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# Aging and Radiosport:
# Modest Evidence from Survey Data

The Holy Grail of statistics regarding amateur radio is the age distribution of licensed operators. While very high quality data from the U.S. Bureau of the Census tells us the age distribution of the national population, and how it is changing over time, we simply have no comparable quality data on ham operators. Nor do we for subgroups like those hams who practice radiosport in the form of contesting. Yet, we speak to one another in various media based upon what we observe in the hobby as if what we see each day out of our personal windshields represents all there is to see in the amateur radio world. But if that is all we have, that is what we will practically use to make sense of the hobby. However, we should not fool ourselves by typifying all hams by just what we see as individuals.

The large cohort of births that occurred after World War II, commonly called the Baby Boom, is entering the retirement years. Such a large cohort, and the smaller "echo effect" of their own children, tend to shape our impressions of society because of the sheer size of the age group. We simply see more people from these age cohorts than we do from other age groups, all things else considered. Thus, it appears that hams' collective impressions of the demographics of age in the hobby are based upon both societal trends as well as what is "seen" through the personal windshields that we use everyday in our exposure to the hobby, whether it's on the air, at hamfests, at club meetings, in hobby publications, or on websites with pictures of operators.

But like the ship captain who sees only a small tip of the iceberg, we really do not know the true answer until we reliably and accurately measure it. This is an example of "convenience sampling" as shown in Figure 1. If we talk to people at a hamfest or a club about a ham radio topic, we are using a "convenience sample" (see Figure 1). And, just like the survey contained in the Literary Digest magazine that asked subscribers to voluntarily tell them who they favored for President, it was indeed Truman who was actually elected, not Mr. Dewey who was highly favored by the (non-random) subscribers of the magazine.[1] The Literary Digest asked their readers to voluntarily return the survey included in one issue of the magazine. If we put out a general notice that an online survey is open for responses, we have a "voluntary response sample" as illustrated in Figure 1. While each have the *internal validity* of actual observed responses (subject to measurement errors), neither have the *external validity* of generalizing to a larger population of ham operators.[2] There is an important lesson in these two examples for us in amateur radio. Until we have a large random sample of licensed hams from the FCC's Amateur Radio Service database and measure these demographic and other characteristics, we will only be making guesses at the answers we seek.

[Figure 1 about here]

In this article, I present some systematic "guesses" about aging and contesting using modest survey data, with two exceptions. I've combined U.S. Census data on age and Bureau of Labor Statistics data on time use with the ARRL's membership database in conjunction with an online survey conducted by

1 For an overview, see https://en.wikipedia.org/wiki/The_Literary_Digest.

2 See, for example, Earl S. Babbie. 2010. *The Practice of Social Research, 12th Ed*. Belmont, CA: Wadsworth Publishing.

the League for the NCJ Editor.[3] I've added two regional surveys that I conducted with the ARRL staff for members in the Delta Division during 2011[4] and 2013.[5] All told, while the Census and BLS surveys are of the highest quality, the surveys of ham operators are "opt-in" or volunteer response samples where the relevant amateur operators were contacted about participating and given a website link to take the survey itself. These volunteer response surveys possess credible internal validity but have undefined external validity. Thus, I call this "modest" survey evidence against the standard of high quality random sample designs and implementation of a fielded survey using best practices.[6]

While the results are not authoritative in their design regarding generalizability to the U.S. ham population, they do help us gain better insight into how aging is related to the practice of contesting in the U.S. I examine how the U.S. population compares to our best available proxy for the age of the ham population, ARRL membership age data, and contesters through the NCJ survey. I add some detail into the age-differences in the focus of hams on contesting per se, how much time is spent doing that using the two regional surveys, and how they use various sources of information for contesting practice from the national NCJ Survey. All told, these results give us a modest picture of aging in the practice of U.S. radiosport, one that we do not get from our daily operations or visits to our favorite hamfests or club meetings. Some of them do, however, confirm the impressions of many about aging, amateur radio and radiosport itself.

**A Conceptual Perspective on Aging in Amateur Radio**

Analyzing data without a set of theoretical expectations is akin to the new ham pushing buttons and turning knobs on a sweeping antenna analyzer without a sense of what to expect from those results. I'll briefly describe what social scientists call the *life course*, a set of age-related transitions that occur at relatively narrow ranges of time (ages) for a population as a lens thorough which to interpret our results. Hutchinson describes it as:

"*A life course perspective is stage-like because it proposes that each person experiences a number of transitions, or changes in roles and statuses that represent a distinct departure from prior roles and statuses ... Life is full of such transitions: starting school, entering puberty, leaving school, getting a first job, leaving home, retiring, and so on.*"[7]

These transitions amount to multiple trajectories that most people experience, each shaping one another according to various other social forces. One might think of complex impedance visualized in a Smith

3 According to Steve Ford at ARRL Headquarters (personal communication, October 30, 2019), "According to the person who managed the survey, it was sent to all NCJ subscribers for whom we had email addresses. That would have been about 1500 individuals." A total of 937 valid survey responses were received. As noted in the actual survey results, many of these previous NCJ subscribers say they do not currently subscribe to the Journal. Thus, I interpret it as a convenience sample using a voluntary response modality.

4 Frank M. Howell. 2011. Results of ARRL Delta Division Survey of Members, July. Available at http://k4fmh.com/wp-content/uploads/2014/10/2011final.pdf. There were a total of 641 respondents.

5 Frank M. Howell, *Survey of Members 2013*, ARRL Delta Division, located at http://k4fmh.com/wp-content/uploads/2014/10/dd-final13.pdf. There were a total of 1,234 respondents.

6 James D. Wright and Peter V. Marsden. 2010. "Survey Research and Social Science: History, Current Practice, and Future Prospects," Pp. 3-25 in Peter V. Marsden and James D. Wright, Handbook of Survey Research, 2nd Ed. New York: Emerald Publishing.

7 Elizabeth D. Hutchinson. 2011. *Dimensions of Human Behavior; Changing Life Course, 4th Ed*. Thousand Oaks, CA: Sage Publications, page 22.

Chart as a an example of multiple forces shaping one another. While it is not a parallel example, it does share a notion of mutually-influencing complexity that typical ham operators may be more familiar with.

Time-use, especially for leisure time activity such as amateur radio, is shaped by these age-related transitions and social trajectories.[8] For instance, many young people in the Baby Boom cohorts got exposed to amateur radio but did not get licensed because of these transition-based trajectories. Some, what I call late-in-life hams,[9] return to the hobby and get licensed when forces embedded in these trajectories allow two factors required to engage in a hobby: available time and discretionary money. Let's examine high quality national data on leisure time and aging.

[Figure 2 about here]

The BLS American Time Use Survey annually collects on samples of adults regarding how they spend their time. To show how life course trajectories affect leisure time,[10] I've created a graphic to illustrate age patterns in time use (see Figure 2). Several life course trajectory effects are evident which will be important for us to understand the survey results on contesting. Figure 1 shows that educational activities sharply taper off with age. Work related activities ramp up and peak at the tail ends of the typical work career (55-64) in an inverted U-shape. Personal care has a *U-shaped pattern* wherein middle age adults spend less time in those activities (including sleep). These are no doubt linked to education, work, and family trajectories. Household activities ramp up toward the end of work careers and the beginning of retirement phases. Note in particular the leisure and sports time use. It too has a clear U-shaped aging characteristic. This gives us an insight into how many middle-age amateur radio operators may not spend as much time in the hobby through club membership and on-air operations, including radiosport. It has little to do with the amateur radio hobby but more to do with other more socially pressing trajectories in the life course, such as careers, child-rearing, and so forth versus the relative priority of leisure time pursuits.

[Figure 3 about here]

In data not presented here due to space limitations, trends in the BLS Time Use Survey show that total leisure time has become dominated by watching television, now comprising *one-half* of leisure activities. Because of the differential life course trajectories faced by women (commonly called the *second shift*[11]), leisure time activities are systematically less for women in favor of otherhousehold activities and employment. Current time use for children shows that they are perhaps "over scheduled" in organized activities, leaving leisure time pursuits ("play") such as amateur radio as increasingly secondary in the trajectories they find themselves in. Thus, if we had to point out a significant competing leisure time activity to amateur radio, these data would point to *increased television time* as the dominant theme over the past decade or so in the total time adults devote to leisure pursuits!

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8 The popular podcast *QSO Today*, hosted by Eric Guth 4Z1UG, contains a "convenience sample" of amateur operators who often give rich biographical details on how these forces have shaped their exposure to and participation in the hobby. See https://www.qsotoday.com.

9 See my 2013 Delta Division Survey report, Frank M. Howell, *Survey of Members 2013,* ARRL Delta Division.

10 The BLS American Time Use Survey is located at https://www.bls.gov/tus/.

11 See Arlie Hochschild and Anne Machung. 2012. *The Second Shift: Working Families and the Revolution at Home, Revised Ed.* New York: Penguin Books.

## Age Distribution of the U.S. Population and Amateur Radio Operators

I now turn to the age distribution data for the U.S. as a whole and for radio amateurs. Since we have no direct measure of the age distribution of all licensed hams, I am using as a proxy the 2019 ARRL membership data on age. For contesters, the NCJ Survey in 2019 is the source for that age distribution. The U.S. data are from the Census Bureau.[12] Figure 3 displays the age distribution for these three groups.

The U.S. follows a clear age distribution of an even population spread, declining within the higher mortality in the most elderly years.[13] Using ARRL membership data,[14] the middle to later age dominance fits part of what we tend to see visibly as we attend ham fests or club meetings. *They are concentrated in the 50 to 79 age span.*[15] For contesters, it does appear that they tend to be older than are amateur operators as a whole. The NCJ Survey respondents are predominately in the 60 to 79 age groups while the 80 and over contestors drop off considerable to levels less than the 50-59 group. While there *are* younger participants shown in this graph, there is evidence to suggest that contesting is less popular for hams in general for those 40-49, a dramatic gap as compared to the older group of hams in their fifties, sixties or seventies. I will return to this at the end of this article but bear in mind that the rates of contest participation do increase with age among the youngest age groups in this survey.

[Figure 3 about here]

## Radiosport Participation by Age

The NCJ Survey asked about participation in contests. But to put that in some context of operator preferences, I also report data from my Delta Division Surveys in 2011 and 2013. There respondents were asked about favorite operating activities and time spent in them from those most popular among hams. Figure 4 contains the results for these two regional surveys. Radiosport in the form of Dxing and contest participation ranks high in both years.[16] There is some age variation in 2011 but not as much in 2013. About 30 percent of those hams in the Delta Division said that radiosport was their favorite activity. So, contesting is one of the *most popular activities* in these two regional surveys of ARRL members.

[Figure 4 about here]

While one of the two most popular operating activities, how much time do radiosport participants actually say they spend in pursuit of contacts? In Figure 5, I've compared the amount of time reported on the air per week with favorite operating activity. For both years, contesters report high percentages

12 Source: U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population by Single Year of Age and Sex for the United States: April 1, 2010 to July 1, 2018. Release Date: June 2019.

13 Note that the category of 1-19 is twice the age period as the successive decade categories.

14 These were kindly provided by the ARRL CEO, Howard Michel.

15 I caution readers that the ARRL's 150,000 or so reported membership does not include approximately 600,000 licensed amateurs out of the total 750,000 or so current licenses. The statistical issue here is that we have no empirical idea about how the age distribution of the non-members compares to League members. And, the membership data themselves are incomplete as they are not universally volunteered by members.

16 Note: the green and blue columns Panel A for 2011 reflect single survey respondents. The spikes should largely be ignored.

in the 5 hours and above categories. By contrast, the 10 hours and above reflect what a quarter-time paid employment position would require. Note that experimenters and builders report significant time "not on the air" or no more than one hour each week. Contestors thus spend *more time on the air* each week than any other popular operating activity.

[Figure 5 about here]

While the NCJ Survey and the earlier regional surveys of the Delta Division are not directly comparable in terms of sample population (one is national while the other two are regional), Figure 6 contains the NCJ Survey question asking about the number of contests each respondent said they participated in per year. It's broken down by age category.[17]

[Figure 6 about here]

Most engage in 6-10 contests per year but there are age effects in participation. Note that marginal radiosport participants (1-5 per year) tend to be less than 50 years of age. By stark contrast, those who participate in 16 or more tend to be distinctly older. Survey respondents who are 80 years or over report the highest percentages in the 16-20 and 20 or more contests per year. In perspective, 20 or more is about one contest every two weeks!

Age is linked to placing a priority on contesting, how much time is spent on that activity, and how many of those activities are pursued each year. This is to the extent that the most committed and active radiosport enthusiasts are the oldest respondents in the NCJ Survey in 2019.

**Sources of Contest Information**

Preparing for participation in a contest, at least to be relatively successful, requires preparation.[18] Sources of both rules and strategic information about a variety of things affecting contest scores become key reference or study material for the contest participant. The NCJ Survey asked about favorite sources of such information, which ones respondents utilized, and how they felt about new technology forms of this information. One key element for the National Contest Journal is the print versus digital media, whether the latter is simply a digital version of what is in print or a website that is more frequently updated by the editors or contributors.

[Figure 7 about here]

In Figure 7, I've sorted the percentages representing the favorite sources of contest information and clustered them by age group. The clusters are sorted by the average response for each group. The residual "other" category is the overall winner in terms of favoritism. The second is the 3830.com website, followed by the ARRL's website. Both of these are also clearly more attractive to younger contest participants. This age pattern extends to the print version of QST as well. But here is where the NCJ's profile seems more clearly focused. *Older radiosport participants favor the traditional NCJ*

17 As noted in the previous figure, the blue column reflects a single respondent and the spike should be ignored.

18 See, for example, Randy Thompson, K5ZD. 2019. "Preparation and Practice for Better Contest Scores." Presentation at Contest University 2019, Hamvention, Xenia Ohio. Available at https://www.contestuniversity.com/wp-content/uploads/2019/05/8-CTU2019_Preparation-and-Practice-K5ZD.pdf. The new book published by ARRL, *Amateur Radio Contesting for Beginners* by Doug Grant, K1DG, also emphasizes this part of radiosport.

*print journal as their favorite source*. This is demonstrably so even over the NCJ website. Thus, older contesters are more imbued with the traditional, institutional source of information that is the NCJ.

A looming question here is the *actual* NCJ subscription status of contesters, irrespective of the Journal's favoritism ranking (see Figure 8). Yes, there is the expected age-graded pattern of subscriptions to the NCJ. Younger age groups, even to 100 percent among those in their twenties, tend to say they do not subscribe. Consequently, subscription levels rise up to 25 to 40 percent among those age 40 and over. This result underscores the observation above that older contesters, tending to engage more in radiosport than younger hams, are also connected at higher levels to the tradition outlet for contest information, the NCJ, than other sources.

[Figure 8 about here]

The stated reasons as to why survey respondents do not subscribe to the NCJ are shown in Figure 9, broken down by age. In every age group, the dominate reason for not subscribing to the National Contesting Journal is *a preference for online sources of information.* For the majority of age groups, the second most prominent reason is the price point of the NCJ subscription. All other reasons register below ten percent within each age group. Contesters in this survey therefore fall into two clear groups: those who subscribe to the NCJ (34%) and those who do not (66%), largely because of a preference for online sources. Age has a linkage to being a subscriber (see Figure 8) but not to the reasons why not, as shown in Figure 9. While age is related to the level of competition in terms of number of contests annually, the two-thirds of survey respondents who do not subscribe tend to fall into most age groups, either due to price point of the Journal or, more likely, a preference for online sources.

[Figure 9 about here]

But this does not rule out older contesting hams using *multiple* sources. There is the question of the age patterns in the number of sources used as they may vary by level of annual contest participation. In other words, do more active contesters utilize more information sources to "better research" the contest? We observed that age-graded participation tends to decline for the most elderly group (80 years and over). So we can reasonably wonder if the number of sources by level of contest participation varies with age. I've calculated the total number of reported sources for contest information out of the ones presented in the survey. The mean is 2.97 with a standard deviation of 1.75. The median is 3.0 which indicates that the distribution is skewed slightly to the higher number of sources. To better understand the aging patterns in the research strategies that high participation contesters use, a simultaneous comparison of average number of contest sources by the number of contests per year and age group using analysis-of-variance.[19]

The key illustration is the plot of marginal mean scores shown in Figure 10. The average number of contest sources used does increase by the number of contests each year. And this generally does do for each age group as illustrated by a separate line connecting that age group's average of sources by number of contests. Both contest participation and age have statistically significant effects (that is, the differences in all mean scores are not likely by chance). However, while the mean plots illustrate some age group variation, the "interaction" effect of age and contest number is not statistically significant (p

19 Most introductory statistics texts cover one-way ANOVA. But see Wikipedia for an overview at ttps://en.wikipedia.org/wiki/Analysis_of_variance. All of the technical results are not presented here but are available upon written request to the author by email.

= 0.977). A few observations are warranted relative to the question of these aging effects. The eldest group, 80 and over, does tend toward using fewer sources if they are in the two top levels of annual contest participation. There could be a number of unmeasured factors, including lower retirement income, greater contest experience negating the felt need for more sources, or cognitive declines in making effective use of many information sources. But those from 50 to 79 all tend to use more research sources as their participation level increases. The anomaly for the 40-49 age group may be just that: a small number of those in this age group in the NCJ Survey participate in 16-19 (n = 1) or 20 and over (n = 5) contests per year. There is only one survey respondent in the less than 20 age group which results in just a single point in this graph. So in general most age groups use more information sources if they participate in more contests with the noted exception of those 80 years and over.

[Figure 10 about here]

**Conclusions and Recommendations**

As I remind the reader at the outset, I've presented "modest" survey data on aging and selected aspects of radiosport. They have internal validity in that the differences observed through comparing respondents by age are really observed (within measurement error). But they lack external validity of no firm basis to generalize to all amateur radio operators or contesters. Alas, until we have random samples from the FCC ULS of licensed amateurs using best-practices survey methods, our ability to reliably generalize to the population(s) of choice will remain limited to "guesses" like we've reported on here.

What I've found is that age indeed appears related in several ways to participation in radiosport. All leisure time by adults in the U.S. is constrained by the life course trajectories in which the individuals are situated. This includes amateur radio operators. (And those who would like to become one.) Hams are engaged in Dxing and contesting at about the same level as EmComm operators. But contestors are slightly older than our proxy of all hams (ARRL members). Even so, contestors spend more time on the air than most any other popular category of operating, many more than 10 hours per week and in more than 20 contests per year. Age is related to *more participation*, except for those 80 years of age and over. I interpret this as a feature of the life course trajectory that post-employment years provide: time based upon an "empty nest" and more discretionary income perhaps invested over a few years while employed (i.e., building a contest station). It is characteristic of the U-shaped age pattern in the BLS American Time Use Survey for the later years.

There appears to be an age fracture in terms of sources of contest information. Younger contest operators tend toward online sources whereas older ones lean toward institutionalized sources, such as the NCJ, whether for sentimental legacy reasons or longevity of subscription tenure. The print journal faces stiff competition from other sources, even "other" sources than were explicitly identified in the survey itself. The price of subscription to the NCJ pales as the second most popular reasons for not subscribing. This begs for further study. But this is not all of the picture. My analysis identified a core group of contesters who use multiple and, for some, many sources, including the NCJ. The more contests participated in during the year, the more sources of information were used. Age had only an indirect part in this pattern, except that older hams tend toward higher levels of contesting each year, up to age 80 and beyond as the latter's participation tapers off significantly.

In conclusion, with the age-graded contest participation results that I've presented here, coupled with the age concentrations of both the ham population (proxied by ARRL membership) and contestors responding to this survey by the NCJ, the future of contesting is likely to change. This does not mean the likely extinction of contesting, only a change in radiosport itself. Clearly, the sources of information strain toward more immediacy that online sources can provide. There *may* be less competition in the coming years as the "hard core" highly-participating, heavily-invested hams age-out of the picture. This could bring on more younger hams who, at present, do not feel they can compete against the current contest leaders.

More likely, it will be the change in life course trajectories for leisure time in general that "frees" younger contesting operators to devote *more* time in these pursuits than they say they do now while in the life course trajectories in which they are currently located. This could be characterized as a *vacancy-chain model*[20] whereby the aging-out of ardent contestors (Big Guns) leaves perceived "openings" for their replacement in the competitive world of radiosport. Or, focusing on more egalitarian scoring methods that facilitate the stations, modes, and power accessible by a larger audience of hams might attract extant amateurs who focus on other operating activities. For instance, those who identify emergency communications as their favorite operating activity and have HF access in licensing might be attracted to contest participation if they were collectively made aware how valuable contesting skills are during traffic handling in times of emergency. These are just some ideas toward change rather than demographic extinction that is frequently feared regarding the "graying of radiosport."

Future studies might reveal other options but in the meantime, these modest survey data suggest that younger amateur radio contesters compete differently in terms of how they affiliate with institutionalized resources such as the NCJ. Even in terms of online resources, the NCJ website was not reported to be utilized very much, especially in comparision to other institutionalized sources, such as the ARRL or CQ websites, or new online sources, such as 3830.com. How key institutional sponsors and facilitators of contests (ARRL and CQ) respond to these demographic fractures may indeed shape their future viability for how and what they publish in the pages of NCJ or CQ Magazine.

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Author Bio

Frank M. Howell, Phd, is Professor Emeritus of Sociology at Mississippi State University and Adjunct Professor at Emory University. He serves as Assistant Director of the ARRL Delta Division and is a Presenter on the ICQ Podcast. Frank holds the General Class license and blogs about amateur radio at k4fmh.com.

20 See, for example, Ivan D. Chase "Vacancy Chains." Annual Review of Sociology. Vol. 17:133-154, 1991.

## Figures

**Figure 1. Illustration of Convenience and Voluntary Samples**

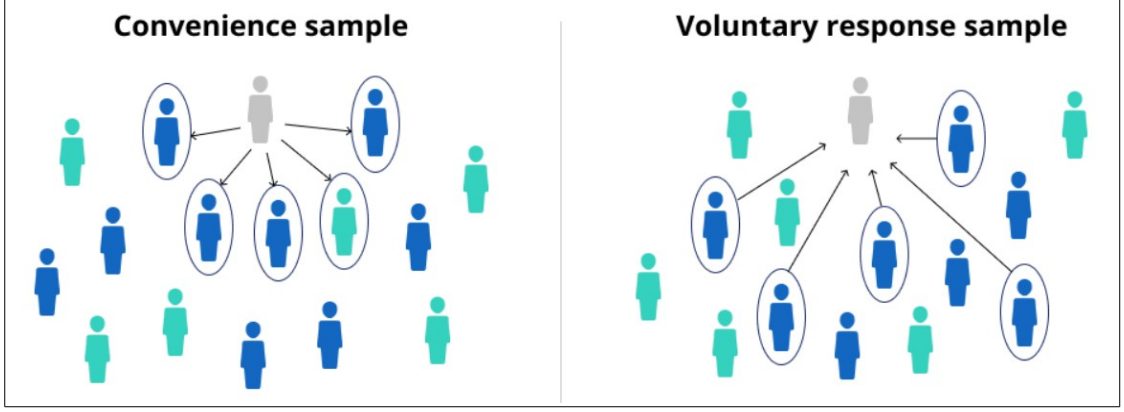
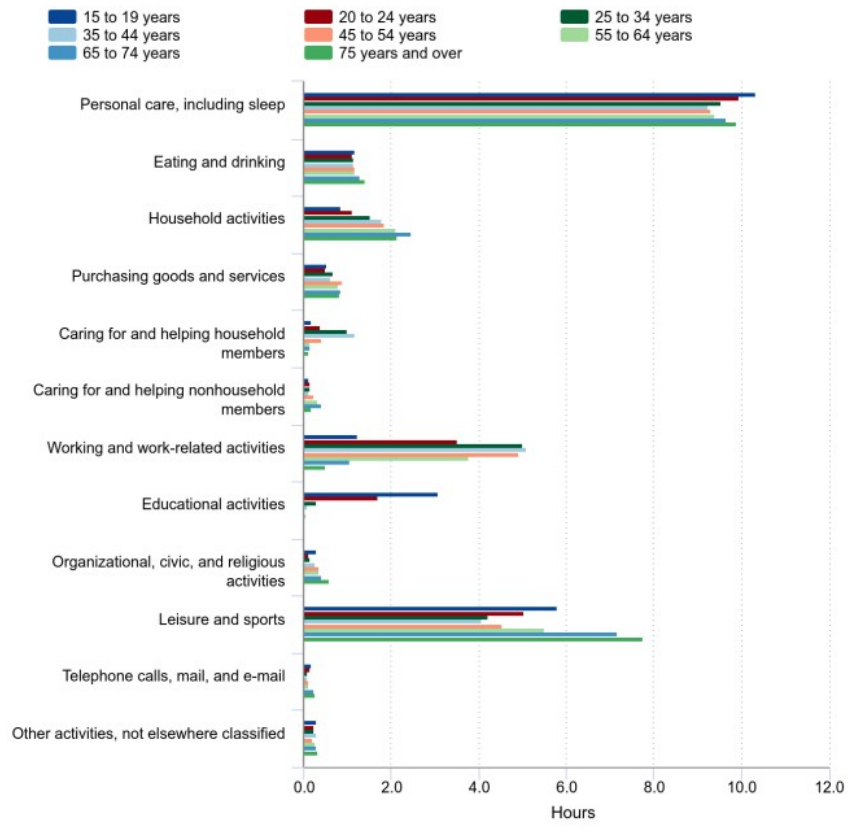


**Figure 2. Average Hours Per Day Spent in Selected Activities by Age, 2018 Annual Averages, BLS Time Use Survey**




Data refer to all days of the week.

Source: U.S. Bureau of Labor Statistics.

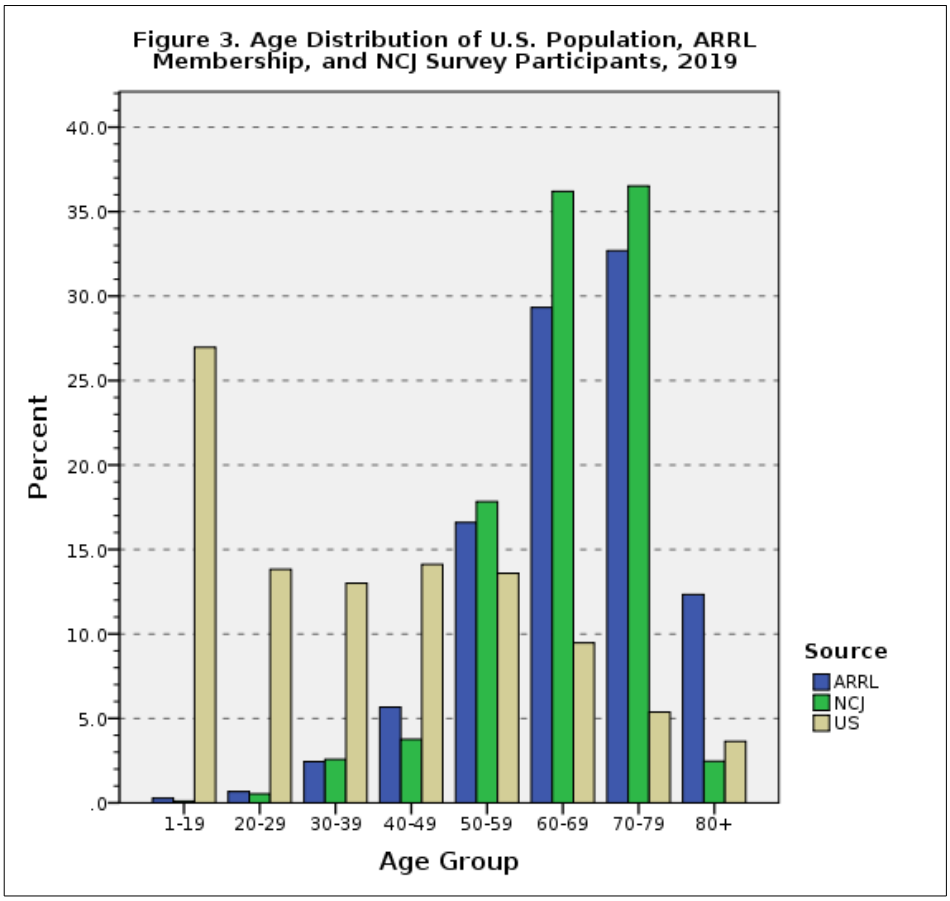
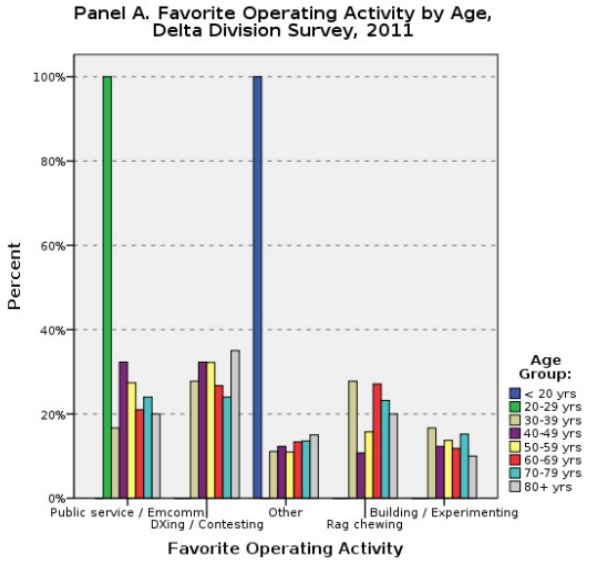


Figure 3. Age Distribution of U.S. Population, ARRL Membership, and NCJ Survey Participants, 2019
Percent
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
.0
1-19
20-29
30-39
40-49
50-59
60-69
70-79
80+
Age Group
Source
ARRL
NCJ
US

**Figure 4. Favorite Operation Activity By Age Group, 2011 and 2013, Delta Division**



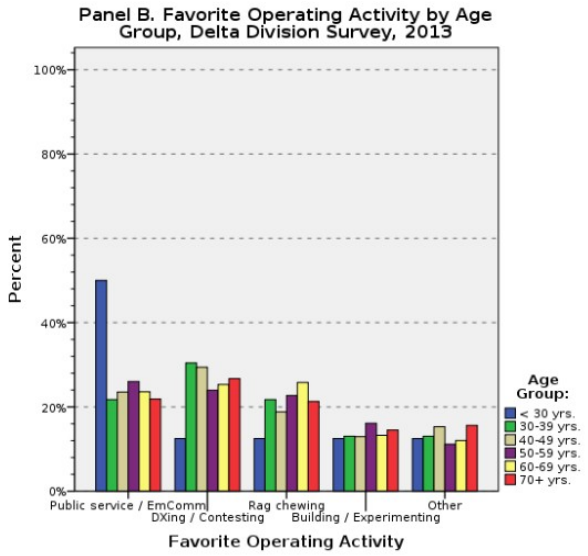



Figure 5. Favorite Operating Activity by Hours Per Week on Air, 2011 and 2013, Delta Division

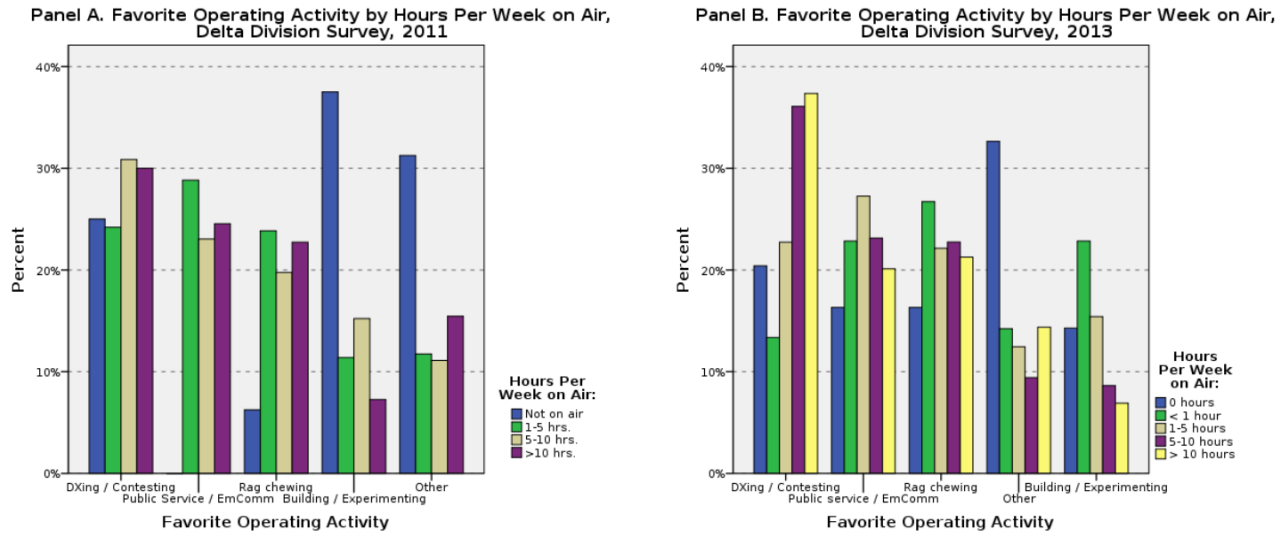
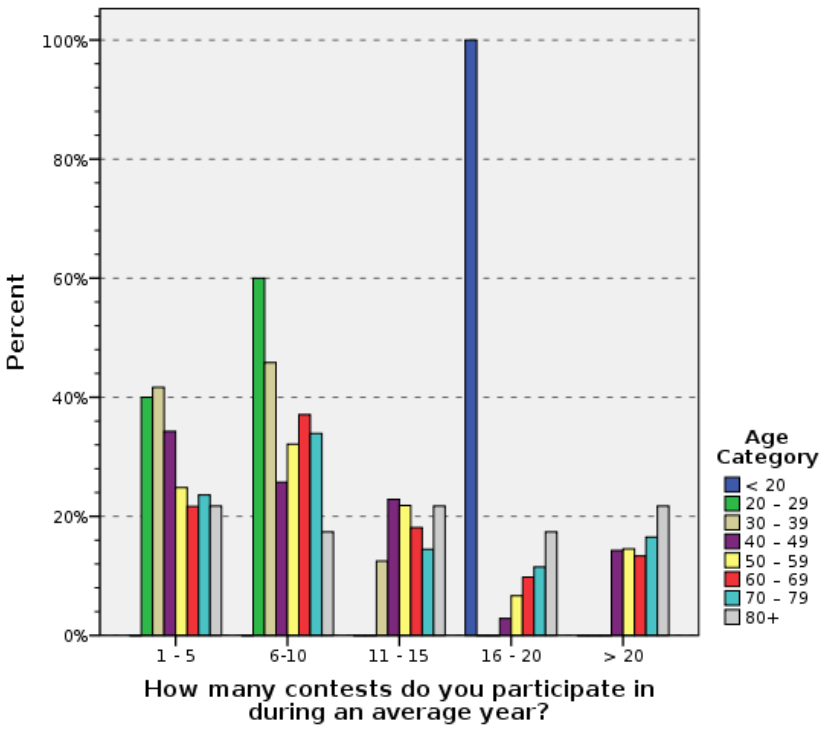


Figure 6. Number of Contests Per Year by Age Group, NCJ Survey, 2019



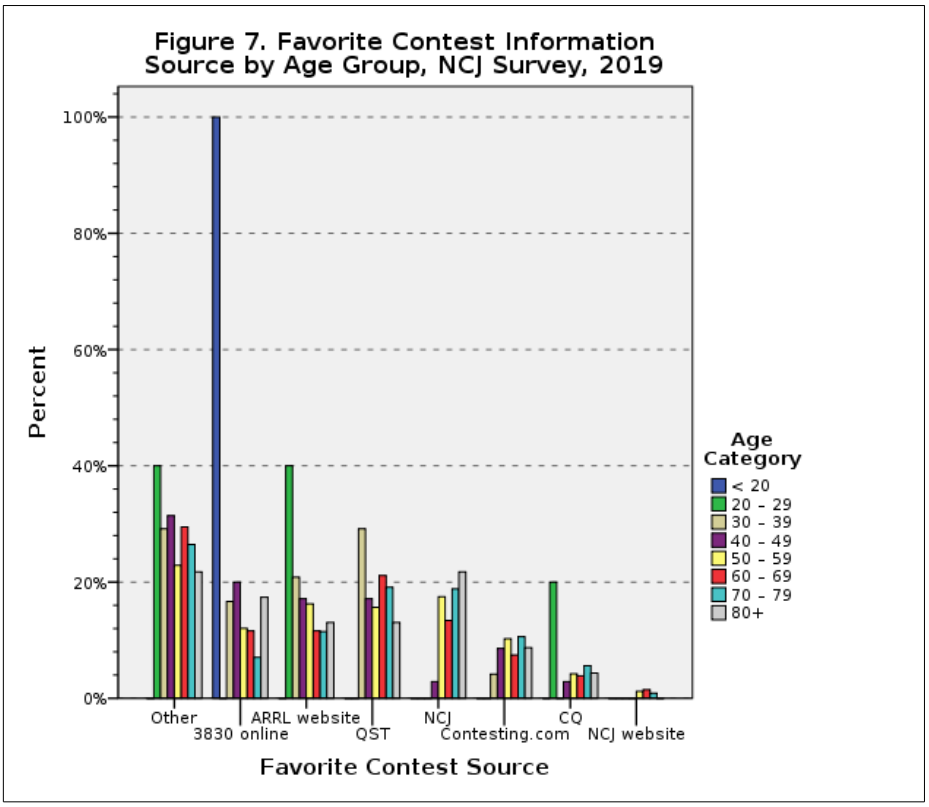
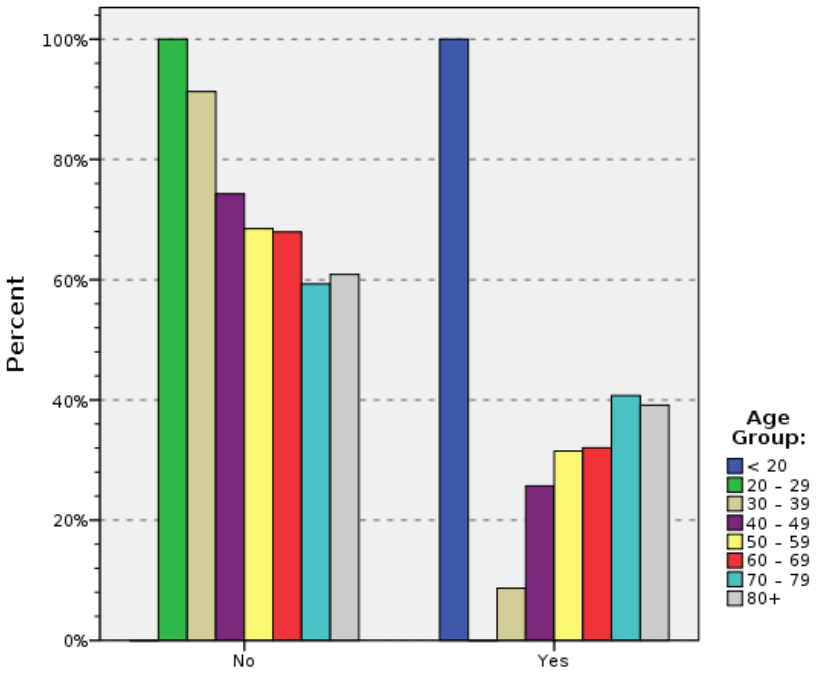


Figure 7. Favorite Contest Information Source by Age Group, NCJ Survey, 2019
Percent
100%
80%
60%
40%
20%
0%
Other
3830 online
ARRL website
QST
NCJ
Contesting.com
CQ
NCJ website
Favorite Contest Source
Age Category
< 20
20 - 29
30 - 39
40 - 49
50 - 59
60 - 69
70 - 79
80+

Figure 8. NCJ Subscription Status by Age Group, NCJ Survey, 2019



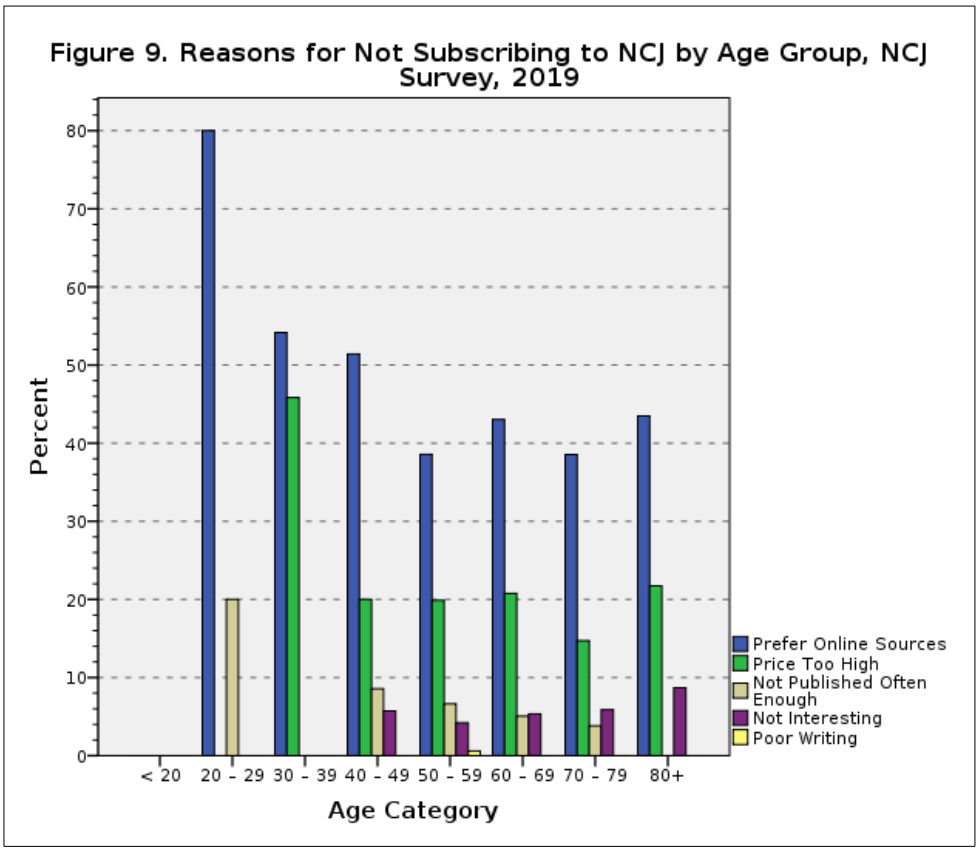
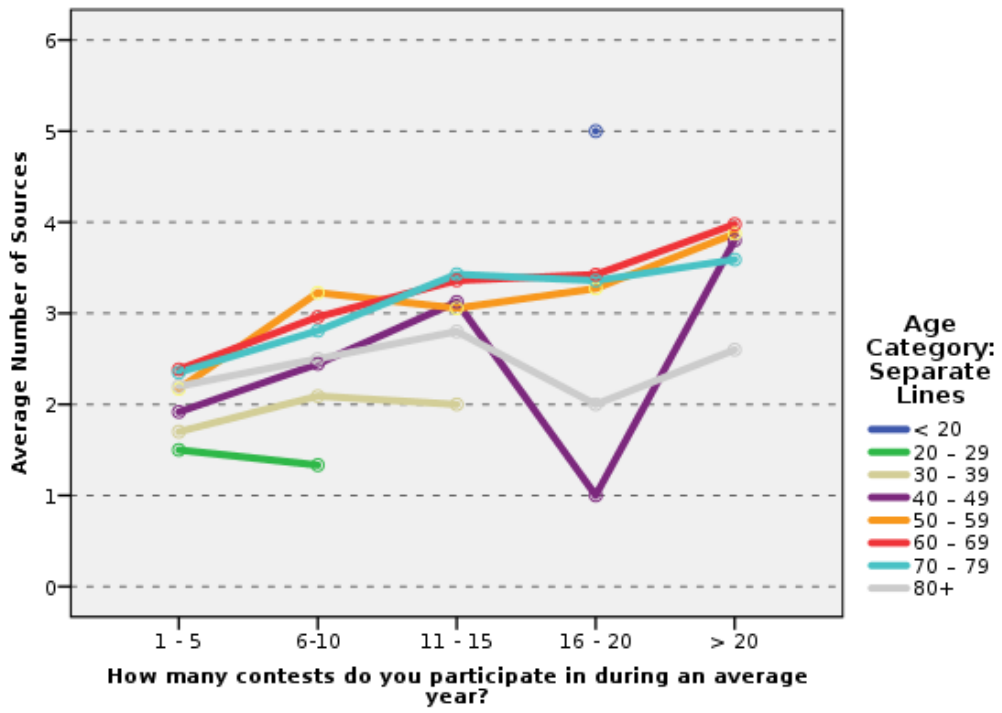


Figure 9. Reasons for Not Subscribing to NCJ by Age Group, NCJ Survey, 2019
Percent
0
10
20
30
40
50
60
70
80
< 20
20 - 29
30 - 39
40 - 49
50 - 59
60 - 69
70 - 79
80+
Age Category
Prefer Online Sources
Price Too High
Not Published Often Enough
Not Interesting
Poor Writing

Figure 10. Average Number of Contest Sources by Annual Contest Participation and Age Group, NCJ Survey, 2019




Results from ANOVA model with Number of Contest Sources as the Dependent Variable, Number of Contests Per Year and Age Group as Independent Variables. Non-estimable means (age < 20) are not plotted