The Great American Electronics Hobbyist Census

Summary

Jameco Electronics endeavored to better understand electronics as a hobby. After polling our most active hobbyists we developed the following profile of American electronics hobbyists:

They've thrown away their pocket protectors but wear an identity as nerds with pride. A highly educated group, most have at least achieved a bachelor's degree and have twice as much education as the average American. Electronics hobbyists' affections for their hobby are so strong that they think about it in some way every day. They are convinced that the American economy is at least in part fueled by this hobby and believe emphasis of electronics in education is immensely valuable.

This is not a new passion, in fact most began by taking things apart at a young age and have spent 35 years or more pursuing their avocation. While they haven't always had a lot of time to pursue electronics as a hobby, they expect that it will become a larger part of their lives in the near future.

Hobbyists believe that this is first and foremost a hobby about creativity that transforms from an idea into something tangible. New technology and renewed devotions have given electronics hobbyists the ability to create almost anything they can dream up and yet at the end of the day there is a childish affection that succumbs to goofing around and playing with fun, blinking lights.

This is an old-boys club very much split between those that make their living with electronics during the day and then use it to play and those that pursue it as a pure pastime. For those who see it as a pure hobby, a large percentage are self-taught but are no less skilled nor passionate than those who have dedicated all aspects of their life to electronics.

While today's hobbyists still have a warm place in their heart for the old school technology like vacuum tubes, ham radio and model trains, the hobby is clearly driven by the availability of open source microcontrollers that have substantially increased the breadth of what's possible for the average electronics hobbyist.

Electronics hobbyists are not shy about admitting that they've blown things up and sometimes even on purpose. They would rather cuddle up with a technical publication than most mainstream publications.

Electronics hobbyists are as amazed by their hobby today as ever and talk about the evolution from idea formation through the challenges of problem solving all the way to the thrill of throwing the switch and watching their idea turn to life. From fixing to building to designing, electronics as a hobby is enjoying a renaissance of fervor proving every day that the projects are greater than the sum of the parts.

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Background

The Do-it-Yourself movement has been one of the surprising trends of the past decade. It wasn't long ago that electronics as a hobby was tagged for extinction. Technological advancement saw the miniaturization of everything electronic and increasingly became beyond the reach of the average electronics hobbyist. At the same time, local electronics component supply stores were disappearing across the country. Radio Shack, long the retail leader in this space, continued to exist but only with a dramatic shift in its inventory strategy away from electronics. The most loyal electronics hobbyists seemed to be retired and aging quickly.

As Mark Twain might have said, the death of electronics as a hobby was greatly exaggerated. Instead of dying, the hobby seemed to explode, driven both by young enthusiasts and new products. Science projects, engineering competitions and robotics clubs dramatically increased in popularity. Do-it-yourself websites, publications and fairs drew lots of attention and something called "Arduino" (an open source platform that allowed almost anyone to seemingly do anything with electronics) seemed to light the electronics hobbyist world on fire.

Jameco Electronics' relationship with hobbyists began in 1974 and has seen its hobbyist business swell over the past decade. Jameco has responded by adding electronics kits and projects that now total more 500 complete step-by-step projects.

Yet what do we know about today's electronics hobbyist? Jameco endeavored to better understand electronics as a hobby with a survey conducted in the spring of 2015. Jameco sampled the electronics hobbyist community by identifying the most serious hobbyists and with over 1700 responses is confident the results accurately depict the state of the hobby.

Methodology

Jameco identified just under 10,000 recent electronic component customers that met three criteria: made multiple purchases, spent more than average on electronic components and purchased for personal use and not for a company. The list was further limited to residents of the United States.

All respondents were asked a qualifying question before being allowed to proceed with the survey. To take the survey, respondents had to have engaged in an electronics project in the past year for which they were not compensated. Overall 94.1% of respondents qualified for the survey.

Overall the survey generated a 17% response rate.

Results

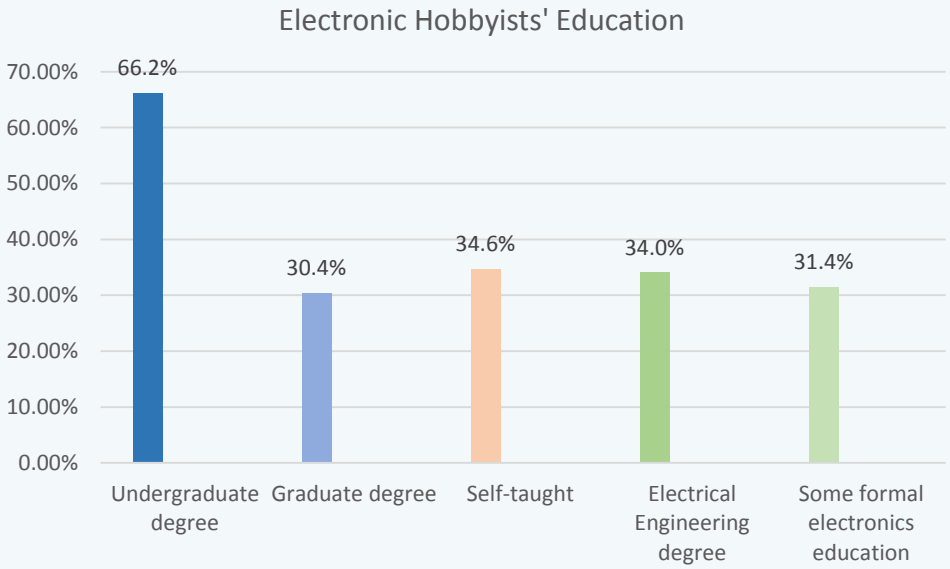
Gender

Only 2.3% of electronics hobbyist respondents were female. This is in contrast to National Science Foundation data from 2012 that reports that 19.2% of all engineering field bachelor degrees went to women. Apparently electronics as a hobby is, at least for now, a male activity 97.7% of the time.

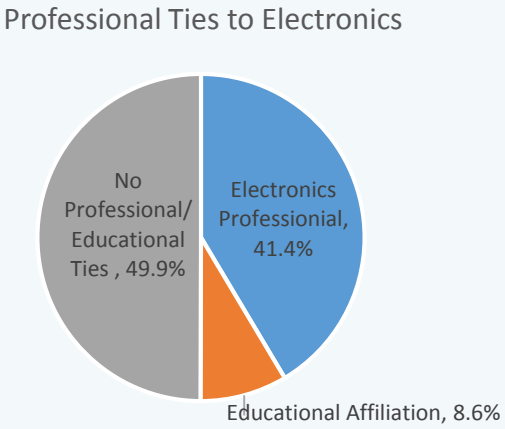
Age
As with most hobbies, younger people are often “time challenged” due to career and family commitments and that likely explains why the average age of an electronics hobbyist is 56. In fact 75% of the survey respondents were over the age of 46 while only 6.8% were 30 or younger.

Education
Electronics hobbyists are well educated with 66.2% reporting that they graduated from a four year college and almost half of those (30.4%) completed a graduate degree. Electronics hobbyists are nearly twice as educated as Americans overall. According to 2014 US Census data, 34% of adult Americans have completed an undergraduate degree.

Electronics Education
Over one-third (34.6%) of electronics hobbyists have no formal electronics education. Most of these individuals are self-taught. About one-third have an electrical engineering degree (34.0%) with the balance of respondents reporting that they had some formal training.



Profession
Exactly half (49.9%) of all electronics hobbyists have no direct ties to electronics in their professional or academic world. 8.6% have an educational tie to electronics and 41.4% are either actively or were previously electronics professionals.



First Project
The majority of electronics hobbyists started by taking something apart (55.1%) versus putting something together (29.9%) or fixing something (15%). Younger hobbyists were more likely to have taken something apart as their first experience with electronics (68.6%). Older hobbyists (over 50) were 28% less likely to have taken something apart during their first electronics project.

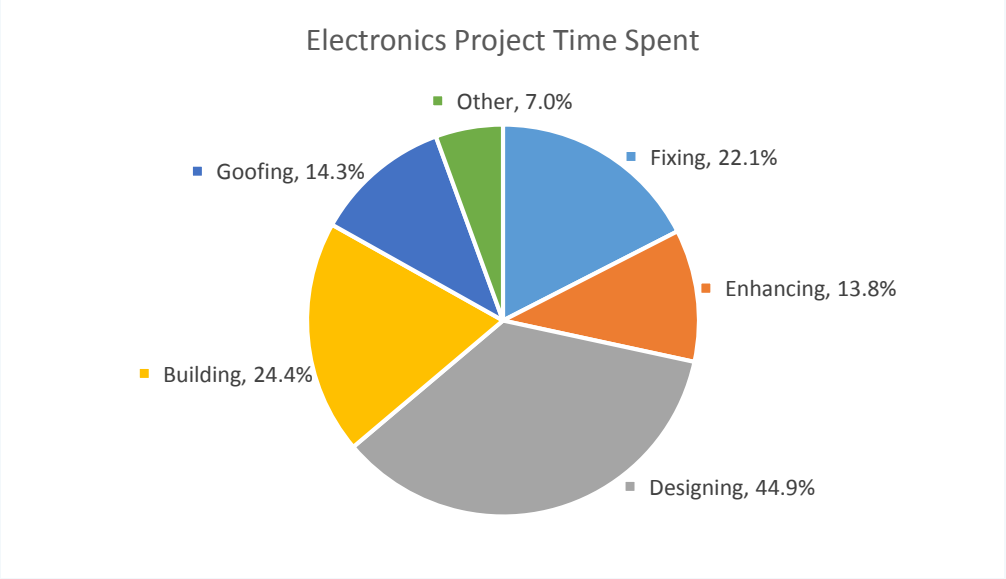
First Electronics Experiences
Soldering, which creates an electrical junction, is a skill required to pursue advanced aspects of the electronics hobby and 81.3% of electronics hobbyists report that their first experience happened before the age of 18. While less than 3.8% reported having their first experience occur late in life (after the age of 36), almost no one in our hobbyist population reported that they have yet to solder.

Electronics Experience
The median number of years of experience in this hobby is 35 with a full 25% reporting 50 years or more.

Project Hours
On average electronics hobbyists spend about a half an hour a day on their hobby. The median response was 16 hours spent on the hobby in the past 30 days with a full 75% reporting that they spent at least six hours a month on electronics as a hobby.

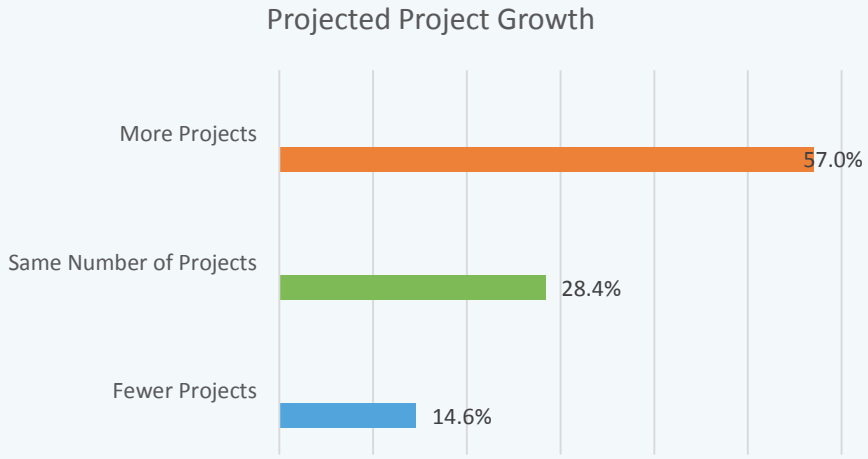
Number of Projects
Half of the hobbyists completed 5 projects or more over the past 12 months. A quarter of respondents told us that they've completed 10 or more projects over the past year. The average number of projects was 9 driven up by a small percentage of very active hobbyists. Interestingly younger hobbyists (below 50) while smaller in number are more active hobbyists, averaging 10.3 projects a year, while older hobbyists (50 and above) average 19% fewer projects at 8.3 projects a year.

Project Time
Just under half of all electronics hobby time is spent both designing and building a project from scratch (44.9% of time) while a smaller percentage of time was spent building something to someone else's design (24.4%). Just under a quarter of projects (22.1%) were spent fixing something. Electronics hobbyists acknowledge that a whopping 14.3% of their time is spent "goofing around."



Project Growth

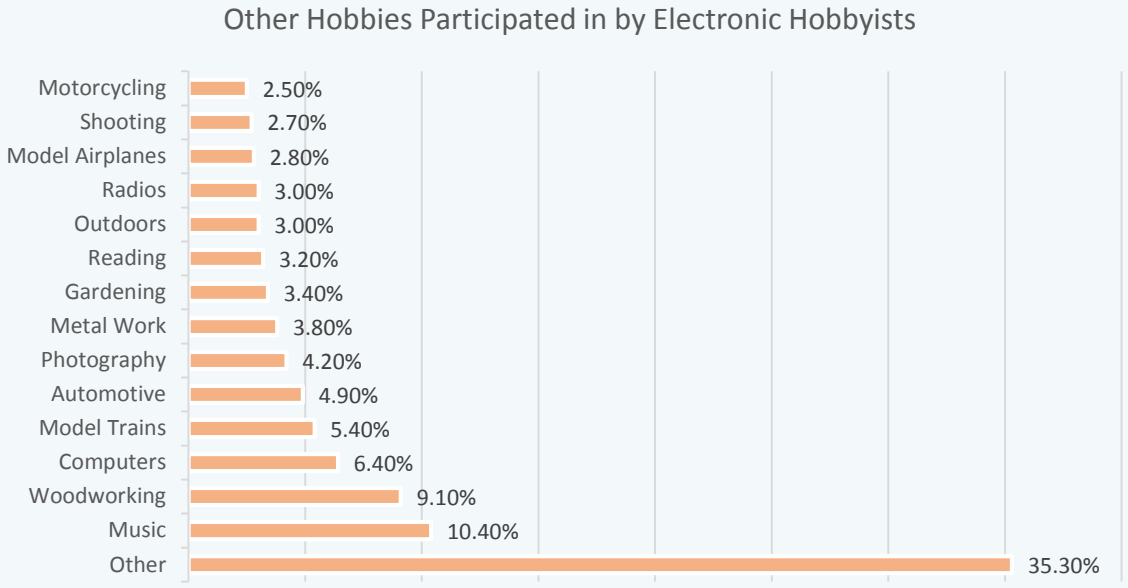
The majority (57%) of hobbyists plan to do more projects in the next 5 years than they've done in the past 5 years. That number grows to 85.4% if you include those who expect to grow or do about the same number of projects. Only 14.6% of hobbyists anticipate a decline in their electronics activities.



Where are Electronics Practiced?

While many said "just about anywhere" and answers included virtually every room of the house from the porch to those with a dedicated space of their own, often referred to as a "man cave," more electronics happen inside the house than out. 76.2% report that they do their electronics inside the house, while 15.7% report that most of their electronics happens outside or in the garage. The remaining 8.1% report that they don't practice their hobby at home.

Other Hobbies
While electronic hobbyists are clearly adoring of their electronics hobby, the most common "other" hobby reported was music followed by woodworking and then some form of computing.



Multimeters
Multimeters are one of the basic tools employed by an electronics hobbyist. While less than 1% (0.8%) of hobbyists report not owning a multimeter, 63.7% report owning 3 or more multimeters with most of those people (40.9%) reporting that they own at least 4 multimeters.

Most Loved and Hated Electronic Components
While many respondents claim to love all electronic components, when asked which components are their least favorite, electronics hobbyists created the following top 10 list.

Rank	Least Favorite Component
1.	SMD
2.	Capacitors
3.	Inductors
4.	Resistors
5.	Batteries
6.	Transformers
7.	Transistors
8.	Coils
9.	Diodes
10.	Connectors

The top ten most favorite components of the electronic hobbyist are listed below. The list doesn't begin to tell the true story however. The top 10 represent 69% of respondents' favorite components, but microcontrollers were listed as a favorite by 31%. This is more than three times more popular than the

next closest component, LEDs. This should be no surprise as the advent of microcontrollers like Arduino, Beagle Bone, Raspberry Pi and Picaxe have opened up electronics for a new generation of hobbyists.

Rank	Favorite Component
1.	Microcontrollers
2.	LEDs
3.	Transistors
4.	ICs
5.	Op Amps
6.	555 Timers
7.	Vacuum Tubes
8.	Capacitors
9.	Resistors
10.	Diodes

Most important electronic invention of the past 50 years?

Although over one-third of hobbyists identified the microprocessor and the internet as the most important electronic invention of the past 50 years (26% and 11% respectively), there were over 100 suggestions in total including solar cells, vacuum tubes, GPS technology, frequency counter, electric vehicles and more. The wide variation in responses stands as testament to the range of developments in electronics over the past 50 years. The top 10 responses are listed below. While it's clear that hobbyists have plenty of love for the analog devices that served as the industry's foundation, the top responses largely fell to more recent digital innovations.

Rank	Invention
1.	Microprocessor
2.	Solid State Components
3.	Internet
4.	Computer
5.	Oscilloscope
6.	Breadboard
7.	Multimeter
8.	PCB
9.	Test Equipment
10.	3D Printer

Why Electronics as a Hobby?

When we asked electronics hobbyists why they loved this hobby the responses were very consistent. Many people hit on the concept of "making an idea work." The tangible aspect of the hobby that starts by "imagining" travels through "problem solving" and ends with "throwing a switch" and seeing that idea become a reality was uniformly lauded. Electronics, we're told, gives hobbyists the ability to create almost anything, making some even "feel like a wizard" for creating things you just "couldn't buy in a store."

For many it was the challenge of the hobby that was most important. The problem solving aspect and the ever changing landscape "keep the brain nimble" and amplify "feelings of accomplishment" having traveled through the "forest of frustration." Many pointed out that it's a relatively inexpensive hobby and that it builds marketable skills.

While some enjoyed impressing their friends and others saw electronics in all aspects of modern life, there was a strong sense that this was a thinker's hobby. Yet before concluding that somehow this is a purely cerebral hobby, many more said things like the best part about electronics as a hobby is "making blinking lights."

Electronic Hobbyist Factoids

We asked electronic hobbyists a series of questions highlighting their activities and opinions in regards to themselves and their hobby. Statistics are below.

94% report saving a component they know they will never use.
83% have used an axe or saw in the prior 12 months.
82% agree that all American children should be taught the basics of electronics.
79% report thinking about electronics in some form or fashion every single day.
77% report having blown something up by accident and 38% report blowing something up on purpose.
68% think that electronics as a hobby is critical to fueling the American economy.
68% report having taught someone else electronics.
66% have purchased something that was broken with the idea they would fix it.
59% report creating something electronic that only they could love.
50% view the name "nerd" as a compliment while fewer than 3% see it as an insult.
47% report that they always protect their eyes when doing electronics.
46% have a pen or pencil on them at any given point in time.
43% have burned themselves while practicing their hobby over the past 12 months.
42% chose to read a technical publication over other reading alternatives; 27% chose to read "news" and 12% chose a novel as the next best alternatives.
36% prefer coffee or tea as their most popular beverage choice which is nearly twice as popular as its closest competitor, soda (18%). Electronics hobbyists are twice as likely to prefer a non-alcoholic beverage to an alcoholic beverage.
9% have received an electric shock in the past 30 days.
8% report that electronics as a hobby helped them get a date.
3% have worn a pocket protector in the past 30 days.

The future of electronics as a hobby.

When we asked respondents to provide a prediction for the future of electronics as a hobby, the responses varied widely, but the optimists outweighed the pessimists. There were many that predicted a continued transition toward digital technologies at the expense of analog solutions. The digitally focused believe that this trend will fuel the hobby pointing to corresponding price declines as another reason that growth in the hobby will continue. Several participants lamented the loss of electronic design as components continue to miniaturize. Prebuilt, modular and plug and play digital technologies are predicted to continue to saturate the market. Respondents see electronics and computer programming increasingly overlapping as the hobby evolves.