Brazilian Amateur Radio Survey

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Brazilian Amateur Radio Survey 2024

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1. SUMMARY

This national survey, conducted between May 1 and 19, 2024, involved 940 hams in 27 states. The study aimed to gain a deeper understanding of the profile, activities and preferences of the amateur radio community in Brazil.

Only 2% of participants are women, highlighting the low female representation in the hobby. The majority of hams live in the Southeast and South, especially São Paulo (34%), data that confirms other existing studies.

66% live in small or medium-sized towns, while only 31% are in large urban centers.

In terms of age group and years of experience, 72% of hams are between 40 and 70 years old, with most of them between 40 and 60 years old (58%). There are peaks of experience with 10, 20 and 30 years of practice, but also a recent increase in new hams with up to 1 year's tickets.

Only 27% are members of LABRE, the Brazilian Amateur Radio League. In addition, 48% do not belong to any association, which makes it difficult to pass on technical knowledge to new hams.

The most popular bands are VHF (2m): 87%, HF (10m to 80m): 76% and UHF (440MHz): 63%.

Class A is most active on HF (80m to 10m), while Class C mainly uses VHF (2m).

In terms of modes, voice leads the way, followed by interest in DX, FT8 (digital modes), CW and repeater conversations.

This report provides a detailed overview of the current scenario of amateur radio in Brazil and points out relevant trends for its future development.

2. INTRODUCTION

Previous studies carried out using Anatel data have adopted a quantitative approach, enabling certain aspects of the local amateur radio activity to be understood. However, a qualitative view was lacking to provide a deeper understanding of who these hams are, what their activities and preferences are, and how intensely they dedicate themselves to the hobby. In response to this need, we came up with the idea of carrying out this nationwide survey to answer these questions.

3. METHODOLOGY

This national survey was conducted online between May 1st and 19th 2024, with a 12-question questionnaire. 940 people from 27 states and more than 350 cities took part.

4. DEMOGRAPHY

4.1. GENDER

It is a well-known fact that female participation in the amateur radio world is limited. This study confirms this situation in this survey, where women represent only 2%.



4.2. MEMBERSHIP IN GROUPS OR ASSOCIATIONS

This study also analyzed the membership of hams in any association or entity representing the hobby, in particular the LABRE, a traditional institution in Brazil and the country's representative before the IARU (International Amateur Radio Union). The data shows that only 27% of hams are members of LABRE, and their contributions enable the remaining 73% of Brazilian radio amateurs to practice the hobby. This situation can be explained by the former obligation to join a class organization, which led to problems that are still present in the state chapters of the LABRE.

Around 25% of hams are associated with local or regional organizations, playing an important social role. However, 48% do not belong to any association. This scenario has had an impact on new generations of hams, who face difficulties in learning the essential technical concepts, especially the operational and cultural ones related to the activity.



4.3. GEOGRAPHICAL DISTRIBUTION

The distribution by state of radio amateurs evaluated in this research confirms other existing statistics. The southern and southeastern states have the largest number of radio amateurs, especially the state of São Paulo, which is home to 34% of the total.



AC

AP

Total

0,11%

0,11%

100,00%

4.4. ANALYSIS BY URBAN DENSITY

The majority of hams, totaling 66%, are located in small towns or mediumsized urban centers, in contrast to the 31% who live in large urban centers. Only 3% of the group analyzed live in rural areas. Small and medium-sized towns provide more space for installing antennas and have lower levels of RF pollution, which makes it significantly easier to set up stations.



Med. sized urban ctr (100k a 1 mi)	39,79%
Classe A	19,36%
Classe C	16,81%
Classe B	3,62%
Large urban center (>1 mi)	31,17%
Classe C	14,89%
Classe A	14,26%
Classe B	2,02%
Small town	25,64%
Classe A	11,81%
Classe C	11,38%
Classe B	2,45%
Rural area	3,40%
Classe C	1,91%
Classe A	0,96%
Classe B	0,53%
Total	100,00%

Med. sized urban ctr (100k a 1 mi)	39,79%
40-49	12,45%
50-59	11,06%
60-69	9,15%
30-39	3,19%
70-79	2,55%
20-29	0,85%
80+	0,32%
10-19	0,21%
Large urban center (>1 mi)	31,17%
50-59	9,26%
60-69	8,83%
40-49	7,23%
70-79	2,66%
30-39	1,49%
20-29	0,96%
80+	0,43%
10-19	0,32%
Small town	25,64%
40-49	8,30%
50-59	7,23%
60-69	5,74%
30-39	2,02%
70-79	1,06%
20-29	0,74%
10-19	0,43%
80+	0,11%
Rural area	3,40%
40-49	1,06%
50-59	0,96%
6U-6Y	0,53%
30-39	0,32%
/U-/9	0,32%
10-19	0,11%
öU+ Tetel	0,11%
IUtal	100,00%

Class B

Class A

Class B

Class C

Total

⊡ 80+

0,11%

0,96%

0,64%

0,21%

100,00%

0,11%

4.4. ANALYSIS BY AGE GROUP

Fifty-eight percent of radio amateurs are aged between 40 and 60, indicating that this is a hobby generally practiced by people with economic stability and time on their hands. In addition, 24% are in the 60 to 70 age group, making up a segment of 40 to 70 year olds that represents the majority of radio amateurs, totaling 72%. The data set has a typical Gaussian distribution.



Med. sized urban ctr. (100k a 1 mi)

Med. sized urban ctr. (100k a 1 mi)

Med. sized urban ctr. (100k a 1 mi)

|Large urban center (>1 mi)

|Large urban center (>1 mi)

Small town

Small town

Área rural

Área rural

Small town

Total

□ 10-19

⊟ 80+

0,85%

0,74%

1,06%

0,43%

0.32%

0,21%

0,11%

0,96%

0,43% 0,32%

0,11% 0,11%

100.00%

4.5. ANALYSIS BY CLASS

An analysis by class does not identify a conclusive trend from the point of view of age or urban density. Instead, it suggests that Class B acts as a transitional class between Class C and Class A, representing approximately 9% of the universe analyzed.



5. ANALYSIS OF WEEKLY DEDICATION PER BAND

5.1. TOTAL

37% of radio amateurs spend between 1 and 8 hours a week on the popular VHF (2m) and HF (10m to 80m) bands, regardless of class.



5.2. CLASS C

Seventy-four percent of Class C devote up to 8 hours a week to using the 2-meter VHF. In addition, 50% of this time is also allocated to HF use, covering the 80 meter to 10 meter bands, totaling up to 8 hours a week



5.3. CLASS B

On the other hand, Class B shows a trend towards longer use in the HF bands, which range from 80m to 10m. The privilege in the 40m band of this class encourages the use of all HF bands.



5.4. CLASS A

Class A invests 74% of their time, up to 8 hours a week, in the HF bands from 80m to 10m. Of the total population, 12% spend between 8 and 12 hours a week on the HF band, where the big contest operators and the most experienced operators are to be found. In addition, they continue to use the 2m VHF band intensively, with 69% of them devoting up to 8 hours a week to this band.



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6. ANALYSIS OF TIME LICENSED AND YEARS OF PRACTICE

The period analyzed does not allow for definitive conclusions, but it does reveal an increase in the number of radio amateurs with up to 1 year's experience, as well as peaks at 10, 20 and 30 years. Examining the trend of these peaks shows a decline in the number of radio amateurs in the first 15 years, followed by a significant decrease from the high number recorded at 20 years and beyond.

A possible explanation for the first segment (0-15 years) could be a change in interest after initial enthusiasm. The second segment may result from a combination of changing interests, priorities or the consequences of the age of radio amateurs.



Analyses of years of amateur radio practice show a similar trend to the previous one, with a peak at the age of 30, followed by another peak at 20 years of practice. The first year also shows a significant increase, but it cannot be definitively concluded that there is a new wave of radio amateurs entering the hobby. To do this, it would be necessary to analyze a larger sample and follow this population over time.



Comparing these two figures (years of license and practice of the hobby), it can be seen that the vast majority of people start practicing the hobby several years before obtaining a license. This doesn't necessarily mean that it's an illegal activity, but it is a known fact that the real entry point into the hobby in Brazil takes place in the Citizen's Band. This activity, due to its characteristics and technical limitations, does not require a license, unlike amateur radio.



7. BAND UTILIZATION ANALYSIS

7.1. BAND UTILIZATION

The data shows that the most popular bands among radio amateurs are VHF 2m, with 87%, followed by HF bands from 10m to 80m, with 76%, and in third place, UHF 440MHz, with 63%. The other HF bands, such as 160m, VHF 220MHz and above 440MHz, are less used by radio amateurs in general and are more common among experimenters.

The 6-meter VHF band has a usage rate of 30%, indicating a significant number of enthusiasts. The bands above 440 MHz have potential for use in various hobbies, combined with amateur radio. Experimentation on these bands can be especially interesting for young people who are interested in other technologies.

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7.2. BAND USAGE BY CLASS

Segmentation by class, considering that class B really is a pass-through class, as can be seen in all the bands, shows that the 2m VHF band has no class preference. On the other hand, it can be seen that for HF and 6m, there is a priority for classes B and A. This can be attributed to a number of reasons, such as the need for more expensive equipment, more space for antennas and a higher level of technical and operational skills.



7.3. ANALYSIS BY MODE

As you might expect, the big star of traditional amateur radio is voice. The other areas of interest to most include antennas, mobile operation and ragchewing on repeaters. DX also occupies a prominent position and, logically, digital modes, with the popular FT8 mode have an important place in this context.

Very traditional interests, such as CW and paper QSL card exchange, still occupy important positions, equaling satellites and digital voice in the preference of hams.

Voice	Digital	Rago	h HF	Nets		Cont	est
Antennas	Digital Voice		QRP	Casual	Eme	rge	DXpe
Mobile	QSL card		Repeater	Portablel	Awar	ds	ARISS
Ragch Repet.	Kits and homebre	ew	APRS	Clima	Ev	ent	Resta
DX	Satellite		Youth	Weak Foxhui Off Ro	nt ad	Re Tele Men.	

1	01 - Voice (SSB, FM, AM)	88%
2	22 - Antenna construction	51%
3	09 - Mobile operation	50%
4	18 - Ragchewing on local repeaters	50%
5	05 - DX	49%
6	03 - Digital modes (FT8, RTTY, SSTV, etc)	42%
7	19 - Ragchewing on HF	42%
8	17 - Nets (local repeater or HF)	40%
9	23 - Contest	36%
10	02 - Digital Voice (D-Star, DMR, Fusion, etc)	30%
11	24 - Collect paper QSLs	26%
12	04 - CW	26%
13	21 - Homebrewing and kit assembly	24%
14	11 - Sattelite operation	22%
15	07 - QRP	21%
16	16 - Sporadic operation	19%
17	20 - Emergency communictions (REER, RENER, etc)	19%
18	06 - DXpeditions	16%
19	39 - Build and maintain repeateres	15%
20	08 - Portable operations (POTA/SOTA/IOTA)	15%
21	29 - Awards	14%
22	13 - ARISS Space station operation (voice and data)	14%
23	10 - APRS Operations	14%
24	32 - Youth (JOTA, Scouts. etc.)	12%
25	38 - SWL	12%
26	26 - Weather monitoring	10%
27	27 - Special events stations	9%
28	28 - Classic radios restoration	9%
29	14 - Weak signal operation	8%
30	30 - Foxhunting	6%
31	31 - Off Road communications	6%
32	15 - Remote operations	5%
33	36 - High altitude balloons	4%
34	35 - Radio Astronomy	3%
35	12 - Telemetry	3%
36	25 - Coaching and mentoring (Elmering)	3%
37	33 - Micro-wave operations	2%
38	34 - EME	2%
39	37 - ATV/DATV/HamTV	1%

8. FINAL CONSIDERATIONS

The study revealed a predominantly male and experienced community, with a strong concentration in the Southeast and South regions. Despite the recent growth in the number of new hams, the low level of membership of clubs and associations is a cause for concern due to the loss of opportunities for technical training. Traditional VHF and HF bands continue to play a leading role, while new digital technologies are gaining ground.

This report provides a detailed overview of the current scenario of amateur radio in Brazil and points out relevant trends for its future development.

9. REFERENCES

Ricardo da Silva Benedito PY2QB, Radioamadores e Estações no Brasil ed.2020, ed.2021, ed.2022 [Portuguese]

ABOUT THE AUTHOR



Born in Buenos Aires, Argentina, he became an Amateur Radio Operator at the Centro de Radioaficionados Ciudad de Buenos Aires LU5CBA in 1976. He went into a hiatus in the 1990s due to work and family priorities, and only returned to the hobby a few years later. He studied electronics engineering and systems engineering at the Universidad Tecnológica Nacional in Argentina. He graduated in computer science from Fairleigh Dickinson University in New Jersey, USA and is passionate about technology, radio and electronics. Today he lives in São Paulo, Brazil and is licensed in both Brazil as PY2BIL and Argentina as LU7ECX.

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