

A NEW MEASUREMENT CALLED RoA FOR ESTIMATING THE AUDIENCE RATE OF A FAMILY OF WEB RADIO STATIONS

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ABSTRACT

In this paper, we have developed a new measure called RoA (Radio Online Audience) of the audience rate of a web radio station. The RoA is a method that uses real-time audience tracking and measurement technologies to provide a more accurate estimate of the audience rate of web radios. It is a composite formula that incorporates the radio broadcast frequency, the number of radio listeners and the average listening time of all radio listeners. In order to implement the new measure, an experiment is being conducted on a family of twelve radios from the "AfricaWebRadio" ecosystem. We have also extended the experiment on the results of the ranking of radio stations (March 2023) carried out by the ACPM (Alliance for Press and Media Figures). The experimental results are promising.

KEYWORDS

RoA (Radio Online Audience), Webradio, audience rate, AfricaWebRadio.

1. INTRODUCTION

The digital revolution is also affecting the traditional radio sector. This wonderful means of oral expression is now accessible to all audiences, enriched by all the technological innovations, thereby reinventing the relationship of commitment between users and brands [1]. The growing popularity of streaming services has created a need for an accurate measurement of Internet radio audiences.

The RoA (Radio Online Audience) is a new approach that uses real-time audience tracking and measurement technologies to provide a more accurate estimate of the audience rate of web radios. It is a composite formula that incorporates the radio broadcast frequency, the number of radio listeners and the average listening time of all radio listeners. The evaluation is made in a region r over a given time interval $[a, b]$.

The RoA consists of estimating a value (a score) which makes it possible to assess the broadcasting performance of a web radio station and therefore to identify the best web radio station among many others. It was created for the monitoring system adapted to the "AfricaWebRadio" [2], [3] platform but can be applied to any web radio. In order to provide an opportunity for community radios to be accessible all over the world, via web and mobile platforms, we have initiated a project called "AfricaWebRadio" which is an innovation in the

world of broadcasting. This platform integrates several community radio stations into its space. The concept of the *RoA* is initially proposed to position the radios of the "**AfricaWebRadio**" ecosystem between each other, but can be applied to any ecosystem in order to assess the performance of a radio.

In the rest of this article, a brief overview of traditional methods of audience measurement will be presented, followed by a presentation of our approach, and finally, *RoA* the results of work acting as experiments will be presented.

2. THE CLASSIC NOTION OF AUDIENCE RATING

In the world of media, the audience rate or audience share is the number or percentage of people who have had access to a medium over a given period of time [4]. However, it is not the only audience indicator for these media. There is also the average audience, the cumulative audience, the listening time etc. Several methods are used to measure these different indicators.

The methodologies used for radio audience measurement are [5], [6]:

- The telephone survey approach where individuals are interviewed by telephone. The latter declare what they listened to and for how long. The particularity with this method is that the pollster does not take into account the listening time of the respondent but only the radio programs with which he comes into contact. Thus, each person who listens to a radio station for more than one second is counted as a listener.

- The diary approach where people are asked to record all the radio stations they listen to over a seven-day period. For each quarter of an hour, they must indicate the stations they listen to, the platforms used (for example, a radio station, a smartphone or another device) and the location where they are (home, car, work, etc.). Diaries can be completed digitally via computers, tablets or smartphones, or on paper, depending on user preference.

- However, these methods have certain shortcomings as follows [7]. Listening to radios is not directly measured. The results are the product of the respondents' answers. These people must use their memory when questioned. It is therefore difficult to verify that the men and women answering the questions are perfectly telling the truth. The impartiality of the questions asked is also sometimes called into question.

3. NEW APPROACH TO CALCULATING AUDIENCE RATINGS

We have defined a new approach to the calculation of the audience rate of a radio that we have called the *RoA* (Radio Online Audience).

It should be noted that the *RoA* is evaluated in an ecosystem made up of several radios. We have chosen the case of the "**AfricaWebRadio**" ecosystem for the experimentation of the formula. How is this value determined in practice?

3.1. Implementation of the formula

Consider the following variables involved in the calculation of the *RoA*:

n: the number of radios subject to the calculation;

i: a number representing a radio;

r : a range of geographic listening regions;

a : the lower bound of a time interval representing the beginning of the broadcast period of radio i in the region r ;

b : the upper limit of a time interval representing the end of the broadcasting period of radio i in the region r .

The input parameters for each radio i are:

✓ $f_{i,r[a,b]}$: the broadcast frequency of the radio i in the region r over the time interval $[a, b]$;

✓ $n_{i,r[a,b]}$: the number of radio listeners i in the region r over the time interval $[a, b]$

✓ $t_{i,r[a,b]}$: the average listening time of all radio listeners i in the region r over the time interval $[a, b]$

✓ w_f, w_n and w_t : the weights respectively associated with the broadcasting frequency, the number of listeners and the average listening time of all radio listeners i in the region r over the time interval $[a, b]$. Note that w_f, w_n and w_t are chosen such that $w_f + w_n + w_t = 1$.

Denoting by $RoA_{i,r[a,b]}$ the score of the radio i in the region r over the time interval $[a, b]$, we have the following expression:

$$RoA_{i,r[a,b]} = (w_f \times f_{i,r[a,b]}) + (w_n \times n_{i,r[a,b]}) + (w_t \times t_{i,r[a,b]}) \quad (1)$$

With:

$$✓ \quad f_{i,r[a,b]} = \frac{\text{broadcasting period of radio } i \text{ in the region } r}{\text{elapsed time between } a \text{ and } b} \quad (2)$$

$$✓ \quad n_{i,r[a,b]} = \sum_r \text{auditors} \quad (3)$$

$$✓ \quad t_{i,r[a,b]} = \frac{\sum_r \text{listening time per listener}}{n_{i,r[a,b]}} \quad (4)$$

$n_{i,r[a,b]}$ and $t_{i,r[a,b]}$ having orders of magnitude different from $f_{i,r[a,b]}$, before the evaluation of formula (1), we proceed to a normalization of each value. This normalization depends on the values of all the radios present in the ecosystem. Note that there are several methods of normalizing data [8]-[10]. Since the processed values do not consist of outliers, we have chosen the “**Min-Max**” normalization.

Thus, we obtain the formulas (5) and (6) for the normalization of the data:

$$\|n_{i,r[a,b]}\| = \frac{n_{i,r[a,b]} - \min_i(n_{i,r[a,b]})}{\max_i(n_{i,r[a,b]}) - \min_i(n_{i,r[a,b]})} \quad (5)$$

$$\|t_{i,r[a,b]}\| = \frac{t_{i,r[a,b]} - \min_i(t_{i,r[a,b]})}{\max_i(t_{i,r[a,b]}) - \min_i(t_{i,r[a,b]})} \quad (6)$$

Thereafter, we define for each radio a local index (I_L), a regional index (I_R) and a world index (I_M):

✓ I_L is obtained by applying formula (1) in the traditional locality of the radio;

✓ I_R is obtained by applying formula (1) beyond the traditional locality of the radio;

✓ I_M is obtained by applying formula (1) internationally.

The best web radio station is identified using the following formula:

$$M_r = \max_{i=1..n} [RoA_{i,r[a,b]}] \quad (7)$$

3.2. Experimental results and comments

We tested the RoA formula on a sample of 12 radio stations selected from the “AfricaWebRadio” platform. The results of this experiment are recorded in Table 1. The formula is evaluated over the entire web radio broadcasting region (international). The time interval $[a, b]$ considered is 5 days.

For the calculation of the expression, we assigned the following values to the different weights:

$$\begin{cases} w_n = 0,4 \\ w_t = 0,4 \\ w_f = 0,2 \end{cases}$$

Table 1: Evaluation of RoA on a sample of 12 radios from the “AfricaWebRadio” ecosystem.

1	2	3	4	5	6	7	8
radio stations	$n_{i,r_{[a,b]}}$	$\ n_{i,r_{[a,b]}}\ $	$t_{i,r_{[a,b]}}$	$\ t_{i,r_{[a,b]}}\ $	Broadcast time	$f_{i,r_{[a,b]}}$	$RoA_{i,r_{[a,b]}}$
R1	49	0.0883	36960	0.0877	80160	0.1856	0.1075
R2	229	0.7244	223440	0.5756	266640	0.6172	0.6434
R3	47	0.0813	6840	0.0089	50040	0.1158	0,0592
R4	153	0,4558	385,680	1	428,880	0,9928	0,7809
R5	307	1	302760	0,7831	345,960	0,8008	0.8734
R6	56	0,1131	9900	0,017	53100	0,1229	0,0766
R7	24	0	3420	0	46620	0,1079	0.0216
R8	67	0.1519	52740	0.129	95940	0.2221	0.1568
R9	121	0.3428	79500	0.199	122700	0.284	0.2735
R10	65	0.1449	33300	0.0782	76500	0.1771	0.1247
R11	52	0.0989	41340	0.0992	84540	0,1957	0.1184
R12	51	0.0954	12240	0.0231	55440	0.1283	0.0731

The lowest weight **0,2** is assigned to the radio broadcast frequency. We decided to attribute the same weight (**0,4**) to the number of listeners and to the average listening time of the radio. The average listening time of the listeners is an important parameter because it shows the degree of loyalty of the latter towards the radio.

Note that the radio with the largest RoA ($\max_{i=1..12} [RoA_{i,r_{[a,b]}}]$) is the radio **R5** with the largest number of listeners (**307 auditeurs**), one of the longest average listening times (**302760 secondes**) and a broadcast frequency tending towards 1 (**0.8008**).

The results of the application of our method on the data from the ACPM [11] platform are recorded in Table 2. A graphical representation of the ranking of 30 selected radios out of 128 is also provided in Figure 1. Radio broadcasters and advertisers can also use this RoA -based ranking as a tool to target specific audiences and maximize their impact. It appears that our method places France Inter radio first (same position as the ACPM ranking) with RoA equals **0,7296**. Radio **RTL** (previously 4th on the ACPM ranking) is second with a RoA equals **0,657**. Menergy (previously **122nd on the ACPM ranking**) takes position 5 with a RoA equals **0.5823**.

For the broadcasting time, we assumed that the radios broadcast almost constantly over the study period (03/01/2023 – 03/31/2023).

The application of our formula on the data of the ACPM platform reveals that the use of a single parameter to measure the audience rate is insufficient.

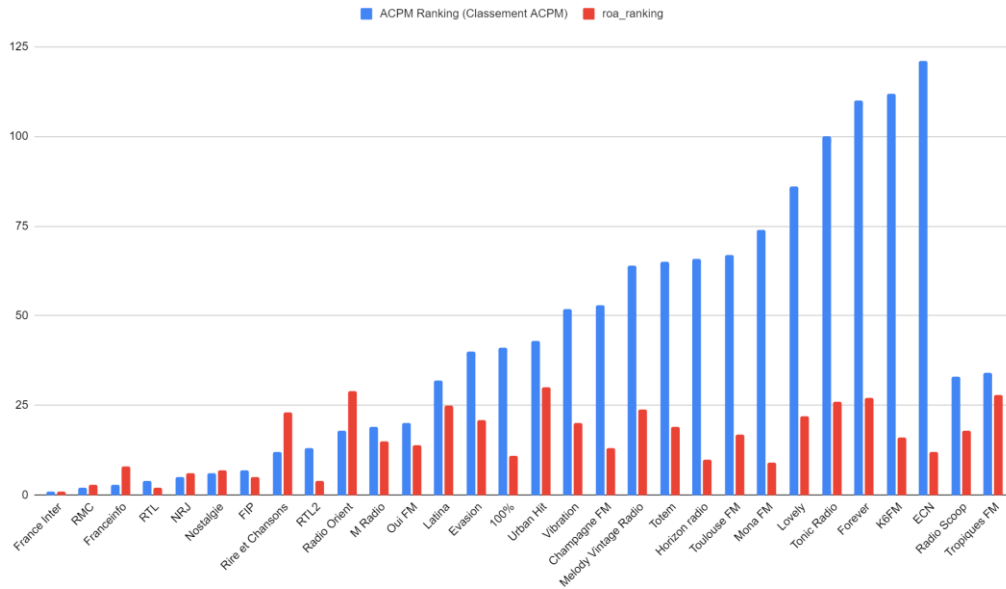


Figure 1: Ranking graph of 30 radio stations in France according to ACPM and the RoA method

Table 2: Evaluation of *RoA* on a sample of 128 radios from the “ACPM” ecosystem.

ACMP Ranking	1	2	3	4	5	6	7	8	RoA Ranking
	radio stations	$n_{ir[a,b]}$	$\ n_{ir[a,b]}\ $	$t_{ir[a,b]}$	$\ t_{ir[a,b]}\ $	Broadcast time	$f_{ir[a,b]}$	$RoA_{ir[a,b]}$	
1	France Inter	34770463	1	1998.7686	0.369	2436907.86	0.9098	0.7296	1
2	RMC	27194657	0.7821	2035.6797	0.3772	2436944,771	0.9099	0.6457	3
3	Franceinfo	21941505	0.631	1610,4052	0.2822	2436519,496	0.9097	0.5472	9
4	RTL	19792065	0.5692	3114,1811	0.6181	2438023,272	0.9103	0.657	2
5	NRJ	18302352	0.5263	2337,217	0.4446	2437246,308	0.91	0.5704	7
6	Nostalgie	11973980	0.3443	3023.0102	0.5978	2437932.101	0.9102	0.5589	8
7	FIP	10557859	0.3036	3392.8254	0.6804	2438301.916	0.9104	0.5757	6
8	Skyrock	8646095	0.2486	1551.8782	0.2691	2436460.969	0.9097	0.389	91
9	Darling FM	7751997	0.2229	3433,467	0.6895	2438342.558	0.9104	0.547	10
10	France Blue	6181592	0.1777	2559.0287	0.4941	2437468.12	0.91	0.4507	48
11	French Culture	5422865	0.1559	1778.7191	0.3198	2436687.81	0.9098	0.3722	101
12	Laughter and Songs	4981937	0.1432	2344.8097	0.4463	2437253.901	0.91	0.4178	73
13	RTL2	4031409	0.1159	4600.9583	0.9502	2439510.049	0.9108	0.6086	4
14	Classic Radio	3163038	0.0909	2844.2196	0.5578	2437753.311	0.9102	0.4415	58
15	Fun Radio	3140130	0.0902	2893.2736	0.5688	2437802.365	0.9102	0.4456	54
16	South Radio	2249585	0.0646	1476,1603	0.2522	2436385.251	0.9096	0.3086	114
17	France	2248581	0.0646	2562.7907	0.495	2437471.882	0.91	0.4058	80

	Music								
18	Radio East	2228344	0.064	951.8688	0.1351	2435860.96	0.9094	0.2615	124
19	M-Radio	2187185	0.0628	3062.8504	0.6067	2437971.941	0.9102	0.4498	49
20	Yes FM	2097989	0.0602	3118.6236	0.6191	2438027.715	0.9103	0.4538	47
21	Radio FG	2054569	0.059	2231.5606	0.421	2437140.652	0.9099	0.374	99
22	Jazz Radio	1715236	0.0492	3348.7483	0.6705	2438257.839	0.9103	0.4699	34
23	Sing France	1685512	0.0484	2717.341	0.5295	2437626.432	0.9101	0.4132	76
24	Move	1495192	0.0429	1389.0243	0.2328	2436298.115	0.9096	0.2922	116
25	Overseas the 1st	1471803	0.0422	1331.9581	0.22	2436241.049	0.9096	0.2868	118
26	BFM Business	1411028	0.0405	1769.6723	0.3178	2436678.763	0.9098	0.3253	111
27	Generations	1357592	0.0389	1353.6727	0.2249	2436262.764	0.9096	0.2874	117
28	BFM Radio	1324164	0.038	1677.8082	0.2973	2436586.899	0.9097	0.3161	112
29	Arab FM	1269178	0.0364	1165.3486	0.1828	2436074.44	0.9095	0.2696	122
30	Radio Public Health	1262846	0.0362	675.8221	0.0734	2435584.913	0.9093	0.2257	127
31	Radio Nova	1230769	0.0353	2557.4655	0.4938	2437466.556	0.91	0.3936	90
32	Latina	1085505	0.0311	2685.0703	0.5223	2437594.161	0.9101	0.4034	82
33	Radio Scoop	839347	0.024	3172.9309	0.6313	2438082.022	0.9103	0.4442	55
34	Tropics FM	698349	0.02	2094.3076	0.3903	2437003.399	0.9099	0.3461	107
35	Allzic	665955	0.0191	2091.6386	0.3897	2437000.73	0.9099	0.3455	108
36	Lark	637232	0.0182	3593.1359	0.7251	2438502.227	0.9104	0.4794	30
37	TSF Jazz	594553	0.017	3005.5353	0.5939	2437914.626	0.9102	0.4264	70
38	Happiness Radio	439315	0.0125	3201.0389	0.6375	2438110.13	0.9103	0.4421	56
39	Hitwest	423946	0.0121	3147.6245	0.6256	2438056.715	0.9103	0.4371	61
40	Evasion	421467	0.012	3065.0229	0.6071	2437974.114	0.9102	0.4297	67
41	100%	413831	0.0118	3421.8055	0.6868	2438330.896	0.9104	0.4615	38
42	Radio Contact	400298	0.0114	3623.9761	0.732	2438533.067	0.9104	0.4794	30
43	Urban Hit	383884	0.0109	1028.9077	0.1523	2435937.999	0.9095	0.2472	126
44	Top Music	334419	0.0095	3788.9247	0.7689	2438698.016	0.9105	0.4935	26
45	Sweet FM	325899	0.0093	2858.7225	0.5611	2437767.813	0.9102	0.4102	77
46	West Trend	323252	0.0092	2933.7062	0.5778	2437842.797	0.9102	0.4168	74
47	Impact FM	320876	0.0091	2530.8019	0.4878	2437439.893	0.91	0.3808	96
48	Voltage	314699	0.009	2787.3149	0.5451	2437696.406	0.9101	0.4037	81
49	Radio Melody	272235	0.0077	3027.9751	0.5989	2437937.066	0.9102	0.4247	71
50	France Maghreb 2	271825	0.0077	1193.0293	0.189	2436102.12	0.9095	0.2606	125
51	DKL Dreyeckland	256899	0.0073	3968.6336	0.809	2438877.725	0.9106	0.5086	18
52	Vibration	249357	0.0071	3146.7318	0.6254	2438055.823	0.9103	0.4351	63
53	Champagne FM	246454	0.007	3396.1567	0.6811	2438305.248	0.9104	0.4573	43
54	Metropolys	237167	0.0067	3861.5372	0.7851	2438770.628	0.9105	0.4988	24
55	Replay News	207621	0.0059	347.0632	0	2435256.154	0.9092	0.1842	128
56	Delta FM	205821	0.0058	3808.9816	0.7733	2438718.073	0.9105	0.4937	25
57	Ado	205554	0.0058	2376.2865	0.4533	2437285.377	0.91	0.3656	104
58	Wit FM	199751	0.0056	3059.6332	0.6059	2437968.724	0.9102	0.4266	69
59	RCA the Radio	194231	0.0055	2799.1	0.5477	2437708.191	0.9101	0.4033	83
60	RDL	166392	0.0047	3383.1026	0.6782	2438292.194	0.9104	0.4552	46

61	Magnum the Radio	166038	0.0047	3923.2537	0.7989	2438832,345	0.9106	0.5036	21
62	spoke 6	165012	0.0046	4186,321	0.8576	2439095.412	0.9107	0.527	15
63	Radio VINCI Autoroutes	161731	0.0046	1364.2431	0.2272	2436273.334	0.9096	0.2746	120
64	Melody Vintage Radio	153126	0.0043	2919.8777	0.5747	2437828.969	0.9102	0.4136	75
65	Totem	142500	0.004	3164,3874	0.6293	2438073.478	0.9103	0.4354	62
66	Horizon radio	132445	0,0037	3804,4562	0,7723	2438713,547	0,9105	0,4925	27
67	Toulouse FM	131292	0,0037	3293,337	0,6581	2438202,428	0,9103	0,4468	52
68	Maritima	123553	0,0035	2390,9189	0,4566	2437300,01	0,91	0,366	103
69	La Radio Plus	111783	0.0031	2578.707	0.4985	2437487.798	0.9101	0.3827	95
70	ODS the radio	110171	0.0031	3148,3458	0.6258	2438057.437	0.9103	0.4336	65
71	Radio turn	109902	0.0031	2544.2267	0.4908	2437453.318	0.91	0.3796	97
72	Africa	108605	0.003	1778.7358	0.3198	2436687.827	0.9098	0.3111	113
73	Radio Pomme d'Api	108397	0.003	2181.6139	0.4098	2437090.705	0.9099	0.3471	105
74	Mona FM	107251	0.003	4376.183	0.9	2439285.274	0.9107	0.5433	11
75	MBS	103843	0.0029	3163.8108	0.6292	2438072.902	0.9103	0.4349	64
76	Radio Space	98287	0.0027	2634.3911	0.511	2437543.482	0.9101	0.3875	92
77	Forum	97576	0.0027	3794.9496	0.7702	2438704.041	0.9105	0.4913	28
78	Antinea Radio	92665	0.0026	1273.8013	0.207	2436182.892	0.9096	0.2658	123
79	Oceane FM	88946	0.0025	3510.2692	0.7066	2438419.36	0.9104	0.4657	37
80	Frequency More	87980	0.0024	2706.3833	0.527	2437615.474	0.9101	0.3938	89
81	Radio Isa	84554	0.0023	3784.0575	0.7678	2438693.148	0.9105	0.4901	29
82	RTS	84366	0.0023	3646.5543	0,7371	2438555,645	0,9105	0,4779	32
83	Maximum	81847	0,0023	1508,8006	0,2595	2436417,892	0,9097	0,2867	119
84	Radio Emotion	77651	0,0021	2736,7529	0,5338	2437645,844	0,9101	0,3964	87
85	Radio Star	75031	0,0021	2423,6702	0,4639	2437332,761	0,91	0,3684	102
86	Lovely	71588	0,002	3012,4881	0,5954	2437921,579	0,9102	0,421	72
87	Blackbox	68494	0,0019	2118,5097	0,3957	2437027,601	0,9099	0,341	109
88	Est FM	66392	0,0018	4056,1815	0,8286	2438965,272	0,9106	0,5143	17
89	Activ Radio	65496	0,0018	3514,3093	0,7075	2438423,4	0,9104	0,4658	36
90	Flash FM	63794	0,0017	1997,285	0,3686	2436906,376	0,9098	0,3301	110
91	Flor FM	61401	0,0017	2805,7263	0,5492	2437714,817	0,9101	0,4024	84
92	RVM	61148	0,0017	3527,2912	0,7104	2438436,382	0,9104	0,4669	35
93	Mixx FM	59295	0,0016	3086,4862	0,6119	2437995,577	0,9102	0,4274	68
94	Direct FM	58095	0,0016	3315,2595	0,663	2438224,35	0,9103	0,4479	51
95	Radio Mont Blanc	57711	0,0016	2634,2985	0,5109	2437543,389	0,9101	0,387	93
96	Cannes Radio	54478	0,0015	3248,3131	0,6481	2438157,404	0,9103	0,4419	57
97	Alpes 1	51917	0,0014	2856,2436	0,5605	2437765,335	0,9102	0,4068	79
98	Lor FM	48444	0,0013	4314,8873	0,8863	2439223,978	0,9107	0,5372	12
99	RVA	46267	0,0012	3907,2687	0,7953	2438816,36	0,9105	0,5007	23
100	Tonic Radio	45177	0,0012	2759,227	0,5388	2437668,318	0,9101	0,398	86

101	MTI	43116	0,0011	3414,3056	0,6852	2438323,397	0,9104	0,4566	44
102	47FM	40608	0,0011	2895,7447	0,5693	2437804,836	0,9102	0,4102	77
103	Radio Camargue	40096	0,0011	3135,9038	0,623	2438044,995	0,9103	0,4317	66
104	TFM	39946	0,0011	3939,8488	0,8026	2438848,94	0,9106	0,5036	21
105	FC Radio	39578	0,001	3238,0717	0,6458	2438147,163	0,9103	0,4408	60
106	Radio Number 1	39152	0,001	3293,5329	0,6582	2438202,624	0,9103	0,4457	53
107	Coastline FM	35704	0,0009	3426,1707	0,6878	2438335,262	0,9104	0,4576	41
108	Radio J	35173	0,0009	1376,7265	0,23	2436285,817	0,9096	0,2743	121
109	Cherry FM	32720	0,0008	3616,9438	0,7304	2438526,035	0,9104	0,4746	33
110	Forever	31161	0,0008	2476,7113	0,4757	2437385,802	0,91	0,3726	100
111	N Radio	31008	0,0008	4288,6997	0,8805	2439197,791	0,9107	0,5347	13
112	K6FM	30753	0,0008	3330,6409	0,6665	2438239,732	0,9103	0,449	50
113	ARL	29885	0,0008	2499,9431	0,4809	2437409,034	0,91	0,3747	98
114	Fusion	29043	0,0007	3981,4069	0,8119	2438890,498	0,9106	0,5072	19
115	Max Radio	28613	0,0007	2604,6622	0,5043	2437513,753	0,9101	0,384	94
116	RadioOne	25775	0,0006	3468,0116	0,6972	2438377,103	0,9104	0,4612	39
117	Radio 8	25220	0,0006	3957,0024	0,8064	2438866,093	0,9106	0,5049	20
118	Oxygen Radio	23124	0,0006	4251,3752	0,8722	2439160,466	0,9107	0,5313	14
119	Lyon 1st	21844	0,0005	1605,6949	0,2812	2436514,786	0,9097	0,2946	115
120	Radio Latitude	16184	0,0004	2721,7993	0,5305	2437630,89	0,9101	0,3944	88
121	ECN	13840	0,0003	3430,1445	0,6887	2438339,235	0,9104	0,4577	40
122	Radio Menergy	11556	0,0002	4823,676	1	2439732,767	0,9109	0,5823	5
123	Frequency Great Lakes	11090	0,0002	3243,2462	0,647	2438152,337	0,9103	0,4409	59
124	Great South FM	10887	0,0002	3428,0518	0,6882	2438337,143	0,9104	0,4574	42
125	VFM Radio	9678	0,0002	2185,7409	0,4107	2437094,832	0,9099	0,3463	106
126	Nice Radio	6648	0,0001	2772,0217	0,5417	2437681,113	0,9101	0,3987	85
127	Jaime Radio	5497	0,0001	3406,1488	0,6833	2438315,24	0,9104	0,4554	45
128	Durance FM	3419	0	4119,0992	0,8426	2439028,19	0,9106	0,5192	16

4. CONCLUSION AND PERSPECTIVES

Traditional methods of audience measurement, such as telephone surveys and audience diaries, although widely used, have some shortcomings such as lack of precision and subjectivity. Thus, the proposal of the method for calculating the RoA appears as an added value to improve the methods for determining the audience rate of web radios. The method RoA is promising to provide a more precise and real-time measurement of the audience rate of web radios. In perspective, a monitoring system for a family of web radios integrating the concept of automatic evaluation of RoA will be proposed. This system will integrate an authentication session (with the possibility of using a third-party connection service) on the "AfricaWebRadio" platform providing more information on the profile of listeners in order to improve the accuracy of the estimation of this parameter. The question of choosing the weights (w_f , w_n and w_t) efficiently remains an issue that would be studied in our future work.

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REFERENCES

- [1] “la_radio_2.0_1.pdf”. Consulted on: April 30, 2023. [Online]. Available at: https://www.iabfrance.com/sites/www.iabfrance.com/files/atoms/files/la_radio_2.0_1.pdf
- [2] “AWR | Welcome ”. <https://africawebradio.bj/> (accessed April 30, 2023). “(19) Watch | Facebook ”. <https://www.facebook.com/watch/?v=6183069238412150&ref=sharing> (accessed April 30, 2023).
- [3] « (19)Watch| Facebook ». <https://www.facebook.com/watch/?v=6183069238412150&ref=sharing> (consulté le 30 avril 2023).
- [4] “Important Online Radio Streaming Reports & How to Improve”. <https://www.cloudrad.io/radio-reports> (accessed April 29, 2023).
- [5] “L’audience cumulée – Effeillage”, 28 mai 2022. <https://effeuillage-la-revue.fr/portfolio-item/audience-cumulee/> (accessed May 1, 2023).
- [6] “Measurement of Radio/Audio/Podcast Listening”, Ipsos . <https://www.ipsos.com/en/measurement-radioaudio-listening> (accessed May 1, 2023).
- [7] Gourraud, (February 1st, 2020). “Comment bien mesurer l’audience des podcasts et des radios ? ? », Medium. <https://anthony-gourraud.medium.com/comment-bien-mesurer-laudience-des-podcasts-et-des-radios-af3d664c7c4e> (accessed April 30, 2023).
- [8] NSS Kalpana, (July 6th, 2020). “Data Normalization With R,” The Startup. <https://medium.com/swlh/data-normalization-with-r-6ef1d1947970> (accessed April 29, 2023).
- [9] G. Kamani, R. Parmar, and Y. Ghodasara, (June 2022). “DATA NORMALIZATION IN DATA MINING USING GRAPHICAL USER INTERFACE A PRE-PROCESSING STAGE”.
- [10] <https://arboretum.link//about>, « Mise à l’échelle des données - standardisation et normalisation », Un jardin digital accompagnant mon apprentissage de la data science. <https://arboretum.link//notes/Mise-%C3%A0-l-%C3%A9chelle-des-donn%C3%A9es-standardisation-et-normalisation> (accessed April 29, 2023).
- [11] eZ CBN eZ S. Bundle, “French Ranking”. <https://www.acpm.fr/site/Les-chiffres/Frequeuntation-Radios/Classement-des-Radios-Digitales/Par-marque/Classement-France> (accessed May 1, 2023).

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