

Make General Aviation Great Again: The People

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

Loneliness kills more people each year than any other illness, ailment, accident, or anything (Harris, 2023). People whose social lives are disrupted, self-worth is low, or who lack a moral basis are all at greater risk of death than anyone else. The human brain developed to need social interaction and a sure sense of self in order to function properly. If people are without these vital social resources, their brain uses extra metabolic resources to try and rationalize and solve these problems and it takes these resources from keeping their body alive. Perhaps the scariest part of this problem is that people, especially youth today, have no conscious awareness of what the problem really is, and they cannot find a solution because they do not have any basis to fall back on. The youth of today are in a loneliness epidemic, losing personal responsibility, their own moral values, and are given no challenging and engaging activities to try and cultivate these values.

Recent research has indicated that people born since 2000 have a high risk of developing depression, anxiety, mental instability, and will not grow up properly (Greenblatt, 2023 and Glazer, 2023). There is an interesting but originally unrelated parallel with this: since 2000, and even before, General Aviation (small aircraft unaffiliated with military or airlines) in the USA has been declining. These two problems did not cause one another, but this General Aviation (GA) decline means the inevitable decline in vital industries like Emergency Organ Transplants, Firefighting, Search and Rescue, Vital Travel (especially in Alaska), Law Enforcement, Emergency Hospital Transfer, Agricultural Spraying, Small Cargo Transport, and Humanitarian Aid/Disaster Relief (Smithsonian Institute, 2016).

How then, can these problems be both mitigated, at least partially? The aforementioned issues, mental/moral decline of youth and literal decline of GA, although not initially related (or perhaps by an extremely small degree), they can be solved together by analyzing the impact that youth can have from exposure to and immersion in the GA community (including maintenance, piloting, air traffic control, airport operations, etc.). These impacts and effects of

being a part of the GA community should help to both increase the popularity of GA and mitigate the mental health crisis of youth. There are socio-technical solutions to these problems, and they are each other. Increasing public exposure to and integration into the GA communities that surround them alongside greater funding to the local airports and GA related fields will benefit every community and most especially the mental state of the youth of those communities. In the technical supplement of this STS Research, I will visit the technical half of this problem as it relates to designing a GA aircraft.

Background, Significance, Motivation

The concept of GA was born as aircraft became less of an experimental miracle and more of a flying car, mass produced and utilized throughout the world after WWII, when many aircraft designs were improved upon over and over for optimized production. By the 1950s, manufacturers had established designs of which private ownership of aircraft by a common citizen was the design goal. These airplanes were cheap, easily maintained, and extremely popular from the 1950s to the 1980s, but declined in popularity due to public exposure being decreased, prices and certification complexity rising, and a general lack of funding by the government, which turned its focus to commercialized travel and military applications of aviation (Dillingham, 2001). The decline of GA has led to hundreds of airports in the US being shut down (FAA, 2022) and abandoned, thousands of jobs in GA to be lost, and much of the knowledge and appreciation of GA to become niche and little known (Damien, n.d.). The worst consequence to come of this decline is the huge social implications of small communities, which have also been on a huge decline parallel to GA, as hundreds of airports that fueled the economy of a town can no longer contribute and are no longer supported. The vital businesses (agriculture, search and rescue, emergency transport, etc.) are much more centralized in larger cities and under the hoof of large corporations. The technical half of my research is dedicated to discovering how the costs of GA can be reduced, but the STS half of my research is dedicated

to solving this GA problem along with a much more pressing and dire issue: the mental state of modern American youth.

If the decline of GA is problematic, the decline of the mental wellbeing of the youth in America is disastrous. Our entire society and future depend on the steady hands and minds of the younger generations, but with senses being dulled by the over stimulation of modern technology, social skills being deteriorated by a decline in interpersonal relationships, and values being replaced with a desire for instant gratification and laziness, our future is in jeopardy. With the technological boom in this age of information, people no longer feel the need to learn material for themselves, because all the answers are online (Tan, 2016). People no longer feel the need to develop physically and increase reaction time and spatial awareness because the jobs that pay the most are very sedentary in lifestyle, and allow for ample time to evaluate decisions before choosing. In a culture where morality is seen as an optional subjective and limiting quality, where people are rewarded for their popularity no matter the wrongs committed, the next generations will be unsure of what right and wrong even are, let alone how to choose one and discourage the other. People are more afraid to speak out for fear of offending, when taking offense of someone's words is a purely personal decision, and we as a society should neither let fear hold us back, nor let ourselves believe we have no choice, but are merely products of social and biological algorithms. Instilling integrity, responsibility, selflessness, patience, gratitude, and respect into youth is no easy task, but challenging experiences are most often effective positive teachers. The challenge and the opportunity one finds in any aspect of the GA community is exactly the kind of motivation youth need to develop as our future custodians of the world.

Methodology

This issue is vital to the survival of the country, and our global society, and how I tackle this difficult topic merits explanation. To approach my research question, I have focused on the concepts of reflective practice/reflection-in-action and values/value-laden design. I chose this

topic because I have reflected a great deal on my own personal experiences, both positive and negative. On the positive side, I have had the privilege and opportunity to meet professional pilots, mechanics, engineers, and aircraft owners in the GA community throughout Virginia, and their support, wisdom, guidance, and instruction have given me a huge advantage in any field or class I find myself in. The most extraordinary aspect of this reflection is that I was exposed to this community extensively at 13 years old in a small gliding club in Front Royal, who collaborate with airports all across the state, and they welcome any and all with open arms. My life, both academically and mentally, has been affected very positively by all my experiences in the GA community. Conversely, negative experiences I have reflected on include the lack of moral values seen throughout my years in a public education institution, the community groups and neighborhoods who are populated by average citizens. There is a distinct lack of interpersonal and even self-respect and responsibility, primarily in the youth that are my peers, and in younger generations. Almost the whole of my personal negative experiences are products of these kinds of environments which the majority of American youth grow up in. As a mentor for many youths throughout my life, including 3 younger siblings, several academic classes, and groups/individuals throughout my religious institution, I have seen and taken note of a huge decline in the mental wellbeing of the youth I have known, including increases in loneliness, stress, anxiety, depression, and decreases in self-confidence, personal responsibility, and mutual respect/love. The GA community is designed with these specific values as a forefront. The environment in which GA members operate is totally fluid, requiring, in place of rigid rules for every step of the way, a person to be shaped into an independent individual with values and knowledge engraved into their very being. The GA community and field is designed to instill and cultivate all kinds of empowering values (personal responsibility, integrity, excellence, etc.). Thus, reflection and value-laden design are the best ways to approach this question.

These concepts will be explored in detail via my research, including both primary and secondary sources. The secondary sources, my research literature, will primarily discuss the generational issues of society mainly in America since the early 2000s, marking a large increase in technology available to the average US citizen's home. The data from these secondary sources will show trends in the youth of today's society, illustrate potential causes (the actors) of these trends, and show possible solutions either already implemented or suggested. The surveys done will gather data concerning the ethical state of youth today, as they will be fielded to youth of all ages between 14 and 24 with questions pertaining to their own personal values, their perception on problems today, and knowledge about GA. Interviews with members of the older generations (especially GA members) will show where their values lie, their take on problems of youth today, and what values the GA community fosters either directly or indirectly, along with when/how they learned about GA. The hope is that the answers to these interviews and surveys will show stark differences between personal values and the awareness of the GA community. With the evidence gathered, I hope to formulate a general plan to mitigate some of the problems youths have today by revitalizing GA. This plan will be very high level in the general sense, offering overarching ideas and potential solutions for different areas of the problems found, and very specific in the implementation of GA back into the mainstream of society. The Actor Network Theory (ANT) will show how different actors are responsible for the situation of today, and that by giving more power to certain actors, one can begin to change and reverse the problems of today.

The aforementioned concepts will translate into the ANT and Virtue Ethics approach I will be using with my research. I want to find out "Why are the youth of today going through such hard mental struggles on a mass scale?" And "Can GA at least partially fix this problem?" The ANT will analyze different segments of society (human, organization, nonhuman) as actors within the network as a whole to help explain, using virtue ethics, why things are the way they are. I will be using the surveys to find the perspective of youth with respect to the research topic,

the interviews to find the perspective and analysis of the older generations on the research topic, and the literature review to see the perspectives of other researchers on these topics.

Literature Review

America is diseased, and what population does this disease target? The target is the impressionable youth of our country, and they are under attack from nearly all fronts. Although our technology and perceived standard of living in the United States is constantly moving up with increased usage of smartphones, tablets, television, video games, social media, Door Dash, owning multiple cars, and everyday individuals becoming superstars in record times online, there is a widespread stigma and reality of rising laziness, apathy, loneliness, and falling integrity with widespread cheating, personal responsibility, and morality (Greenblatt, 2023, Glazer, 2023, Lindner, 2023, Smith, 2024).

Enormous spikes in diagnoses of anxiety, depression, fear, and general mental problems have plagued the nation since the turn of the century (Glazer, 2023 and Greenblatt, 2023), and this trend is alarming for all, as the youth are the future of society. To be frank, making life easier has deprived young people of challenges to overcome, in which they learn who they are and what matters in life. There is a myriad of ways to issue challenges to young people, but the neuroscientific communities have recently advocated for positive experiences for children and youth, as negative experiences could damage their neurological algorithms for the rest of their lives (Zimlich, 2019). GA is one small way to give a positive, challenging, rewarding, and empowering experience to anyone who comes into contact with that community. I propose to revitalize GA (as it has also suffered in the last few decades) by advertising and giving incentive to the public to come and learn and join in this industry and recreation (catering more towards youth) in the areas of piloting, maintenance, airport operations, design, manufacturing, and even painting! This revamp of GA will simultaneously help mitigate the issue of the lack of challenges in American youth, bringing them to overcome complex yet exhilarating challenges

learning lifelong skills and lessons, and serve the communities where these young people live by providing more jobs, available training, and economic support.

All the claims about youth being targeted and experiencing increased mental unwellness in the past few years are all tested and documented claims, proven to be true by case studies (Bates, 2013), mass surveys, and links have been found to social media (Glazer, 2023), ease of living including using AI to do their homework (Langreo, 2023), and led to an “epidemic of loneliness” and other mental health issues (Greenblatt, 2023). GA seeing a decline is easily visible through national reports on GA activity (Meyer, 2021) and the community’s own backlash in the news (Visser, 2015). The idea of solving the issues plaguing youth with positive challenging experiences is not new and has been accomplished with wilderness therapy (Gabrielsen, 2018). GA has been proven to promote moral exactness (Bates, 2013) and positively challenge individuals, especially youth. The claims are all verifiable, and I believe they can be combined to help solve both the GA and morality of youth decline at once.

The wilderness therapy case study is a particularly interesting example. Given that, on average, over 95% (Glazer, 2023) of youth participate in social media and other life-simplifying technologies, the fact that nearly 40% of youth meet the clinical assessment criteria for **severe** impairment or distress is not surprising, even considering the percentage for nominal impairment/distress is most likely much higher (Gabrielsen, 2018). In a case study of wilderness therapy groups, the authors of the analyzing paper found what they called an “antidote for adolescent alienation.” (Gabrielsen, 2018). They defined wilderness therapy as “mental health care which utilizes client and group experiences in wilderness therapeutically,” using natural exposure to help youth understand what really matters. Although this may be a short hike to see a waterfall, the study clearly indicated that “risk and challenge through experiential activity,” including particularly difficult physical activities, are a vital part of the experience, and foster the values needed to be assured of oneself and to move forward from mental health issues and succeed. GA is very similar, and my proposal to allow youth to enter an already established field

offers, on principle, a very similar experience to wilderness therapy. A few of the key differences include utility of skills learned from GA (as these exciting skills are sought after in real industries), the scope of GA (as youth may grow to enjoy any of the wide variety of fields more than the others), and the personalization of GA (as with any GA training there will be lots of one-on-one instruction and interaction).

From a report concerning the professional development available through GA, we learn the most important morals and opportunities youth need are right there in that community. Australia currently seeks to better improve the state of their youth through heightened exposure to GA there. They seek to develop the “self-confidence, decisiveness, risk management and situational awareness” of the youth that enter their programs (Bates, 2013). They identify GA as a “community of practice” in which learning is more than mere education, but a “social process,” where training, work ethic, and sustained honest effort are greeted with success, friendship, and opportunity. The report studying the GA community goes so far as to assert it as requiring individuals to assume new and ever-growing professional identities. Clearly, there is transformative power in GA. The report discusses the structure of their programs (five 80 student groups led by 10 leaders which may have been previous students). In their analysis of these programs, they found overwhelmingly positive results. Through hard work and extensive training and study, people involved all found themselves happier, more driven to achieve, independent, and assist others on that same path. I believe GA in the US is equally capable of implementing programs that can benefit all youth that join to become skilled professionals and intelligent and moral individuals.

Discussion/Results

I conducted a survey, asking organizational questions and short answer thought provoking questions, to the youth (ages 14-24) in the state of Virginia, and found that youth are indeed plagued with mental health crises, but only about half of them indicated concern for a moral crisis. There are clear connections from the youth’s problems to cultural pressures and

technology, which makes living much easier and the need for discipline very high, but resources to cultivate that discipline are very lenient or nonexistent. A large portion of the participants had little knowledge of GA and if given the chance to join GA and learn, the youth in the survey indicated they would participate.

I conducted an interview with a member of the GA community, who has been a pilot and aircraft owner for over 30 years and entered that field at the age of 16. In discussing the matter of youth morality, he expressed concern for the youth of today, but acknowledged that things are “not worse or better, just different,” stating that although the youth of his era (1980s) had many shortcomings and struggles, there was no thought given to the worries and issues that plague youth today. He expressed criticism on the technology of the current day and age, the social norms of helicopter parenting, and more than anything, he said “those [moral] issues are there, the main reason is lack of opportunity.” Without actually explaining the purpose of my interview, he had already confirmed my suspicions on why there are moral issues in today’s youth, they lack opportunity, and they are rarely required to jump into action, as their “protectors and saviors” do all the work and take all the risk for them. He commented on his own generation, that the parents would often work or leave for extended periods, allowing children and youth to find their own way, make their own mistakes, and learn what is really important. Unfortunately, he also noted this led to overarching neglect and abuse of children, which negatively impacts their lives for decades. When presented with the questions concerning GA, he concluded that the field instills “freedom” and the community cultivates “personal responsibility [and] humility,” confirming that the recent and older experiences of his own flight training taught him very quickly, yet respectfully, that he must be a humble and responsible individual to survive in the air. At the prospect of advertising and promoting GA to expose more youth to it, he said “Absolutely, there is currently a shortage of everything, now there are opportunities everywhere!” He agreed that this problem could be very greatly mitigated by

exposure to GA, because anyone who joins this field is challenging themselves in a very positive environment, one meant to be firm but empowering.

As an American youth (23) with 3 siblings ages 15-20, I have had over 10 years of experience in the GA community. I can concur with all the reports, cases, surveys, and the interview that GA really does have a positive lasting impact on anyone who joins. I have seen the issue of declining moral standards since middle school, and so have all of my siblings, who regularly update me about the newest atrocities committed in public institutions meant for education. I have also been a witness to the great good accomplished by the GA community when a young individual takes interest in flight, repair, or aviation in general, they are always treated with respect, enthusiasm, and fairness. Being a part of this community takes personal responsibility and integrity, and those values are taught, encouraged, and expected.

It would be naive to believe that promoting GA would solve the many crises experienced by youth today, as one single solution would more than likely be insufficient. However, this solution is merely one of many potential solutions that should be implemented by those with expertise in the associated fields. This problem of GA decline can also be solved with the same solution used to solve the youth crisis, and it falls in my area of expertise, hence why I suggest it. It is also worth noting that GA is currently too often too expensive for even avid aviators to afford, which is where the technical research comes in, where I analyze the current state of design and production of GA aircraft and identify areas of improvement in both physical and policy areas to reduce costs that have risen extremely unprecedentedly. Thus, this issue of cost is to be mitigated before and as interest in GA grows among the everyday populace.

The framework I have used to analyze this situation has been the Actor Network Theory (ANT). Each individual youth is an actor, each institution and government are actors, and our society is the network. As in ANT, every actor affects and influences the other, especially since within our set network there are hundreds of millions of actors (youth) with a few larger, more influential actors (organizations) affecting each other constantly. As part of the Virtue Ethics

approach, I have assumed that cultivating qualities of a person is a much more effective method of moral fortitude, as opposed to utilitarianism or deontology. If the youth cultivate good moral values, their mental health crises will be gone, they will be better equipped to deal with and have discipline in this modern world, and they will be better functioning members of society. If the sources are trustworthy and the evidence taken to be genuine and representative of the general population, then there really is a moral crisis amongst youth, the lack of challenging opportunities really does cause it, and introducing General Aviation really can, at least partially, solve it.

Conclusion

The steps to be taken to make this possible involve every actor within the network. The national government should begin to take steps towards increasing support and exposure of GA through public institutions and in nationally supported airports. The state and local governments will have the greatest burden with evaluating every GA airport in their areas and working with the airports/towns that have a substantial population available to join these programs. Local towns and airports should begin recruiting members of the GA community to be instructors (whether formally or informally) for every field within GA, advertise to schools and neighborhoods the programs (potentially a technical elective as part of a curriculum) and their benefit, targeting youth and focusing on independence and taking the initiative to join these programs. The policies, logistics, technicalities, funding, etc. require further research and planning, as this paper is to propose the potential solution at a high level. (insert a few sentences about the impact)

References

- Bates, P., & O'Brien W. (2013) 'It's more than stick and rudder skills': an aviation professional development community of practice, *Teaching in Higher Education*, 18:6, 619-630, <https://doi.org/10.1080/13562517.2013.764862>
- BTS. (2021). Motor Vehicle Safety Data. Bureau of Transportation Statistics. <https://www.bts.gov/content/motor-vehicle-safety-data>
- BTS. (2021). General Aviation Safety Data. Bureau of Transportation Statistics. <https://www.bts.gov/content/us-general-aviation-safety-data>
- Burns, B. (1991). Mental health service use by adolescents in the 1970s and 1980s. *National Library of Medicine*. <https://pubmed.ncbi.nlm.nih.gov/2005050/>
- Buckley, J. (2023). US airplane near misses keep coming. Now officials are talking about averting 'catastrophic' incidents. CNN. <https://www.cnn.com/travel/article/aviation-safety-united-states/index.html>
- Chen, X., Chu, S., Zhang, G., Chen, X., Huang, J. and Yi, M. (2023), "Prediction of the maintenance cost of general aviation aircraft based on engineering method", *Aircraft Engineering and Aerospace Technology*, Vol. 95 No. 6, pp. 932-938. <https://doi.org/10.1108/AEAT-10-2022-0267>
- Damien. *General Aviation is Dying*. GoFly Aviation. <https://www.goflyaviation.com.au/latest-news/saving-general-aviation/>
- Dillingham, G. (2001). *Status of the Industry, Related Infrastructure, and Safety Issues*. United States General Accounting Office. <https://www.gao.gov/products/gao-01-916>
- FAA. (2022). General Aviation Airports Reports. Federal Aviation Administration. https://www.faa.gov/airports/planning_capacity/ga_study
- Gabrielsen, L. & Harper, N. (2018) The role of wilderness therapy for adolescents in the face of global trends of urbanization and technification, *International Journal of Adolescence and Youth*, 23:4, 409-421, <https://doi.org/10.1080/02673843.2017.1406379>

- GAMA. (1976). Statistical Data: 1976. General Aviation Manufacturers Association.
<https://gama.aero/wp-content/uploads/Statistical-Data-1976.pdf>
- Glazer, S. (2023). Social media and youth well-being. In CQ Researcher. CQ Press
<https://doi.org/10.4135/cqresrre20230929>
- Greenblatt, A. (2023). Loneliness epidemic. In CQ Researcher. CQ Press
<https://doi.org/10.4135/cqresrre20230505>
- Hagerty. (2023). 1975 Volvo 242. Hagerty. <https://www.hagerty.com/valuation-tools/volvo/242/1975/1975-volvo-242>
- Harris, E. (2023). *Meta-Analysis: Social Isolation, Loneliness Tied to Higher Mortality*. JAMA.
<https://jamanetwork.com/journals/jama/article-abstract/2806852>
- Horonjeff, Robert, Francis X. McKelvey, William J. Sproule, and Seth B. Young. (2010).
 “General Aviation.” *Planning and Design of Airports*. (5th ed.). New York: McGraw-Hill
 Education. <https://www.accessengineeringlibrary.com/content/book/9780071446419/>
- Ienco, D. (2015). 10 Differences Between Children Who Grew Up in the 70’s vs. Today.
 LinkedIn. <https://www.linkedin.com/pulse/10-differences-between-children-who-grew-up-70s-vs-today-ienco/>
- Langreo, L. (2023). *Teens Will Use AI for Schoolwork*. Education Week.
<https://www.edweek.org/technology/teens-will-use-ai-for-schoolwork-but-most-think-its-cheating-survey-says/2023/07>
- Lindner, J. (2023). Must-Know Laziness Statistics [Recent Analysis]. GITNEX MARKETDATA
 REPORT 2024. <https://gitnux.org/laziness-statistics/>
- Meyer, J. (2021). *Examining Crucial Demographic Trends in General Aviation*. Air Force
 Institute of Technology.
<https://scholar.afit.edu/cgi/viewcontent.cgi?article=5935&context=etd>
- Muntean, P. (2023). Aviation safety expert and ex-NFL star both killed in New York plane crash.

- CNN. <https://www.cnn.com/2023/10/02/us/russ-francis-plane-crash-death-new-york/index.html>
- Salas, E., & Maurino, D. (Eds.). (2010). *Human factors in aviation*. Elsevier Science & Technology.
- Smith, W. (2024). 2024 Infidelity Statistics. Smith Investigation Agency. <https://smithinvestigationagency.com/blog/2024-infidelity-statistics-who-cheats-more-men-or-women/#:~:text=According%20to%20recent%20data%20gathered,in%20the%20last%2020%20years.>
- Smithsonian Institute. (2016). *What is General Aviation?* National Air and Space Museum. <https://airandspace.si.edu/explore/stories/what-general-aviation>
- Stolzer, A. J. (1998). The General Aviation Revitalization Act of 1994: An Overview of Tort Reform. *Journal of Aviation/Aerospace Education & Research*, 8(2) <https://proxy1.library.virginia.edu/login?url=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fgeneral-aviation-revitalization-act-1994-overview%2Fdocview%2F1689580850%2Fse-2%3Faccountid%3D14678>
- Tan, Z. (2016). *How Has Google Affected the Way Students Learn?* KQED. <https://www.kqed.org/mindshift/43662/how-has-google-affected-the-way-students-learn>
- Tegler, E. (2021). The High Cost Of New General Aviation Aircraft May Be Pricing Pilots Out Of The Market. *Forbes*. <https://www.forbes.com/sites/erictegler/2021/04/28/prices-for-new-general-aviation-aircraft-may-be-pricing-pilots-out-of-the-market/?sh=57dac5743722>
- Torre, R. and Santhosh, M. (2018). *Teen Issues: past and present*. The Catamount. <https://thecatamount.org/1935/feature/teen-issues-past-and-present/>
- Visser, B. (2015). *Why does General Aviation Get No Respect?* General Aviation News. <https://generalaviationnews.com/2015/06/17/why-does-ga-get-no-respect/>
- Vock, D. (2019). *Aging infrastructure*. In CQ Researcher. CQ Press

<https://doi.org/10.4135/cgresrre20190419>

Won, H., Lewe, J., and Mavris, D. (2008). Advanced General Aviation Design with Transportation Architecture Analysis, The 26th Congress of ICAS and 8th AIAA ATIO.

<https://doi.org/10.2514/6.2008-8929>

Wood, J. (2023). The impact — and importance — of general aviation. General Aviation News.

<https://generalaviationnews.com/2023/07/12/the-impact-and-importance-of-general-aviation/#:~:text=A%20new%20economic%20impact%20study,billion%20economic%20i mpact%20every%20year.>

Zimlich, R. (2019). Positive childhood experiences may have greater impact than the bad.

Contemporary Pediatrics. <https://www.contemporarypediatrics.com/view/positive-childhood-experiences-may-have-greater-impact-bad>

Zimmerman, J. (2021). General aviation trends in charts—2021 update. Air Facts Journal.

<https://airfactsjournal.com/2021/10/general-aviation-trends-in-charts-2021-update/>