dBu 37 dBu 35 dBu 33 dBu 31 dBu 29 dBu 27 dBu

Audience Distribution at Various Signal Levels

All Metros

Percentage of at HOME CUME



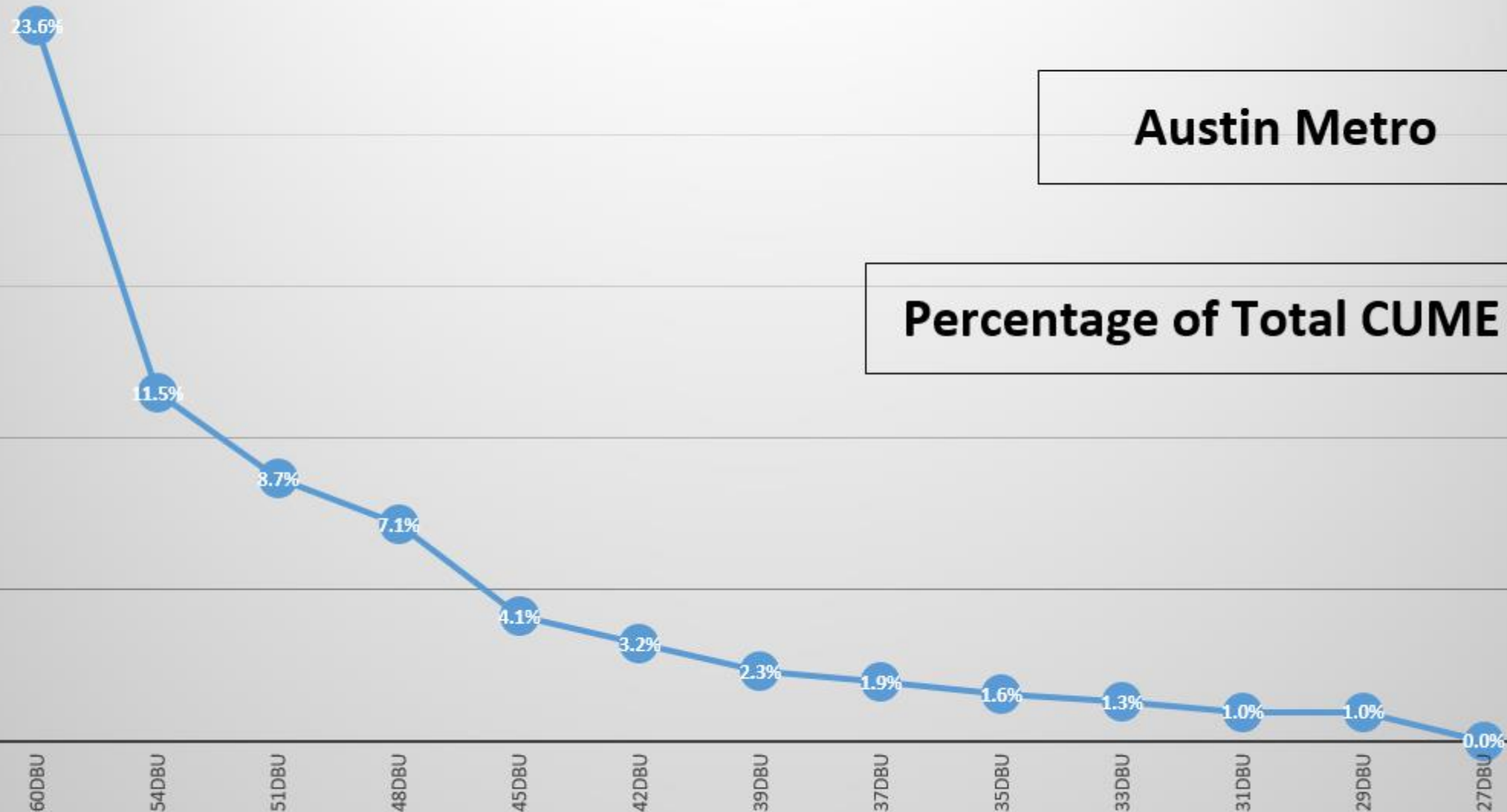
Market 

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Austin Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

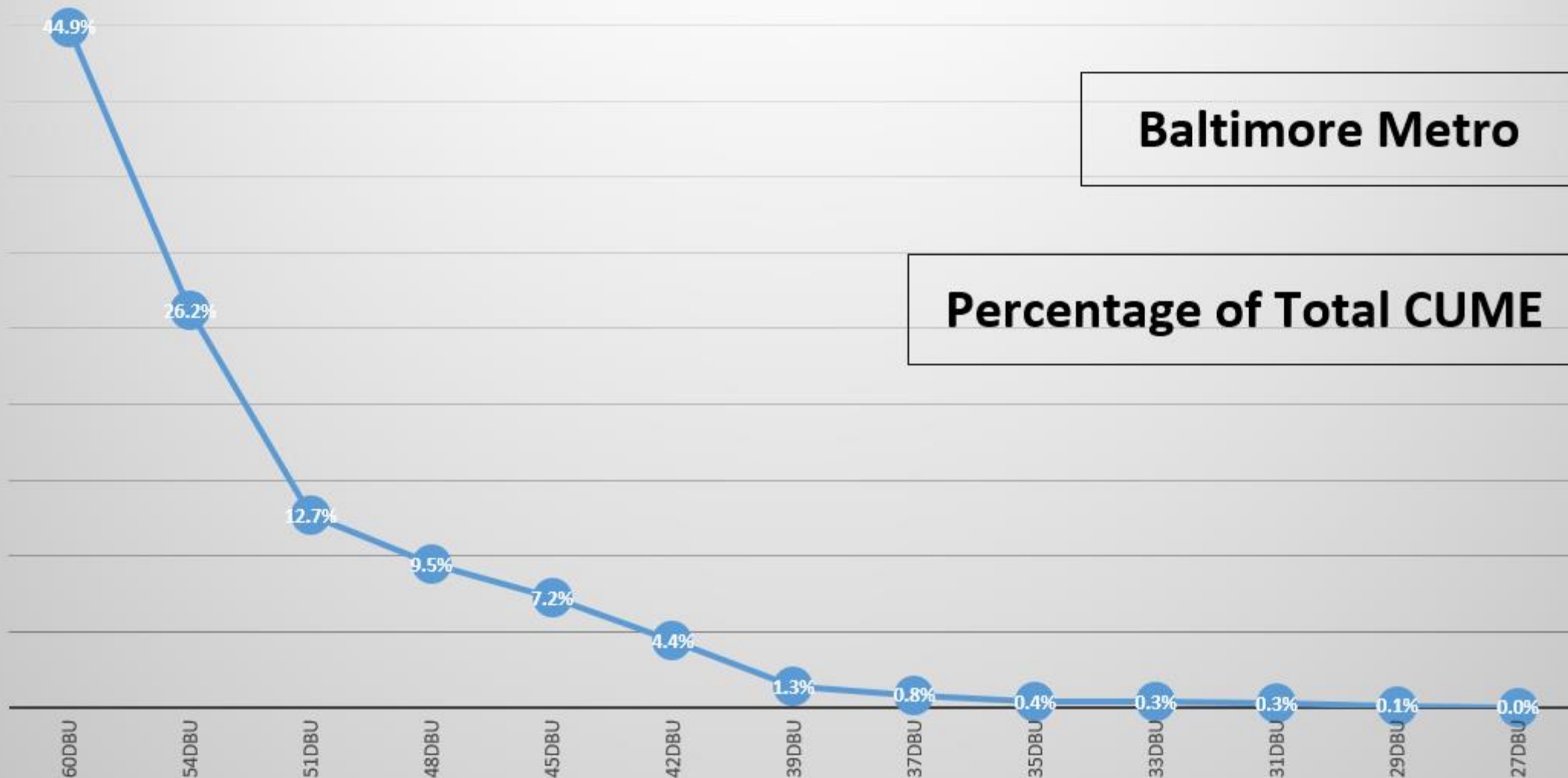
Market ▼

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Baltimore Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

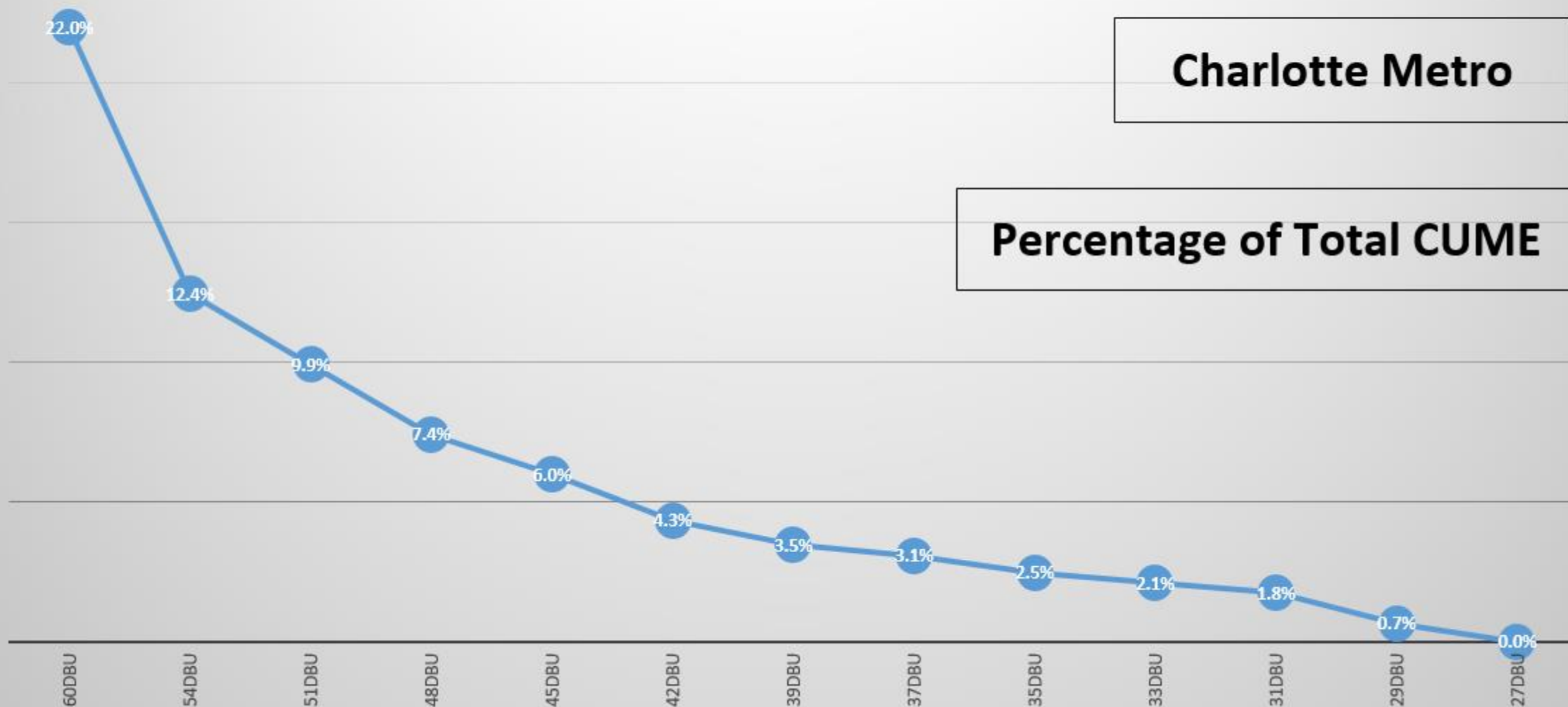
Market ▼

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Charlotte Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

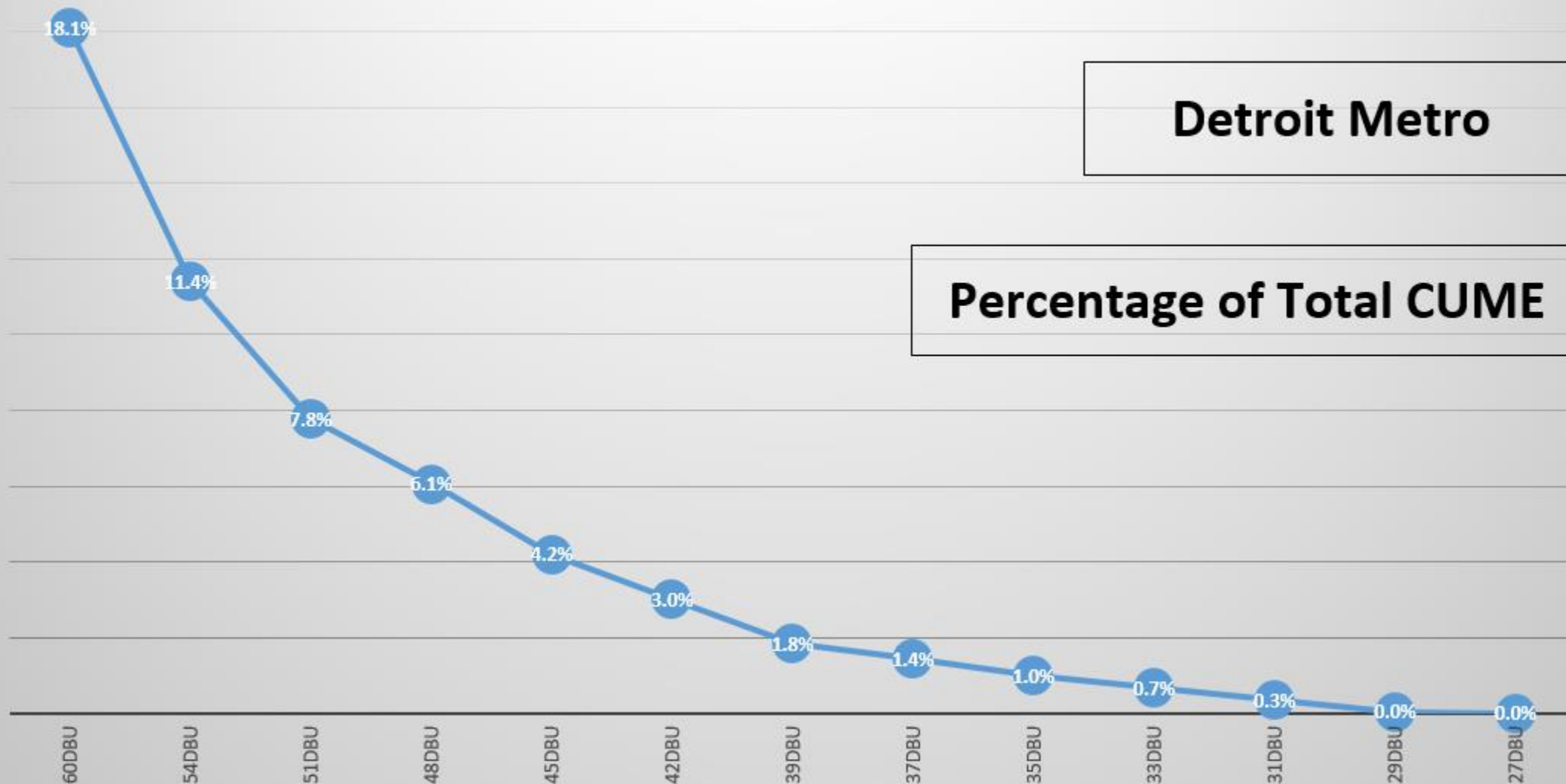
Market ▼

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dBu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Detroit Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

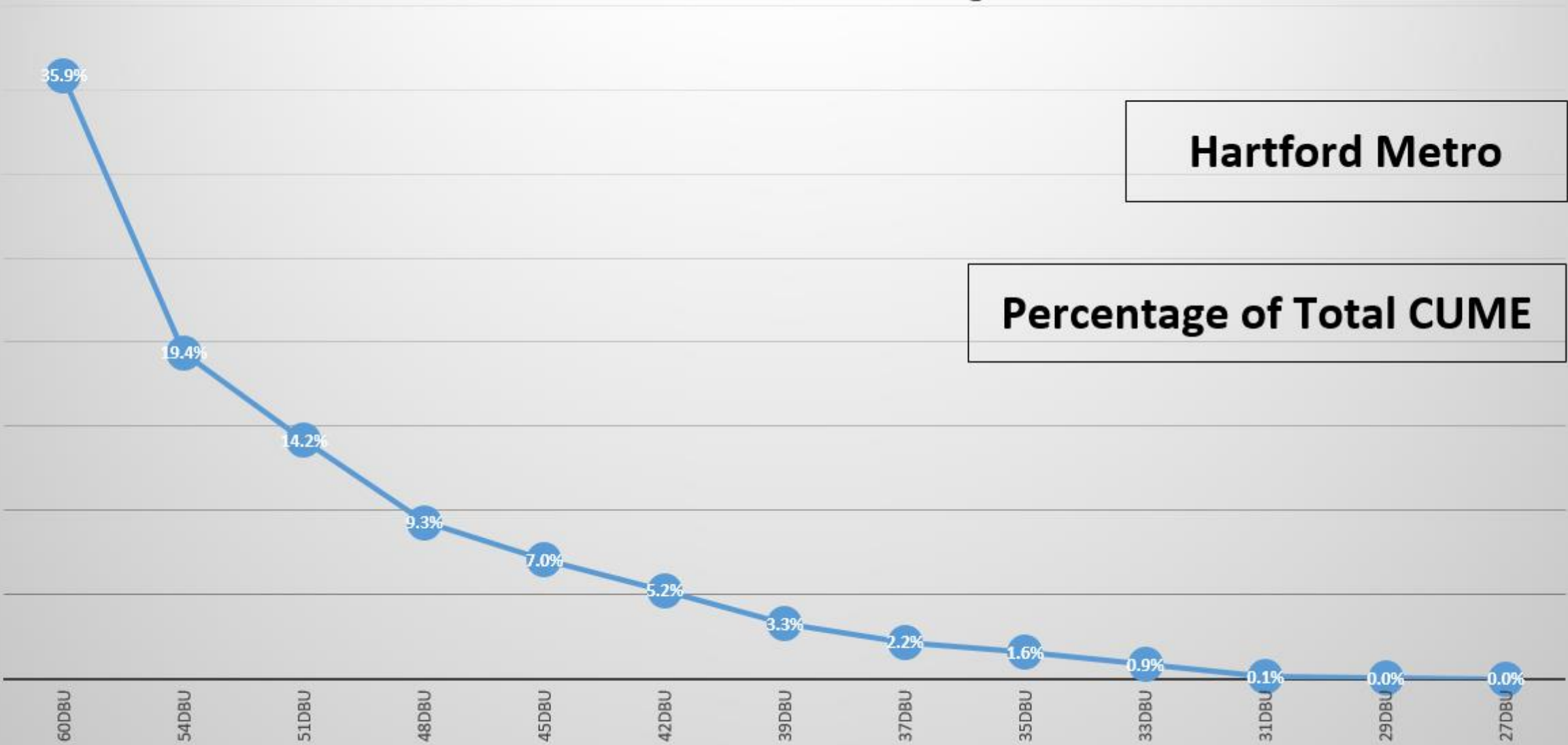
Market ▾

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Hartford Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

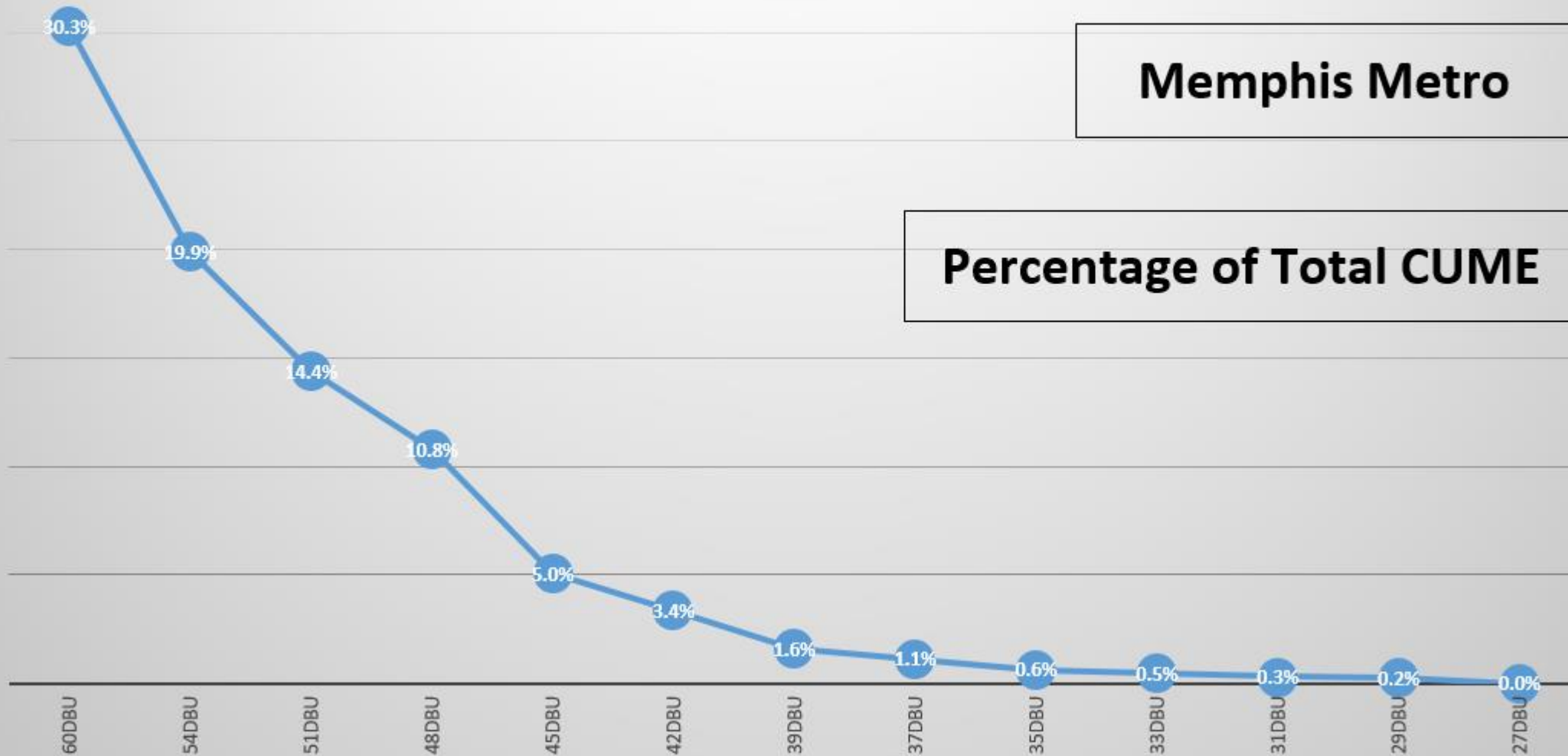
Market ▼

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Memphis Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

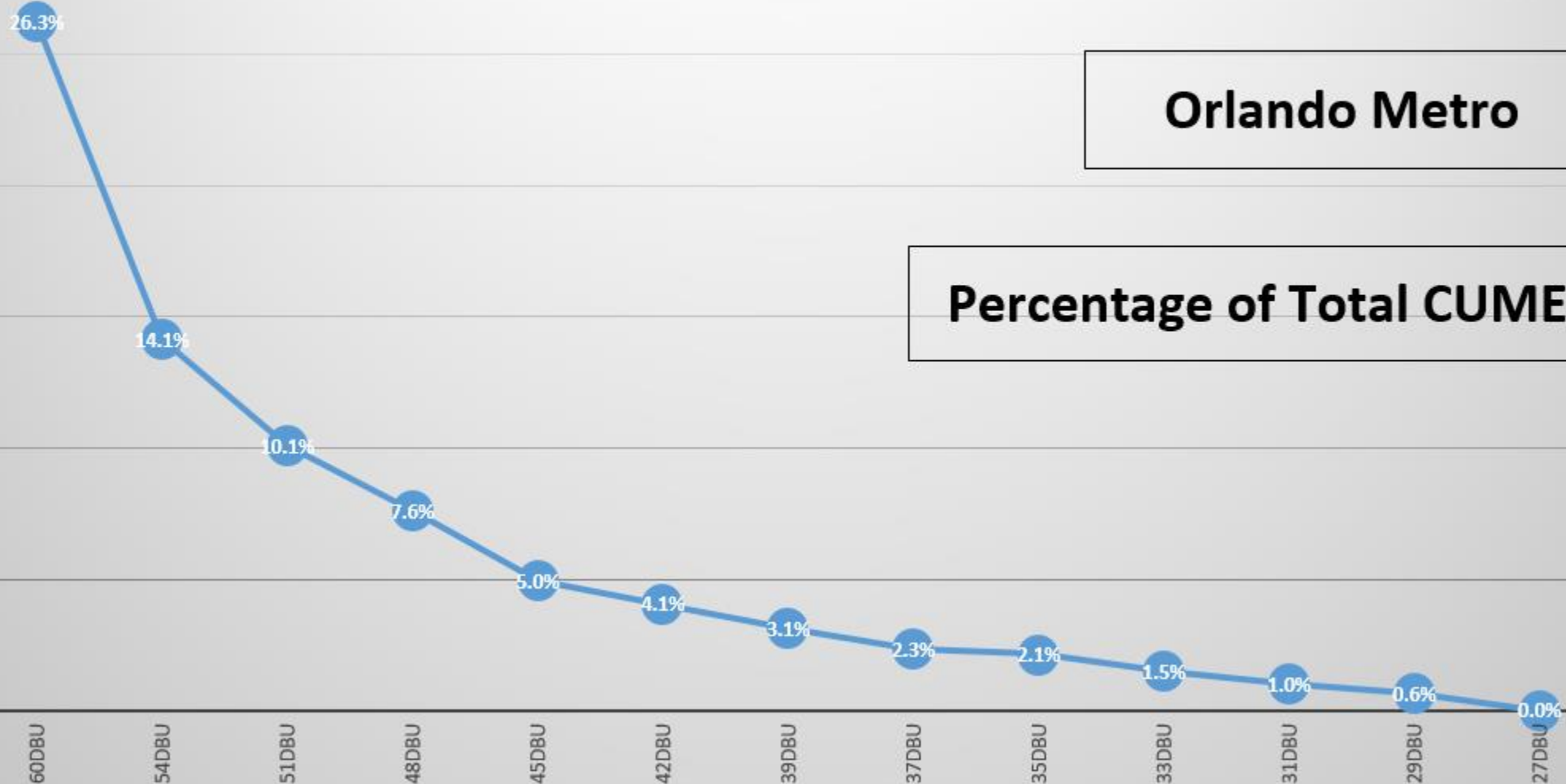
Market

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Orlando Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

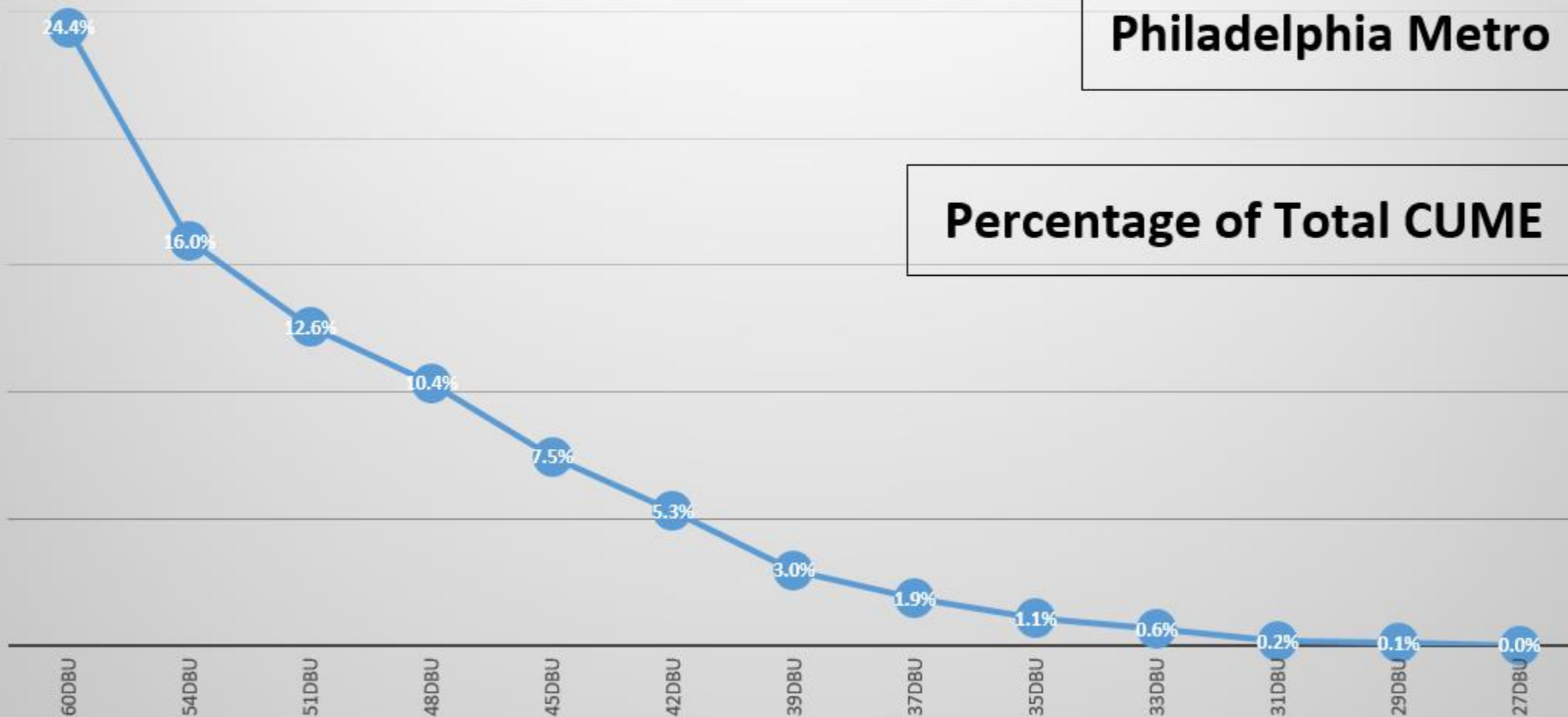
Market

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dBu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Philadelphia Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

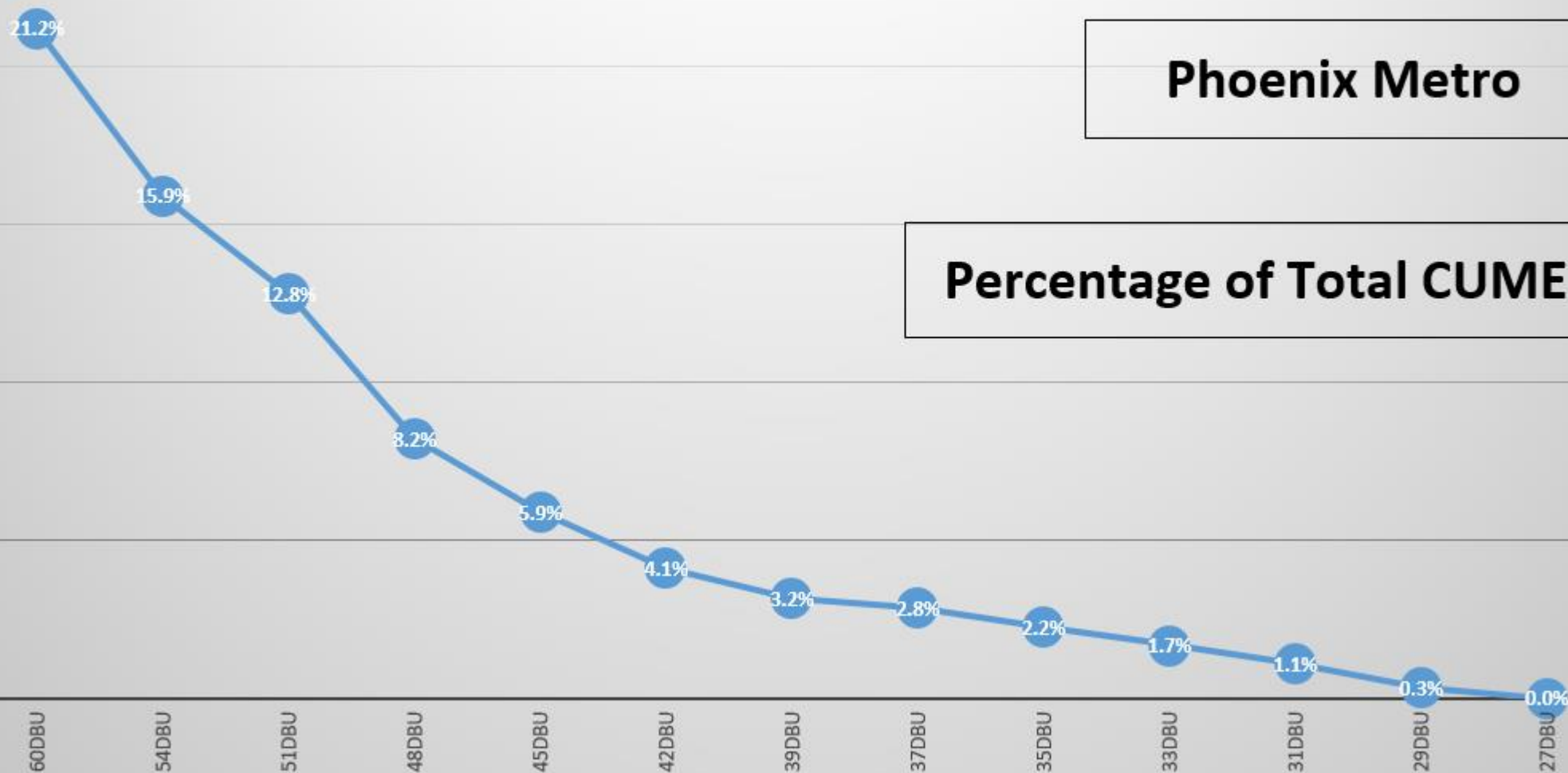
Market

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels


Phoenix Metro

Percentage of Total CUME



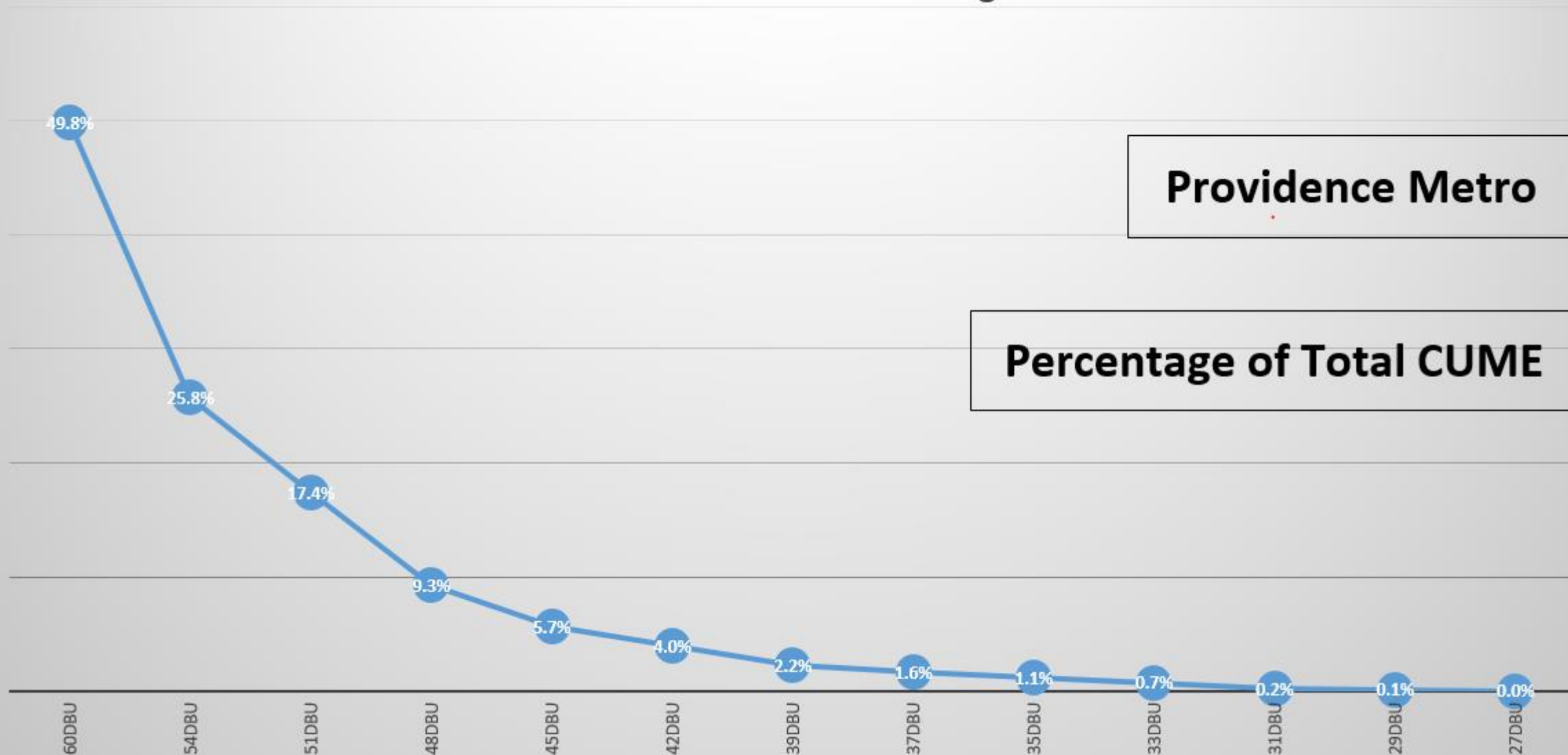
Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

Market 

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

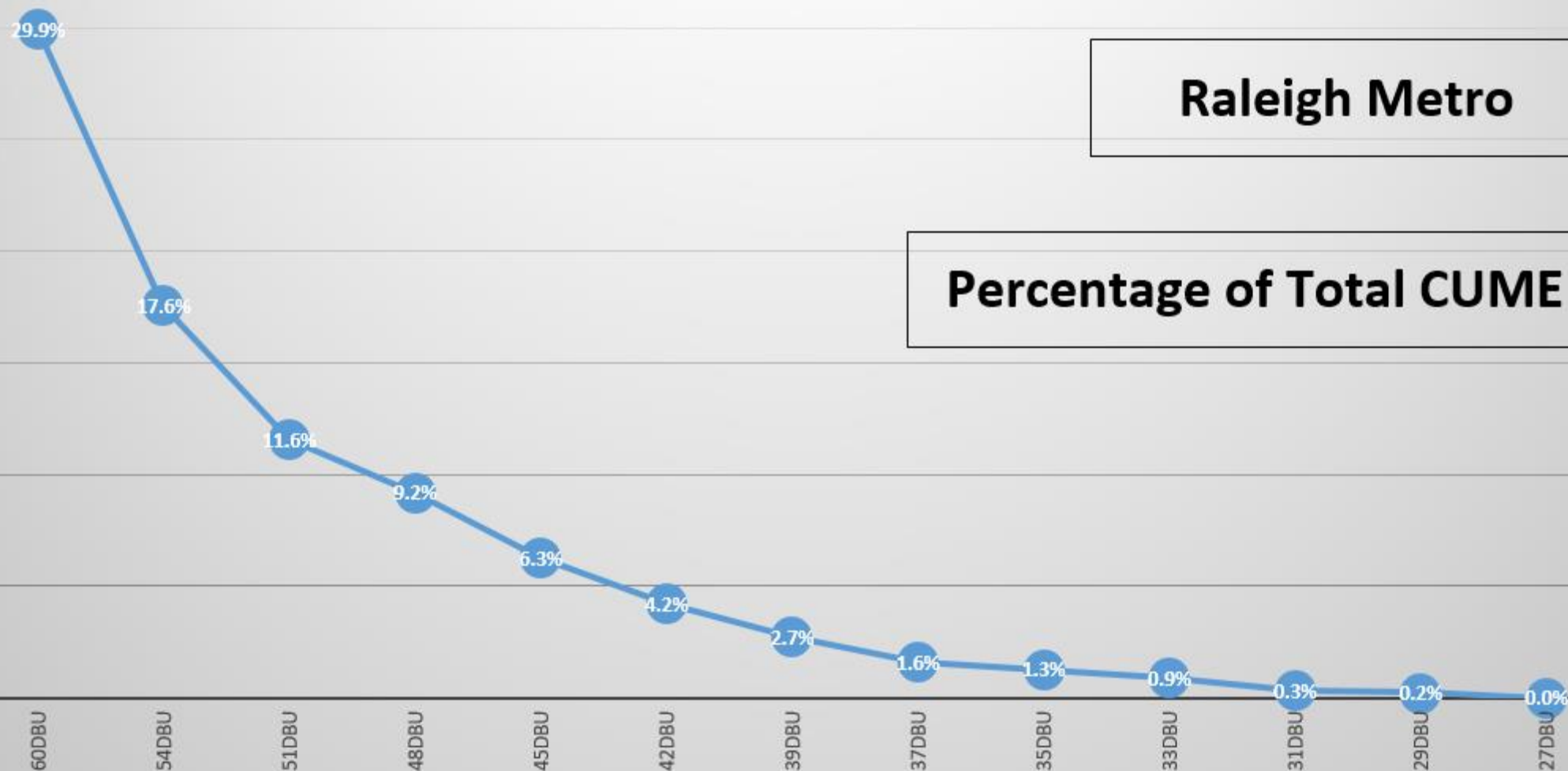
Market ▼

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

Raleigh Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

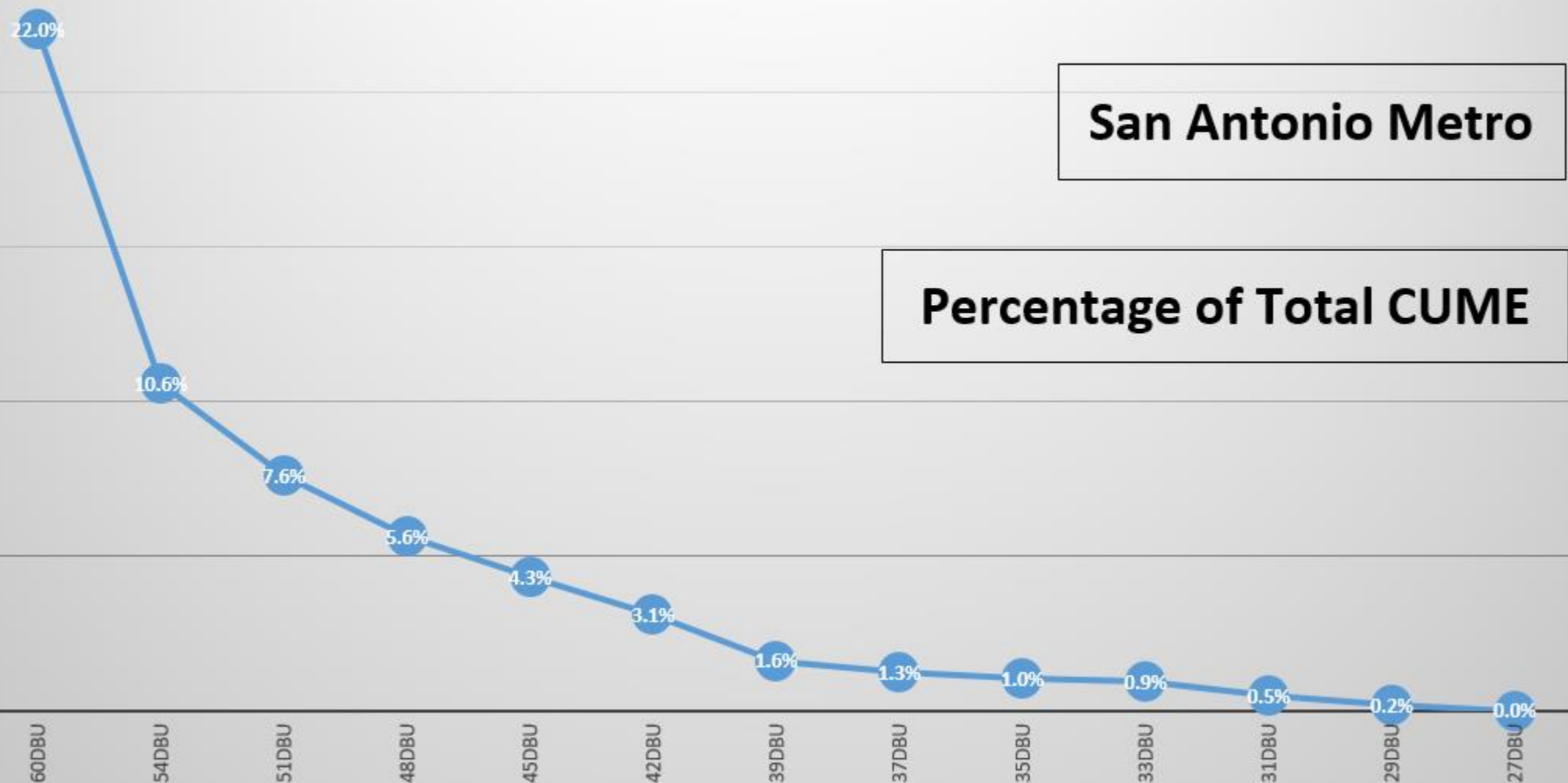
Market ▼

60dBu 54dBu 51dBu 48dBu 45dBu 42dBu 39dBu 37dBu 35dBu 33dBu 31dbu 29dBu 27dBu

Audience Distribution at Various Signal Levels

San Antonio Metro

Percentage of Total CUME



Values

Nielsen Audio, Fall 2017, PPM-Diary combined DMA area, M-Sun 6a-6a, P12+.

NIELSEN'S AT HOME-NEAR HOME LISTENING STUDY

July 2018



BACKGROUND & METHODOLOGY

A THOUSAND RADIO LISTENERS WERE ASKED IN AN ONLINE SURVEY ABOUT THEIR RADIO HABITS IN JULY 2018

METHODOLOGY:

Online survey conducted on desktop or mobile

SURVEY DATES:

July 24th – 26th, 2018

SAMPLE:

n=1,000

Adults 18+

Listened to radio 2+ hours in the past week

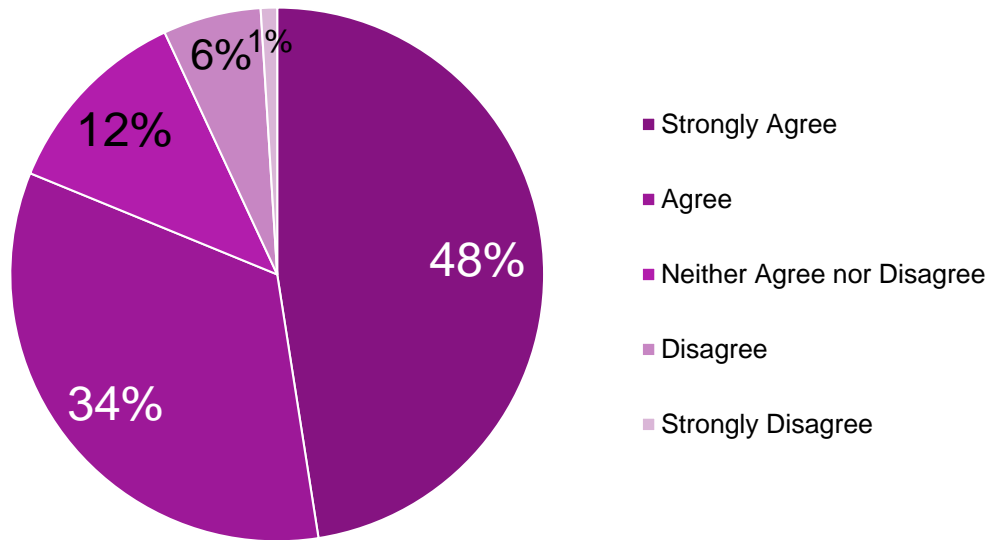
FAVORITE STATIONS AT HOME AND AWAY

FAVORITE STATIONS AT HOME AND AWAY

A P18+ LISTENER'S FAVORITE STATIONS REMAIN CONSISTENT WHETHER THEY ARE AT HOME OR AWAY FROM HOME

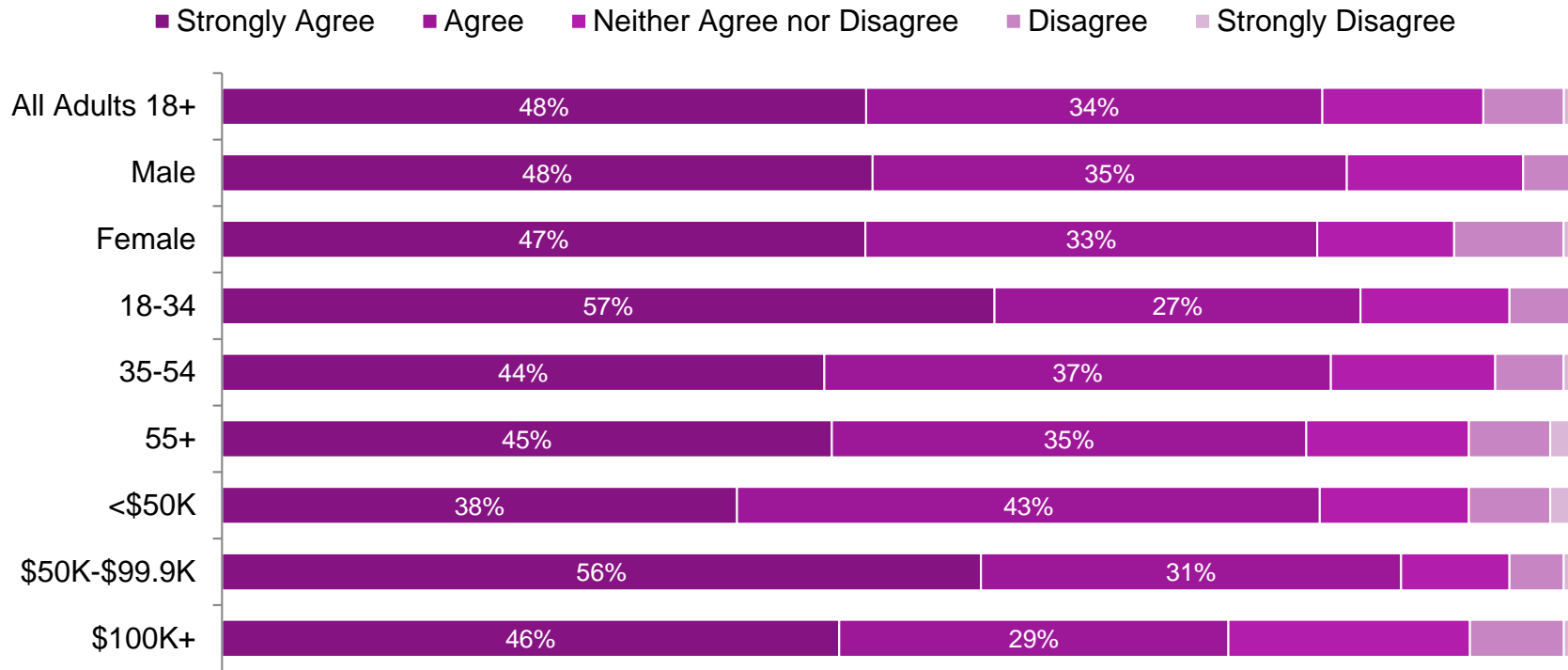
Adults 18+

"I usually listen to the same radio stations while I am away from my home that I listen to while I am at home."



FAVORITE STATIONS AT HOME AND AWAY

A LISTENER'S FAVORITE STATIONS REMAIN CONSISTENT WHETHER THEY ARE AT HOME OR AWAY FROM HOME

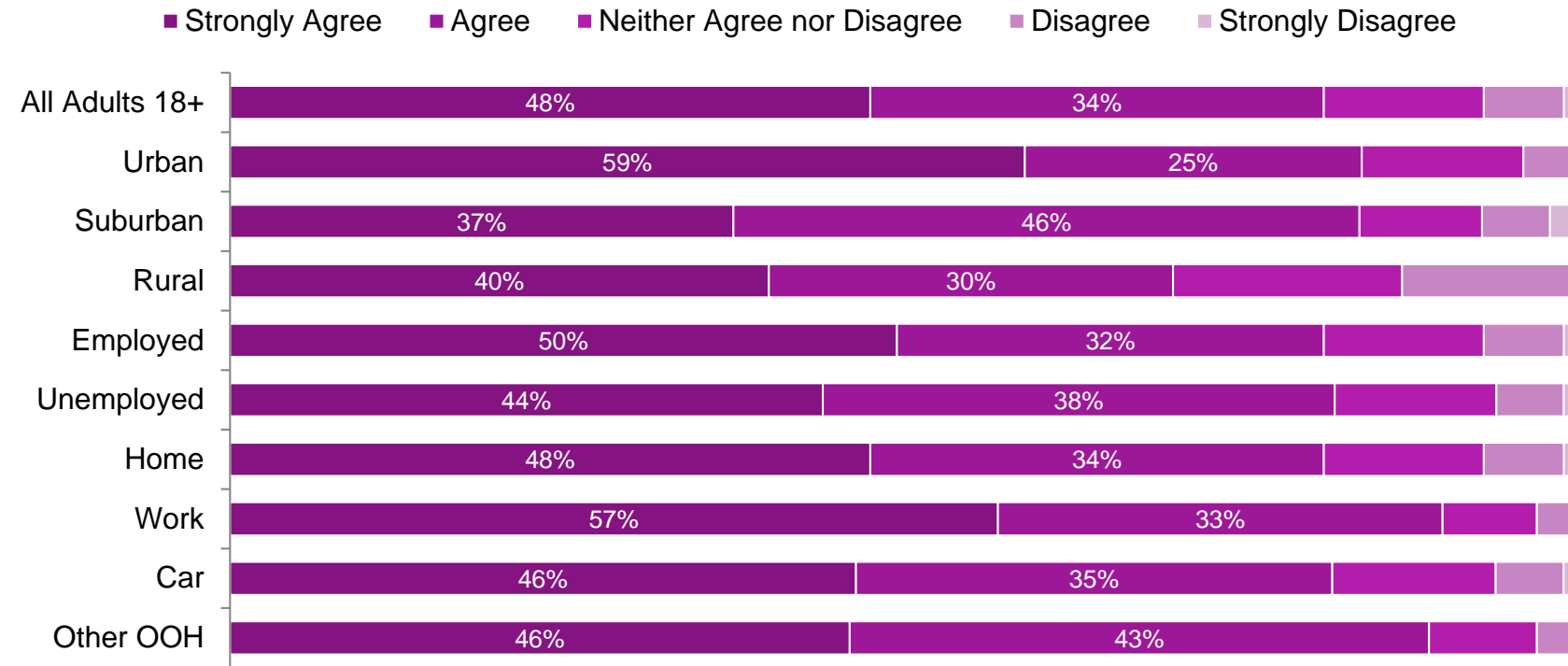


Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

Q5. How strongly do you agree or disagree with the following statement? "I usually listen to the same radio stations while I am away from my home that I listen to while I am at home."

FAVORITE STATIONS AT HOME AND AWAY

ACROSS DIFFERENT TYPES OF LOCATION, LISTENERS' FAVORITE STATIONS REMAIN CONSISTENT WHETHER THEY ARE AT HOME OR AWAY FROM HOME



Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

Q5. How strongly do you agree or disagree with the following statement? "I usually listen to the same radio stations while I am away from my home that I listen to while I am at home."



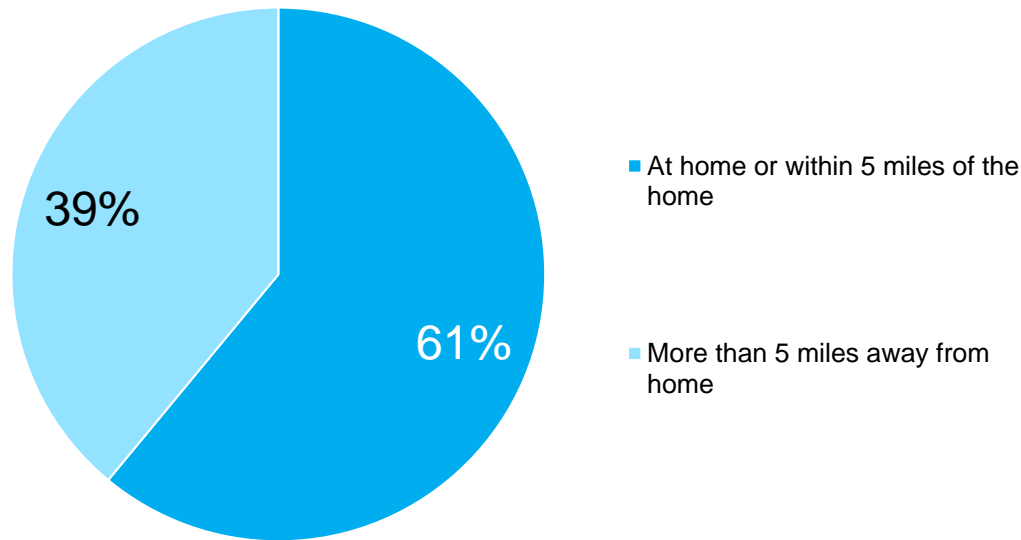
LISTENING IN CLOSE PROXIMITY TO THE HOME

LISTENING IN CLOSE PROXIMITY TO HOME

FOR ADULTS 18+, MORE THAN HALF OF RADIO LISTENING TIME OCCURS AT HOME OR WITHIN 5 MILES OF HOME

Adults 18+

“Approximately what portion of the total time you spent listening to radio in the past week was spent listening in each location?”

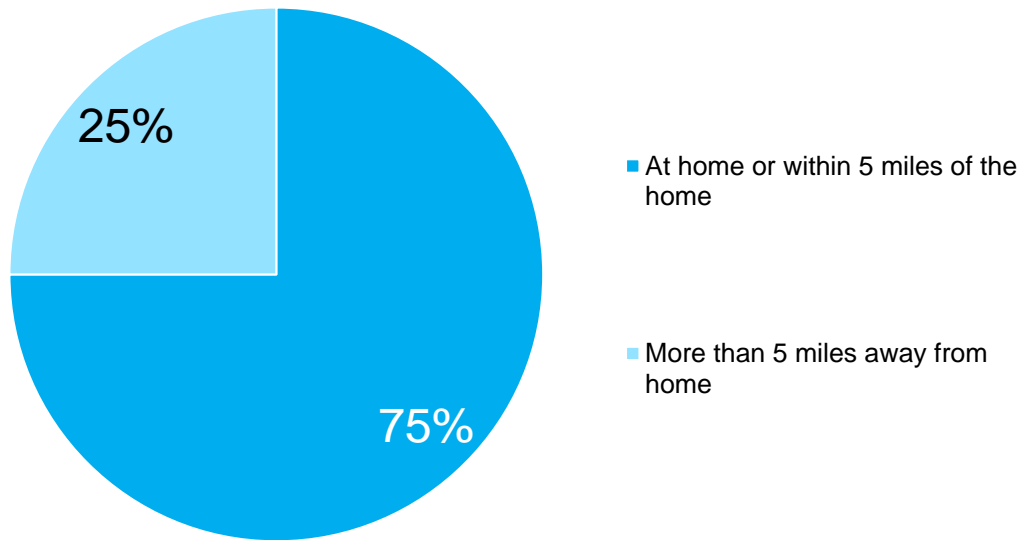


LISTENING IN CLOSE PROXIMITY TO HOME

75% OF LOYAL STATION FOLLOWERS' TIME SPENT LISTENING TO RADIO OCCURS AT HOME OR WITHIN 5 MILES OF HOME

Loyal Station Followers*

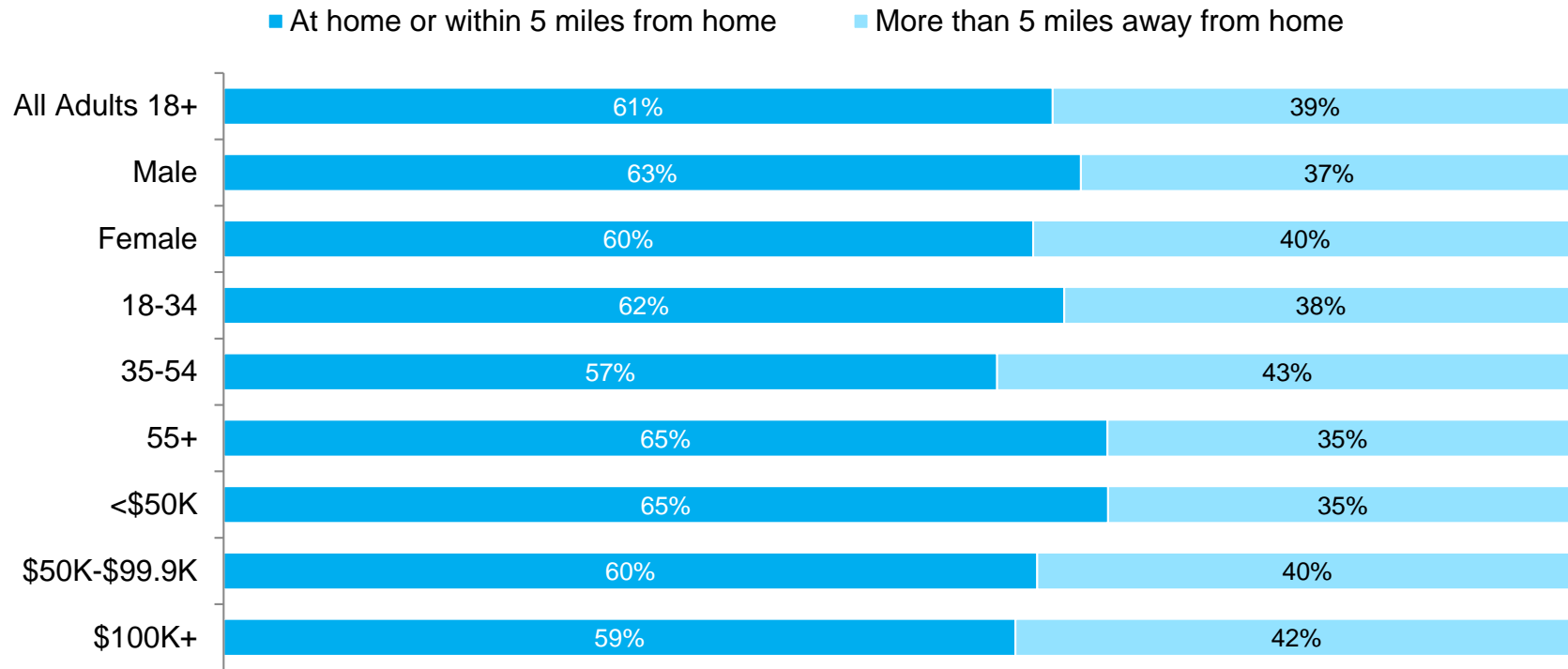
“Approximately what portion of the total time you spent listening to radio in the past week was spent listening in each location?”



* Q5 Top 2 Boxes – Listens to the same stations at home/away from home: Agree + Strongly Agree
Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 353)

LISTENING IN CLOSE PROXIMITY TO HOME

ACROSS DEMO BREAKOUTS, MORE THAN HALF OF RADIO LISTENING TIME OCCURS AT HOME OR WITHIN 5 MILES OF HOME

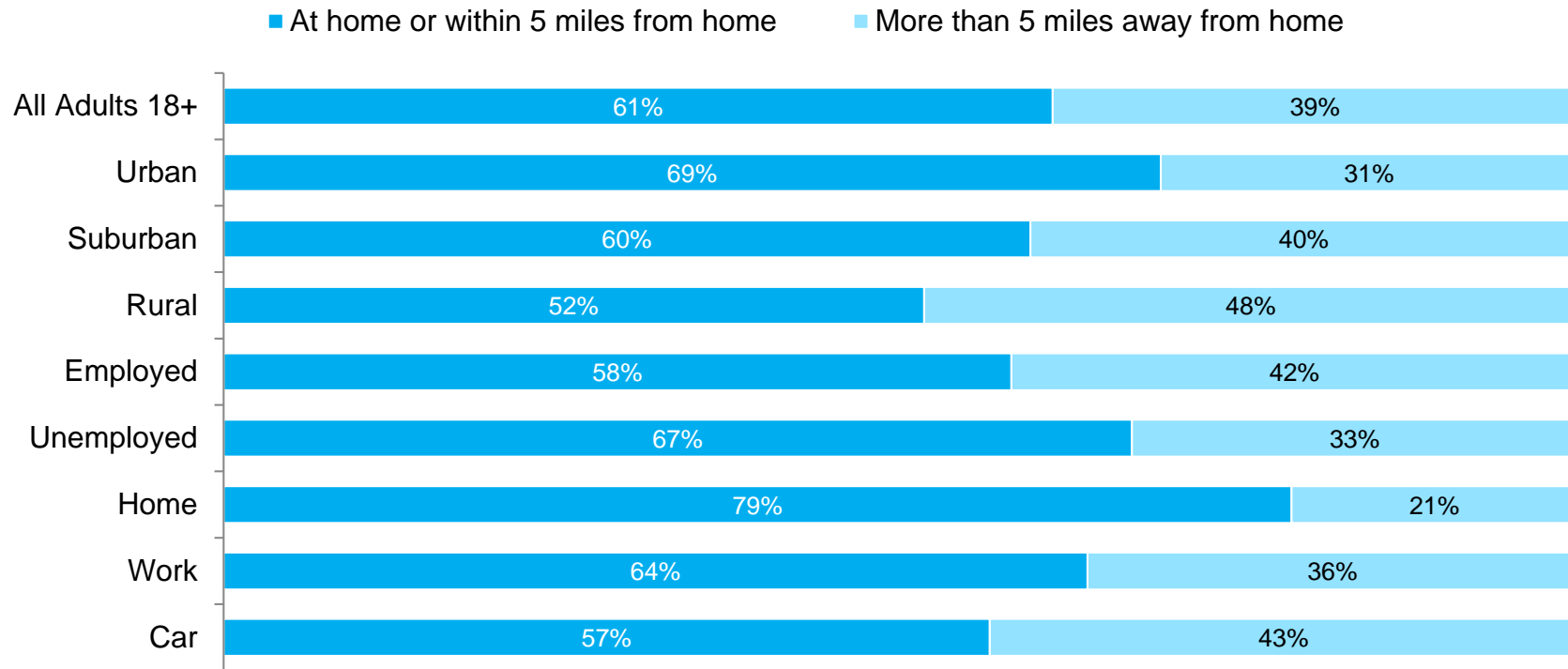


Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

Q1, Q2: Approximately what portion of the total time you spent listening to radio in the past week was spent listening in each location?

LISTENING IN CLOSE PROXIMITY TO HOME

ACROSS LOCATIONS, MORE THAN HALF OF RADIO LISTENING TIME OCCURS AT HOME OR WITHIN 5 MILES OF HOME



Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

Q1, Q2: Approximately what portion of the total time you spent listening to radio in the past week was spent listening in each location?

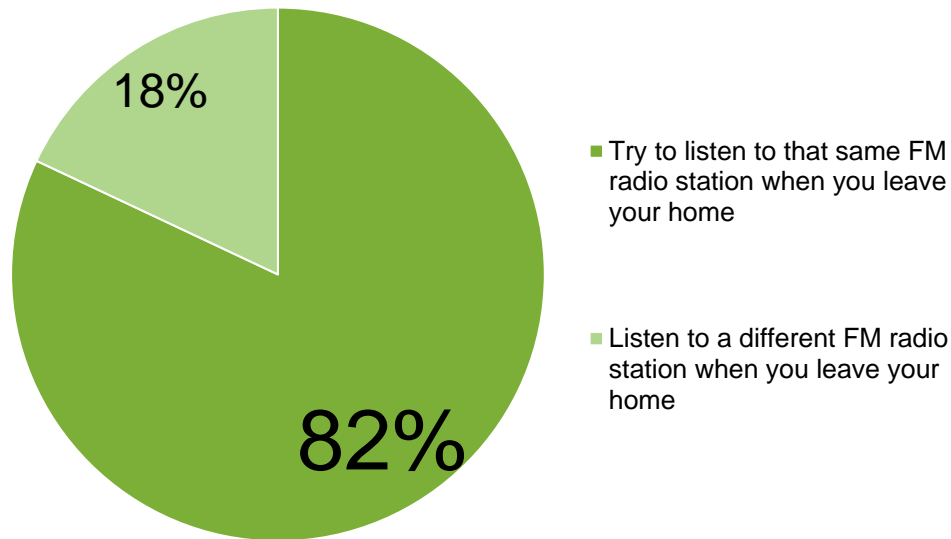
SEEKING OUT THEIR FAVORITE STATIONS

SEEKING OUT THEIR FAVORITE STATIONS

LISTENERS PRIORITIZE LISTENING TO THEIR FAVORITE STATION EVEN AFTER LEAVING THEIR HOME

Adults 18+

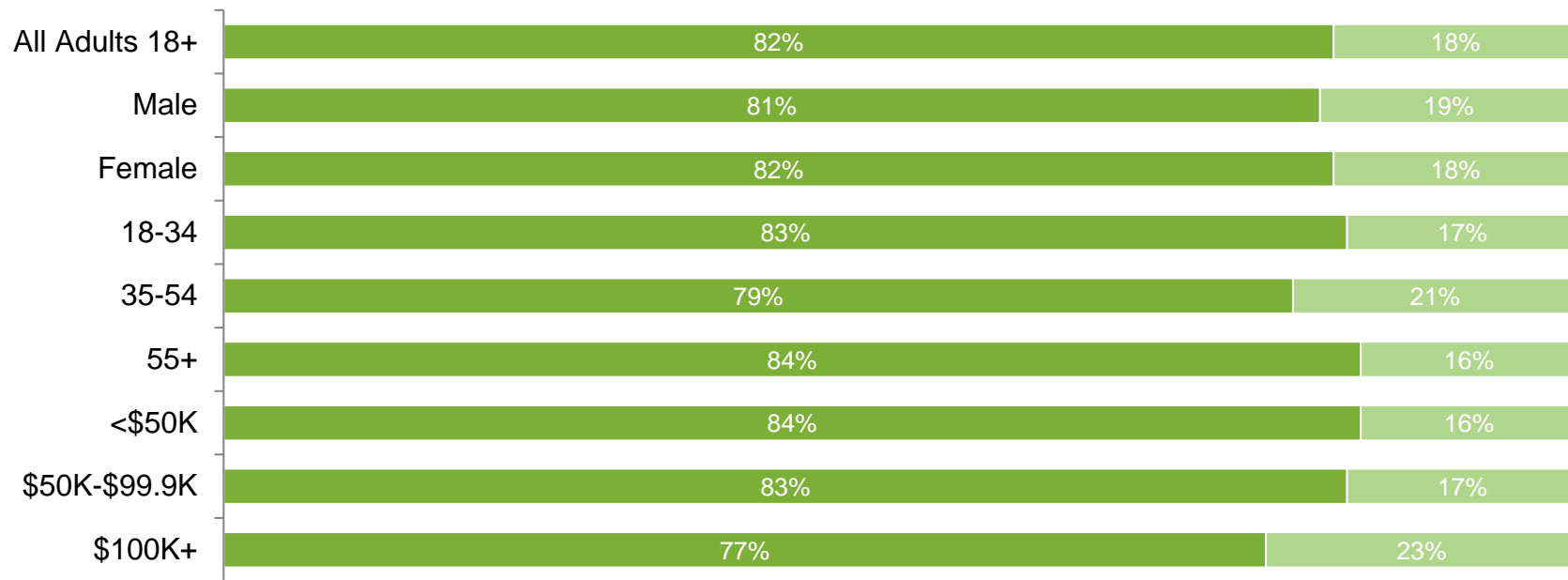
“If you are listening to an FM station at home and then you leave home, which of the statements best describes what you usually do after you leave your home?”



SEEKING OUT THEIR FAVORITE STATIONS

ACROSS DEMOGRAPHICS GROUPS, LISTENERS PRIORITIZE LISTENING TO THEIR FAVORITE STATION EVEN AFTER LEAVING THEIR HOME

- Try to listen to that same FM radio station when you leave your home
- Listen to a different FM radio station when you leave your home



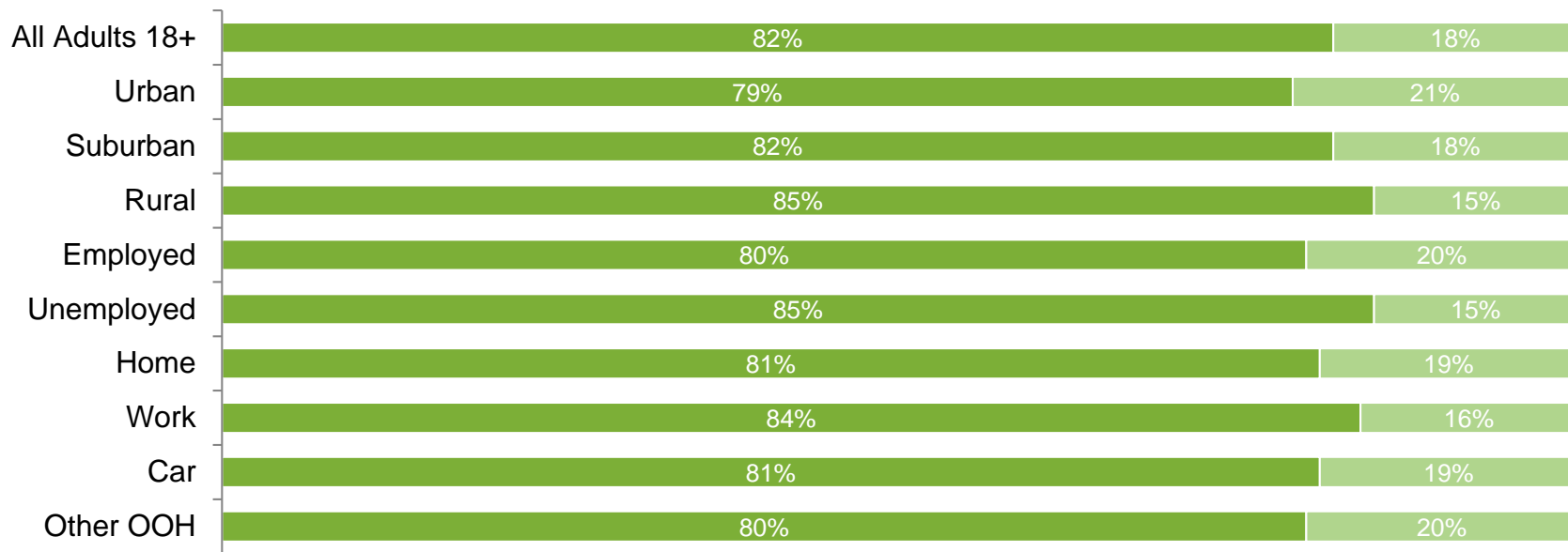
Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

Q7. If you are listening to an FM station at home and then you leave home, which of the statements best describes what you usually do after you leave your home?

SEEKING OUT THEIR FAVORITE STATIONS

REGARDLESS OF LOCATION TYPE, LISTENERS PRIORITIZE LISTENING TO THEIR FAVORITE STATION EVEN AFTER LEAVING THEIR HOME

- Try to listen to that same FM radio station when you leave your home
- Listen to a different FM radio station when you leave your home



Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

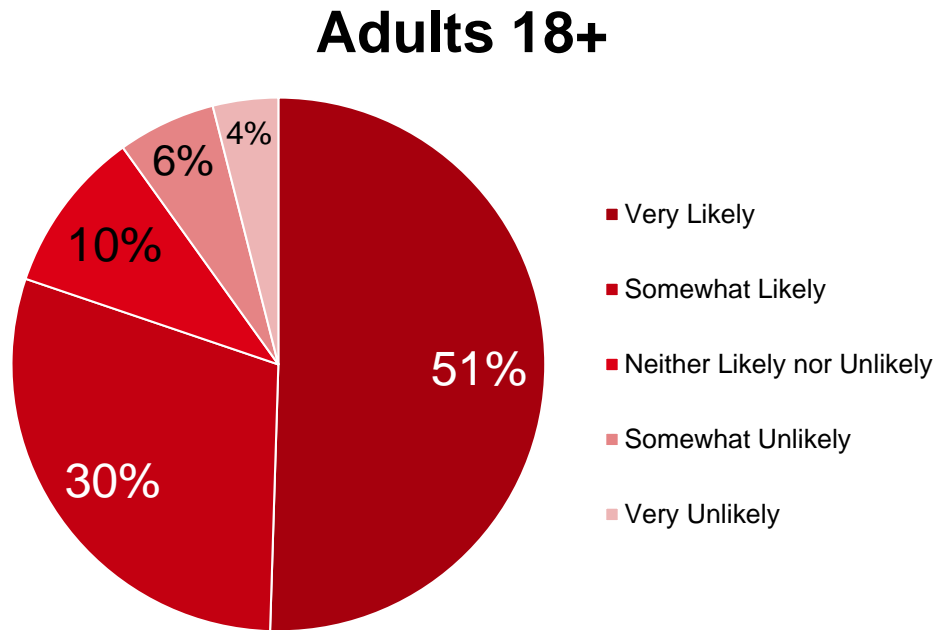
Q7. If you are listening to an FM station at home and then you leave home, which of the statements best describes what you usually do after you leave your home?

THE RISK OF SIGNAL INTERFERENCE

THE RISK OF SIGNAL INTERFERENCE

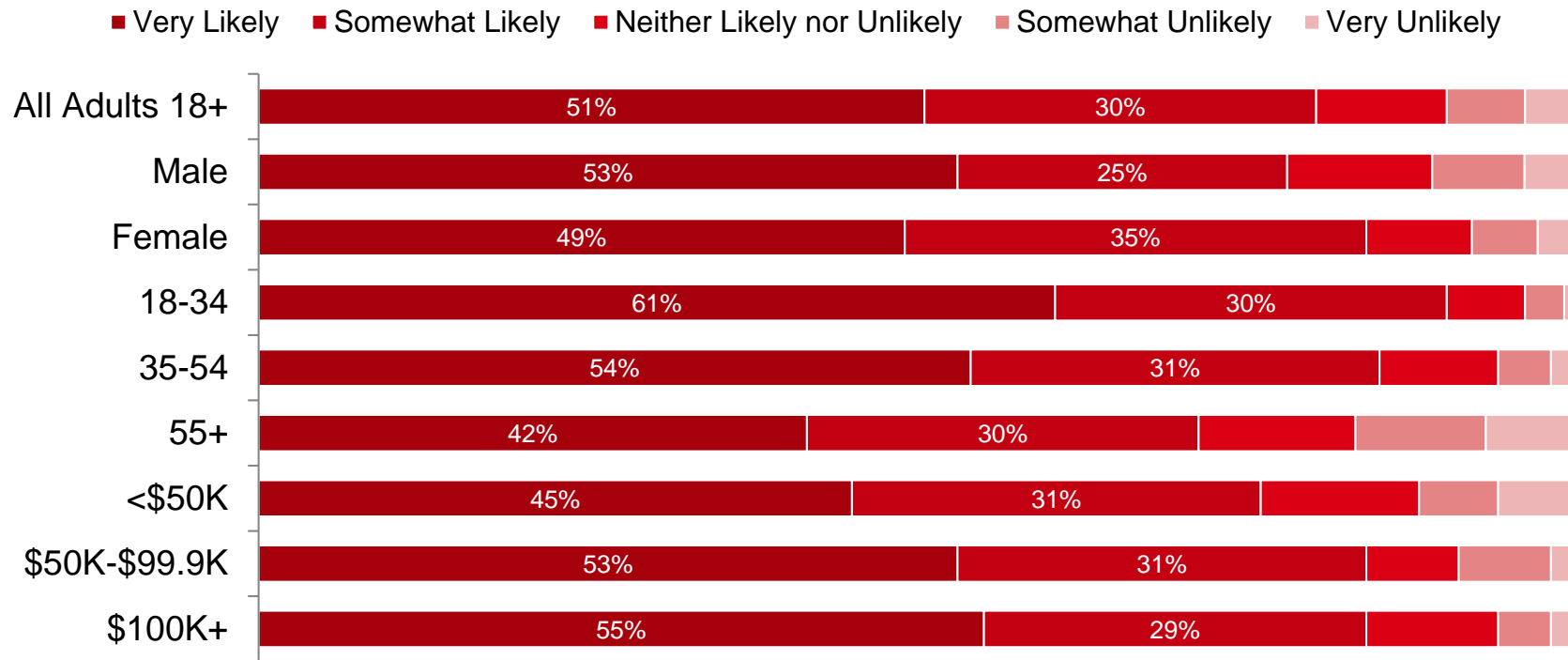
MOST LISTENERS P18+ WOULD BE FORCED TO FIND A NEW STATION IF A TRANSLATOR CAUSES INTERFERENCE AT HOME

“If you could not listen to your favorite FM radio station in your home because the audio cannot be heard clearly, how likely would you be to find another station, like it, and listen to it at home instead of your favorite station?”



THE RISK OF SIGNAL INTERFERENCE

MOST LISTENERS OF ALL DEMOGRAPHICS WOULD FIND A NEW STATION IF A TRANSLATOR CAUSES INTERFERENCE AT HOME

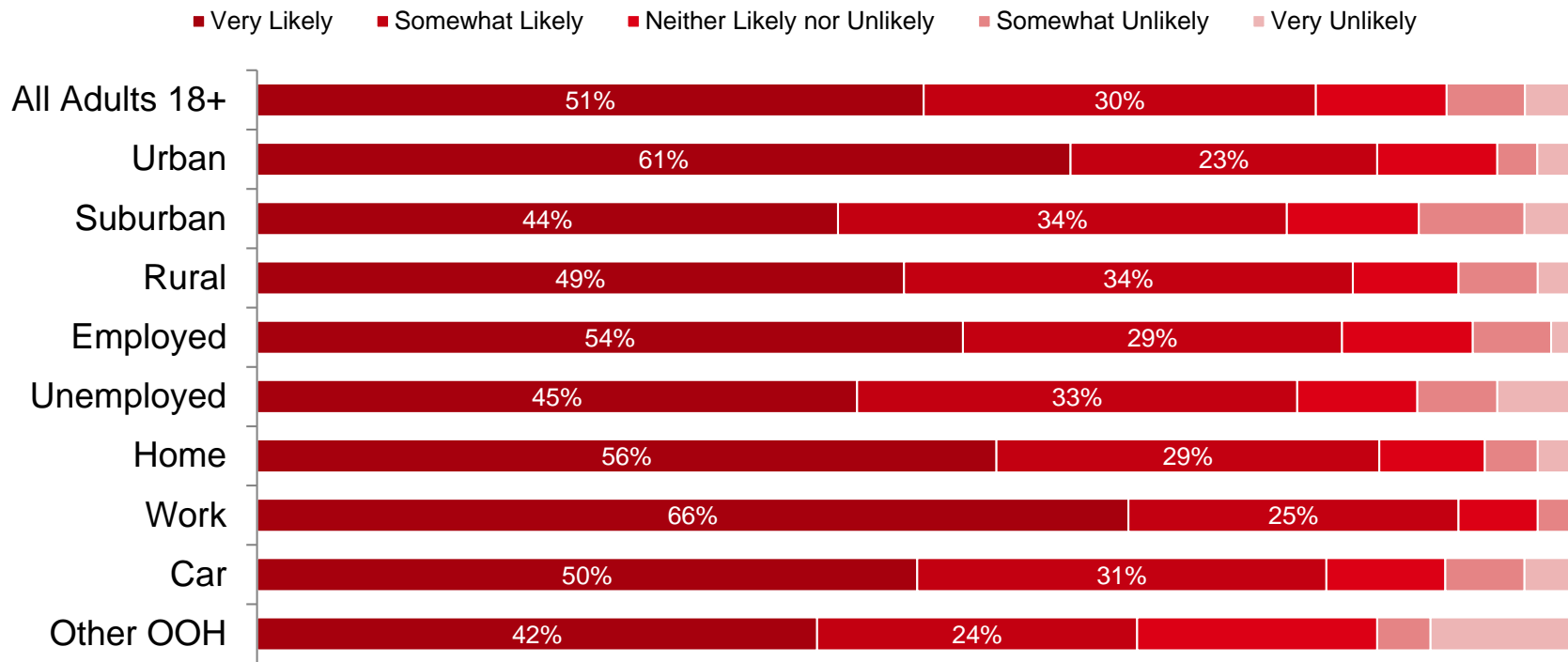


Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

Q8: If you could not listen to your favorite FM radio station in your home because the audio cannot be heard clearly, how likely would you be to find another station, like it, and listen to it at home instead of your favorite station?

THE RISK OF SIGNAL INTERFERENCE

REGARDLESS OF LOCATION, MOST LISTENERS WOULD FIND A NEW STATION IF A TRANSLATOR CAUSES INTERFERENCE AT HOME



Source: At Home/Near Home Radio Listening Survey – July 2018 (sample size: 1000)

Q8: If you could not listen to your favorite FM radio station in your home because the audio cannot be heard clearly, how likely would you be to find another station, like it, and listen to it at home instead of your favorite station?

The background of the entire slide is a vibrant red with a series of flowing, wavy lines that create a sense of movement and depth. The waves are more pronounced in the center and fade slightly towards the edges.

nielsen

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