

A REVIEW OF COVID-19 VACCINE USE AND
ADVERSE EFFECTS IN U.S. COMMERCIAL AIRLINE
PILOTS

By

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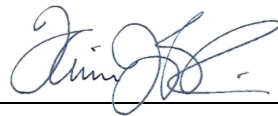
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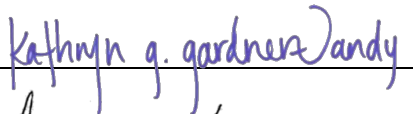


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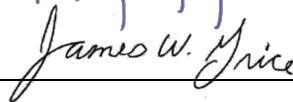
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Abstract: To airline passengers, the health of their pilot is primary. During the corona virus (CV) pandemic, pilots across the U.S., either willingly or due to corporate and/or government mandates, took the EUA vaccines (Pfizer, Moderna, and J&J). The normally vigorous drug approval process for pilots was abandoned, in an effort to get passengers back flying and save the industry. The safety systems that protect these pilots and the National Airspace System—the Federal Aviation Administration, their employers, and their unions—disengaged leaving these pilots with few choices: be vaccinated, be terminated or navigate the onerous exemption process. Although choice advocacy and grass-roots organizations sprung up across the industry pushing back against the mandates, it is estimated, similar to the general population, at least 80% of commercial pilots are vaccinated, which the CDC defines as having at least one dose of any of the three EUA approved CV-19 vaccines. This research examines the adverse effects of those vaccines in the U.S. pilot population. Through an anonymous, online, cross-sectional survey, civilian pilots from all major airlines, many charter, fractional, and corporate operators, and military pilots across the services disclosed their medical maladies, vaccine details, personal narratives, and opinions about oversight, safety, and the future. 1622 pilots responded which was further reduced to an 1132 airline pilot only sample size. Over 23% of respondents report suffering adverse effects from the vaccines. Yet, few are willing to disclose this information for fear of losing their careers. Pericarditis and myocarditis proved to be a statistically significant problem among this population ($p=.0158739$, SI.05). However, little, if any, research has been conducted on this population. Congressional oversight is one of the many recommendations that resulted from this research as 78% of airline pilot participants stated that they believe “safety risks exist due to the CV-19 vaccines.”

Keywords: pilots, vaccine, CV-19, airline, safety, FAA

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Aviation Industry COVID-19 Pandemic History	5
Statement of the Problem.....	9
Pilot Health Oversight.....	10
Purpose.....	13
Research Questions	13
Significance.....	14
Limitations	15
Assumptions.....	15
II. REVIEW OF LITERATURE.....	16
Vaccine Development History	20
Variolation	20
New Technology	21
Development of the COVID-19 Vaccines	21
Vaccine Platform Technologies Supported by Operation Warp Speed.....	23
Vaccine Development Timeline	25
Emergency Use Authorizations	26
Pilot Medical Certification & The FAA	28
NTSB 830	33
Federal Aviation Administration & COVID-19 Vaccines.....	35
FAA Drug Certification Process.....	37
Airmen Responsibility	39
Mandates	41
Private Sector	41
Government Contractor Mandate	43
OSHA Mandate.....	43
U.S. Military Mandate	45
A Grassroots Uprising.....	46
Vaccine Injury Claims	50
Pilot Stories-Making the Case for Inquiry	53
Cody Flint	53
Captain Robert “Bob” Snow	53

Chapter	Page
First Officer Steven Hornsby	54
Captain Patrick Ford	54
All Nippon 216	55
Birman Bangladesh Airlines 002	55
American Airlines 2740	56
Westjet 1590	56
Easy Jet 6932	56
JetSMART3266	57
Ikar Airlines/Pegas Fly	57
Austrian Airlines 87	57
Flydubai 1942	57
Latam 505	58
Indigo Pilot	58
Qatar 579.....	58
Alaska Airlines Pilot.....	58
Airline Employees 4 Health Freedom.....	59
A Search for Scientific Data	61
VAERs Database	61
Vaccine Safety Dataline.....	65
VSafe.....	65
Aviation Safety Reporting System.....	67
Aviation Safety Action Program.....	67
Inflight Incapacitation Data Registry	68
Major Morbidities	70
Anaphylaxis	71
Guillain-Barre Syndrome.....	72
Thrombosis	73
Myocarditis and Pericarditis	75
Risk/Benefit	76
Increased Susceptibility	77
Protection	78
Side-Effects.....	79
Natural & Herd Immunity.....	83
Legal and Ethical Concerns	85
Reality	86
III. METHODOLOGY	87
Design Theory and Conceptual Framework	87
Design Rationale.....	92
Data Collection Design	93
Designing the Study Population.....	95

Chapter	Page
U.S. Civilian Pilots	95
U.S. Military Pilots	100
Participants.....	102
Survey Description.....	102
Validity	103
Schedule.....	103
Budget & Marketing	103
Ethical Assurances.....	104
Reflexivity.....	104
Biases	105
 IV. FINDINGS.....	 108
Demographics	108
Medical Qualifications.....	121
Participant Vaccination Intentions.....	126
Participant Vaccination Status	135
General Study Cohort Health Assessment.....	140
COVID-19 Occurrence	141
Vaccine Attitudes.....	143
Q36'ers.....	146
Q36 Demographics	147
Medical Condition Disclosure	151
Q36 Employment Status	156
Mandates	159
Vaccines.....	160
Morbidities.....	162
Cardiovascular Events	165
Menstrual Events	175
Brain Fog, Mental & Memory Issues	176
Auto-Immune Events	179
Neurological Events	183
Chest Pain	186
Chronic Fatigue.....	187
Musculoskeletal Events	189
Respiratory Events	191
Liver Events	194
Gastrointestinal Events	195
Ocular Events.....	197
Auditory Events	198
Olfactory Events	199
Renal Events	201
Libido Events	202

Chapter	Page
A1C/Diabetes Events	203
Weight Gain	204
Generally Lower Health.....	206
Condition Not Reported	207
Discussion	210
Analysis.....	218
 V. CONCLUSION.....	 224
Recommendations	228
The Future	228
Post-Flight.....	232
Epitaph	235
 REFERENCES	 236
 APPENDICES	 277
Appendix A: FOIA Requests	277
Appendix B: Survey Questions.....	285
Appendix C: Jason Ambrosi Email.....	300
Appendix D; Oklahoma State University Institutional Research Board	301

LIST OF TABLES

Table	Page
Table 1: <i>Global COVID Vaccines Safety Project (GCoVS) Adverse Event by Brand.....</i>	83
Table 2: <i>Adjusted Total U.S. Commercial Pilots</i>	97
Table 3: <i>Comparison of Sample Size Requirements For Total Pilot Population</i>	99 & 210
Table 4: <i>Participant Accommodations.....</i>	129
Table 5: <i>Summary of Participant Mandate Data.....</i>	134
Table 6: <i>Reasons For Taking a CV-19 Booster</i>	137
Table 7: <i>CV-10 Infection Occurrence In Vaccinated Participants</i>	142
Table 8: <i>CV-19 Infection Occurrence In Unvaccinated Participants.....</i>	143
Table 9: <i>Comparison of Actions if Boosters are Mandated Among Study Participants</i>	146
Table 10: <i>Remaining Study Participants & Adversely Affected Medical Systems...</i>	219
Table 11: <i>Summarized Study Recommendations</i>	230

LIST OF FIGURES

Figure	Page
Figure 1: <i>Economic Profit/Loss by Aviation Sector</i>	7
Figure 2: <i>Statement by FAA</i>	12
Figure 3: <i>Vaccine Platforms</i>	24
Figure 4: <i>Pfizer Statement</i>	28
Figure 5: <i>NTSB Mandatory Reports</i>	34
Figure 6: <i>Federal Vaccine Mandates</i>	46
Figure 7: <i>CDC Excess Death Rates-Age 25-44, Fall 2021</i>	52
Figure 8: <i>ICAN V-Safe Dashboard Sample</i>	66
Figure 9: <i>Normal Pilot Systems Interactions</i>	88
Figure 10: <i>Pandemic Pilot Systems Interactions</i>	90
Figure 11: <i>FAA Table 4: Estimated Active Pilot Certificates</i>	96
Figure 12: <i>FAA Table 12-Estimated Active Pilot Certificates Held by Category and Age</i>	98
Figure 13: <i>Percentage Breakdown Civilian vs. Military Participants</i>	109
Figure 14: <i>FAA Pilot Certificates</i>	110
Figure 15: <i>Reported Civilian Type Ratings by Category</i>	111
Figure 16: <i>Reported Corporate Jet Type Ratings</i>	112
Figure 17: <i>Reported Commuter Type Ratings</i>	113

Figure	Page
Figure 18: <i>Reported Transport Category Jet Type Ratings</i>	114
Figure 19: <i>Reported Military Flying</i>	115
Figure 20: <i>Non-airline Civilian Pilot Employment</i>	116
Figure 21: <i>U.S. Civilian Airline Pilot Employment</i>	117
Figure 22: <i>U.S. Military Employers</i>	118
Figure 23: <i>U.S. Civilian Airline Pilot Secondary Military Service Obligations by Branch</i>	119
Figure 24: <i>Participant Age</i>	120
Figure 25: <i>Gender (Based on FAA-FORM 8500-8)</i>	121
Figure 26: <i>FAA Medical Class</i>	122
Figure 27: <i>Status of FAA Medical Certificate</i>	123
Figure 28: <i>Special Issuance Medical</i>	124
Figure 29: <i>Participants Medical Concerns</i>	125
Figure 30: <i>Percentage of Study Participants Under a Vaccine Mandate</i>	126
Figure 31: <i>Reasons for Employer Mandate</i>	127
Figure 32: <i>Percentage of Mandated Pilots Who Were Allowed to Seek</i>	127
Figure 33: <i>Exemption Choices</i>	128
Figure 34: <i>Exemption Results</i>	128
Figure 35: <i>Secondary Employer Mandate Percentage</i>	131
Figure 36: <i>Secondary Employer Mandate Reasons</i>	132
Figure 37: <i>Percentage Allowed to Seek Exemptions From Their Secondary Employers</i>	133
Figure 38: <i>Participant Vaccination Status</i>	135

Figure	Page
Figure 39: <i>Participant Vaccine Brand Choice</i>	136
Figure 40: <i>Number of CV-19 Boosters Per Participant s</i>	137
Figure 41: <i>Boosters 1 Selected by Brand</i>	138
Figure 42: <i>Boosters 2 Selected by Brand</i>	138
Figure 43: <i>Boosters 3 Selected by Brand</i>	139
Figure 44: <i>Boosters 4 Selected by Brand</i>	139
Figure 45: <i>Pre & Post Vaccine Individual Health Assessment</i>	141
Figure 46: <i>COVID-19 Infection Occurrence</i>	141
Figure 47: <i>Retrospective Vaccine Personal Uptake Opinion</i>	144
Figure 48: <i>Retrospective Participant Opinion of Vaccination for Others</i>	144
Figure 49: <i>Mandatory Booster Acceptance Among Study Participants</i>	145
Figure 50: <i>Q36 Pilot Age Distribution</i>	148
Figure 51: <i>Q36 Pilot FAA Medical Certificate Status</i>	149
Figure 52: <i>Q36 Pilot Medical Certificate Status Concerns</i>	150
Figure 53: <i>Q36 Pilot Questions Regarding Intent to Disclose Their Medical Conditions</i>	155
Figure 54: <i>Q36 Participant Employment Status</i>	157
Figure 55: <i>Q36 Employer Type</i>	157
Figure 56: <i>Q36 Employers</i>	158
Figure 57: <i>Q36 Reasons for Employer Mandate</i>	159
Figure 58: <i>Q36 Vaccine Uptake by Brand</i>	161
Figure 59: <i>Q36 Reasons for Choosing to Take a CV-19 Booster</i>	161
Figure 60: <i>Q36 Organ System Classifications/Coding</i>	163

Figure	Page
Figure 61: <i>Q36 Pilots Reporting Adverse Vaccine Effects</i>	164
Figure 62: <i>Q36 Cardiological Reports by Employer</i>	166
Figure 63: <i>Q36 Cardiac Event Onset</i>	167
Figure 64: <i>Q36 Health Assessment Pre/Post Vaccine</i>	168
Figure 65: <i>Q36 Pilots Reporting Adverse Cardiological Effects</i>	169
Figure 66: <i>Q36 Pilot Reporting Adverse Menstrual Effects</i>	176
Figure 67: <i>Q36 Pilots Reporting Adverse Brain Fog, Mental, & Memory Effects</i>	179
Figure 68: <i>Q36 Pilot Reporting Adverse Auto-Immune Effects</i>	181
Figure 69: <i>Q36 Pilots Reporting Adverse Neurological Effects</i>	184
Figure 70: <i>Q36 Pilots Reporting Chest Pain Post-Vaccination</i>	186
Figure 71: <i>Q36 Pilots Reporting Chronic Fatigue Post-Vaccination</i>	188
Figure 72: <i>Q36 Pilots Reporting Adverse Musculoskeletal Effects</i>	190
Figure 73: <i>Q36 Pilots Reporting Adverse Respiratory Effects</i>	193
Figure 74: <i>Q36 Pilot Reporting Adverse Liver Effects</i>	194
Figure 75: <i>Q36 Pilots Reporting Adverse Gastrointestinal Effects</i>	196
Figure 76: <i>Q36 Pilots Reporting Adverse Ocular Effects</i>	197
Figure 77: <i>Q36 Pilots Reporting Adverse Auditory Effects</i>	199
Figure 78: <i>Q36 Pilots Reporting Adverse Olfactory Effects</i>	200
Figure 79: <i>Q36 Pilot Reporting Adverse Renal Effects</i>	202
Figure 80: <i>Q36 Pilot Reporting Adverse Libido Effects</i>	203
Figure 81: <i>Q36 Pilot Reporting Adverse A1C/Diabetes Effects</i>	204
Figure 82: <i>Q36 Pilots Reporting Adverse Weight Gain Effects</i>	205

Figure	Page
Figure 83: <i>Q36 Pilots Reporting Generally Lower Health</i>	206
Figure 84: <i>Q36 Pilots Who did not Report Details Regarding Adverse Effects</i>	209
Figure 85: <i>Airline Pilot Population by Employer</i>	212
Figure 86: <i>U.S. Airline Pilot Population by Union Affiliation</i>	213
Figure 87: <i>“Big Five” U.S. Airline Carriers Pilot Population</i>	214
Figure 88: <i>U.S. Airline Pilot Population-Freight Carriers Only</i>	214
Figure 89: <i>U.S. Airline Pilot Population-Passenger Carriers Only</i>	215
Figure 90: <i>U.S. Airline Pilot Population-“National” Carriers</i>	216
Figure 91: <i>U.S. Regional/Commuter Airlines Pilot Population Charter Operators Pilot Population</i>	216
Figure 92: <i>U.S. Charter Operators Pilot Population</i>	217
Figure 93: <i>Percentage of US Airline Pilots Suffering Adverse Vaccine Effects</i>	218
Figure 94: <i>U.S. Airline Pilot Survey Participants Indicating Pericarditis & Myocarditis</i>	221
Figure 95: <i>T-Test Calculations:</i>	222
Figure 96: <i>Southwest Pilots Association (SWAPA) Phoenix Pilot Update</i>	225
Figure 97: <i>United Pilots LTD Claims October</i>	226
Figure 98: <i>APA LTD Claims</i>	227
Figure 99: <i>Did the FAA Use Due Diligence When Approving the COVID Vaccines For Pilots</i>	231
Figure 100: <i>Percentage of Pilots Who Believe Safety Risks Exist Due to the COVID-19 Vaccines</i>	232

CHAPTER I

INTRODUCTION

In aviation, safety is primary. The margin for error is infinitesimally small because lives depend on us—the nation’s 168,000+ commercial airline pilots. Daily, over 25,000 airline flights carrying 2.5 million passengers and thousands of pounds of freight take to the skies (Airlines For America, 2024). Yet, our nation has enjoyed 15 passenger airline accident-free years, leading to arguably the safest period in U.S. commercial aviation (Josephs, 2019). Add in corporate aviation, air ambulance services, traffic, police, fire, agricultural, and military flights and one is apt to agree with the words of the legendary “Miracle on the Hudson” pilot, Captain Chesley Sullenberger when he posited that this historical safety record is the result of thousands of individual commercial pilots getting it right, every day (Sullenberger, 2016).

Pilot health is fundamental to getting it right. As passengers, consider this: you are sitting in a chair, six miles above earth, traveling at a speed in excess of 80% of the speed of sound. An awesome thought, indeed. However, should your pilot fall ill or become incapacitated, how many of you can land a 300,000 pound jet? A Microsoft Flight simulator will not prepare you.

Some in the media suggest that the commercial pilot cadre is suffering adverse medical effects from the COVID-19 vaccines. Anecdotal stories and hearsay-statistics may generate clicks and likes on social media, but they have no place in determining the

safety of our skies. Instead, answers are found in data-driven research.

The Federal Aviation Administration (FAA) is charged with ensuring the safety of the National Airspace System. Although some airlines instituted COVID-19 vaccine mandates, many pilots chose vaccines based on FAA approval that allowed pilots to use an experimentally authorized drug less than a day after the U.S. Food and Drug Administration (FDA) granted Emergency Use Authorization (EUA) (FAA, 2022b). The FAA's normal drug approval process includes a lengthy review and observational use studies, sometimes exceeding a year or more in duration. Although the U.S. Centers for Disease Control (CDC) published new vaccine safety recommendations and warnings and the Secretary of Health and Human Services (HHS) rescinded the EUA, the FAA continues to sanction COVID-19 vaccine use in pilots. Some even suggest the FAA's recent reduced pilot EKG standards are linked to the effects of the vaccines, even though the FAA states that the changes were scheduled well in advance of the vaccine and were not the result of observed events (FAA, 2022c). Finding truth is paramount as hearsay may play well in the media, but data does not lie.

Where are the pilot unions on this issue? The nation's largest, the Air Line Pilots Association (ALPA), professes, "Through unbiased, fact-based evaluation of airline safety...ALPA works to ensure that the airline industry remains safe." (ALPA, 2024). Yet, ALPA's leadership continues to bury their heads in the sand. When approached with this research proposal, ALPA President, Captain Jason Ambrosi (Delta Airlines), said:

Being a particularly polarizing issue, and especially now with it receding,
I must be cognizant of the likelihood that ALPA participation in or

endorsement of such a survey on this subject could undermine the unity that is at the core of what our union needs to be successful (2023).

Captain Ambrosi's unwillingness to seek truth, no matter how uncomfortable, reminds some of the famous scene from "A Few Good Men" when Jack Nicholson screams, "You can't handle the truth" (Reiner et al., 1992).

Likewise, the Coalition of Airlines Pilots Associations (CAPA), a loosely knit group that includes the pilots of American Airlines, UPS Airlines, Net Jets, Atlas Air, Horizon Air, ABX, Cape Air, Omni Air, Silver Airways, and Republic Airlines (CAPA, 2024) was also approached with the opportunity to disseminate this study survey to their members. They, too, chose not to participate even after an in-depth meeting during which assurances could not be made by the researcher as to study results. Why would someone decide to undertake a project of this magnitude if the predetermined outcome must be agreed upon in exchange for participation? Speaking truth toward safety can never succumb to politics, no matter how uncomfortable.

As an airline captain, researcher, author, former union representative, and professor, I am tackling this uncomfortable issue for two reasons. First, I am one of the 2000+ employees of United Airlines who chose to stand for our faith against our CEO who put his marketing plan to be the first "fully vaccinated" airline ahead of his employees' faith and health (Pittman, 2021). While my personal choice is inconsequential to this research, over the past three years as one of the three founding members of Airline Employees For Health Freedom (AE4HF), a Texas based educational and advocacy 501(c)(4), my organization has been contacted by hundreds of pilots from many major airlines claiming they suffer vaccine injury.

That brings me to my second reason. As a researcher, anecdotal information proves nothing. Without hard facts, no matter what they may be, one cannot speak with an informed voice. I love my industry and the members thereof. So, it pains me when others spread salacious lies that harm my co-workers and my company supported only by rumors. Such is the case surrounding the story of a pilot who suffered a stroke while landing his jet in San Francisco in 2023. Some in the media ran the story suggesting it must be the result of the COVID vaccine. Yet, the pilot, a dear friend, is unvaccinated!

Thus, it was time to put the rumors to bed and do the real work. In May 2023, I publicized the first-ever anonymous survey of the nation's commercial pilots regarding the effects of the COVID-19 vaccines.

My approach is founded in my experience as a pilot and Human Factors practitioner. I posit the study of *Human Factors in Aviation* centers on the way we, as pilots, interact with other pilots, our machines, and ourselves—the way we think. Over the past few decades, a major Human Factors theme proven to enhance safety is the “post-flight” debrief. From the debrief, pilots learn how to identify their mistakes by analyzing the circumstances that led to them and discuss what they could have done differently to prevent future replication. In other words, they train themselves from their lived experiences to recognize and trap their errors preventing future catastrophic events.

It is often said in aviation that every Federal Aviation Regulation is born in blood—the result of an accident or incident. While reactive in nature, and somewhat successful in the early days of the industry, I argue it is time to take a new approach. Just because we have always done something a certain way, may not make it the safest action. It is time to consider taking a preventative approach by examining the state of pilot health

and health certification through an open, unbiased survey because no one—not the regulators, the airlines, or the unions—are willing to do it.

Just as we do when we conduct our post-flight debriefs, our industry needs to ask “what did we do well, what did we do wrong, and where can we improve.” For years, those three questions have improved safety across the industry and on the frontlines—in our nation’s cockpits. It stands to reason that assessing the pandemic response in the aviation industry through this same “post-flight” approach, while perhaps not popular, is the next step.

As a researcher, I had no idea what the data would present, but I approached this task committed to collecting and publishing facts. I committed that if I found a healthy pilot cadre, I would salute those at the FAA who had the foresight to toss aside their normal safety standards for the greater good. But, if I found a critical issue, I would also report because the safety of my co-workers, our families who travel, the flying public, and the National Airspace System must come first.

Aviation Industry COVID-19 Pandemic History

The coronavirus pandemic’s effects on the U.S. airline industry and push for vaccines presents a unique and timely opportunity to examine post-pandemic vaccination attitudes and health certification standards established by the FAA in regard to medical and drug interventions. What is more, the effects of these EUA drugs certified by the FAA for use by commercial pilots offer an opportunity to explore possible adverse reactions and search for correlations that may lead to flight safety concerns.

First reported in Wuhan, China in late 2019, the novel human coronavirus *severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)*, commonly known as COVID-

19 or CV-19 spread rapidly, traversing the globe and becoming the fifth documented pandemic (Liu et al., 2020) since the 1918-19 Influenza outbreak that infected approximately one-third of the world's population (*CDC Archives*, n.d.). In March 2020, the United Nations medical arm, the World Health Organization (WHO), officially declared a global pandemic. The U.S. government followed by instituting a program of lockdowns and closures aimed at slowing the spread, forgoing any major research push toward finding a cure or repurposing already available medications (Liu et al., 2020).

U.S. President Donald Trump introduced "Operation Warp Speed," a consortium of stakeholders including the National Institutes of Health (NIH) and of Allergy and Infectious Diseases (NIAID) in partnership with the Department of Defense (DOD), various manufactures, the CDC, HHS, and the FDA (U.S. GAO, 2021). The program's sole goal was developing and distributing a vaccine to prevent the spread of COVID-19.

Financially, the 2020 pandemic decimated the airline industry. By the end of that year, U.S. airline passenger travel trailed 2019 by some 64% (Goldstein, 2020). Reduced demand forced airlines to cut costs of which labor accounted for nearly 32% (Rodrigue, 2022). In 2020, U.S. airline cash burn exceeded \$10 billion per month (Creedy, 2020), with over \$12 billion in losses credited to the four largest airlines in the second fiscal quarter, alone (Isidore, 2020).

During the lockdowns, people abandoned travel forcing cancellations that resulted in labor furloughs and cutbacks not only at the airlines, but also at ancillary businesses such as rental car providers, hotels, and almost all related industries including the pilot unions themselves. The skies were quiet as fear overtook the nation and the globe.

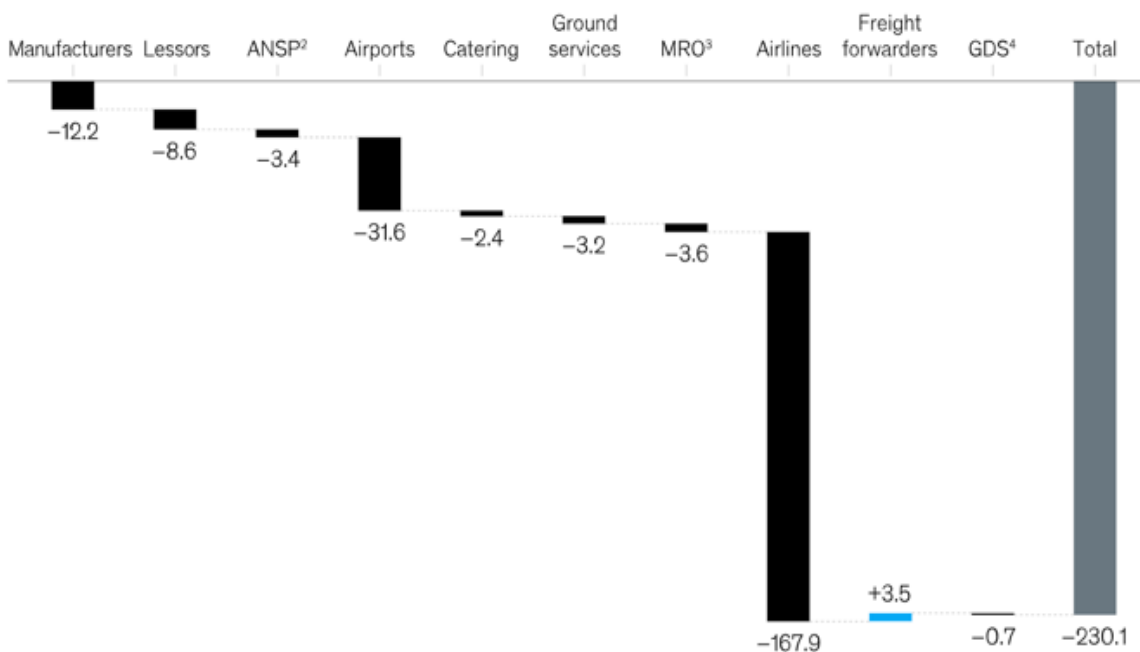
Figure 1 shows a graphical presentation of independent analysts McKinsey & Company's projections for the travel sector in 2020 with losses expected to exceed \$230 Billion, \$168 Billion of which was directly credited to the global airline industry (Bouwer et al., 2022).

Figure 1

Economic Profit/Loss by Aviation Sector

Airlines—with the exception of air cargo carriers—were the biggest destroyers of value in the aviation industry during the first year of the pandemic.

Economic profit/loss by subsector, 2020,¹ \$ billion



¹Based on invested capital (excluding goodwill), extrapolated to total industry.

²Air navigation service providers.

³Maintenance, repair, and overhaul.

⁴Global distribution system.

Source: McKinsey analysis

**McKinsey
& Company**

The International Air Transport Association (IATA), a global trade and advocacy group for the airline industry, forecasted a 43% decline in aviation jobs by the beginning of 2022 (IATA, 2000).

The U.S. Airline industry (passenger and cargo) employs some 700,000 people and directly supports over 10 million related jobs (Josephs, 2020). By August 2020, through voluntary reductions, retirements, job changes, shutdowns, and furloughs, approximately 50,700 airline employees were displaced (2020), and worldwide airline demand was projected to remain below 2019 levels until well into 2024 (IATA, 2020). In September 2020, the four largest U.S. carriers threatened an additional 35,000 employee furloughs of which roughly one quarter were pilots (Duncan et al., 2020). The only other incident in U.S. aviation history even remotely similar in effect to the pandemic was the September 11, 2001, terror attack that sparked a nationwide industry shut-down (Mola, 2001). In 2005, Ito and Lee demonstrated that the short-term effects of the 9/11 terror-attack shutdown resulted in a near 30% industry contraction and a long-term 7.4% shrinkage. The COVID-19 pandemic exceeded the effects of 9/11, both financially and in human resource costs.

In the U.S., despite generous Congressional financial support through the Coronavirus Air, Relief, and Economic Security Act (CARES), airline officials were convinced that a vaccine was the key to industry recovery (Laris & Aratani, 2021; *Payroll support program payments* 2023). By late summer of 2021, although the vaccines were readily available, uptake was low. As a result, United Airlines instituted a company-wide mandate on August 6, 2021 (Koenig, 2021). On September 9, 2021, the Biden Administration implemented Executive Order 14042 mandating, among other

things, vaccinations for employees of federal contractors (*Executive order 14042 requirements for covid-19...*, 2021). Because U.S. passenger and freight airlines supplement their revenue by carrying mail for the U.S. Postal Service, most were affected. Shortly thereafter, in November of 2021, the U.S. Occupational Safety and Health Administration (OSHA) instituted its “Covid-19 Vaccination and Testing Emergency Temporary Standard” (ETS) for companies with 100 or more employees (OSHA, 2021). Both EO 14042 and the OSHA mandate were subsequently struck down by federal courts and United’s mandate was challenged (*Sambrano v. United Airlines*, 2021). Several charter and fractional ownership services, air taxi, and private flight departments also imposed vaccine mandates, but it is unrealistic to estimate the number of small companies who asked or required their pilots to take the vaccine. At the same time, the U.S. military instituted service-wide mandates including for all pilots (Vergun, 2021). While the majority of mandates have either been struck down by courts or voluntarily rescinded, no one has examined the fallout.

Statement of the Problem

In 2017, aviation software data service and statistical provider, FlightAware, stated, on average, 9,728 airliners were in the air at any given moment (Waldek, 2022). Those jetliners are operated by some 164,090 licensed U.S. Airline Transport Pilots (*U.S. Civil Airmen statistics* 2022). In addition, thousands of commercial pilots work in various positions flying corporate aircraft, patrolling pipelines, teaching student pilots, fighting fires, transporting the injured in air ambulances, reporting on traffic congestion, operating agricultural application aircraft, serving in the military, flight testing newly designed airplanes, surveying FAA transmission facilities and procedures, and flying in a

myriad of other commercial applications. Aside from the obvious need for pilots to be in top physical shape to ensure they can safely do their jobs, a recent paper by Minoretti and Emanuele (2023) explains, “...pilot health and safety can enhance profitability within the aviation industry by minimizing expenses related to absenteeism, employee turnover, and accidents” (para. 21). In other words, it is in everyone’s best interest to ensure the U.S. pilot cadre is healthy.

Post-pandemic, no one has examined the effects of the COVID-19 vaccine on the U.S. airline pilot population with regards to efficacy and possible adverse effects. This study provides an opportunity to do a post-pandemic debrief of the current state of airline pilot health and attitudes regarding the vaccine, mandates, and regulatory oversight. In other words, ask the standard pilot debrief questions:

What did we do right?

What did we do wrong?

And what, if anything, could be done differently in the future?

Additionally, this work seeks to understand pilot attitudes toward those charged with insuring medical safety in an effort to advance public health in future pandemics or medical crises.

Pilot Health Oversight

Airline pilot fitness is overseen by the FAA’s medical certification process that finds its authority in 14 CFR Part 67—*Medical Standards and Certification (The Federal Register 14 CFR 67)*. While medical standards based on physiological systems (renal, cardiac, respiratory, etc.) are detailed, the FAA does not publish an approved pharmaceutical list. Individual pilots are held accountable through regulations such as 14

CFR 61.53, which prohibits an aviator from acting as pilot-in-command, or in any other capacity, during a medical deficiency, specifically as listed below:

1. Knows or has reason to know of any medical condition that would make the pilot unable to meet the requirement for the medical certificate necessary for the pilot operation, or;
2. Is taking medication or receiving other treatment for a medical condition that results in the person being unable to meet the requirements for the medical certificate necessary for the pilot operation (*The Federal Register* 14 CFR 61).

Further, 14CFR 91.17 prohibits the use of “any drug that affects the persons faculties in any way contrary to safety” (*The Federal Register* 14 CFR 91). However, nowhere in the airman regulations are “investigational” or EUA drugs addressed. On the other hand, research shows that the FAA’s “Therapeutic Drug Guidelines for Air Traffic Control Specialists,” (2016) states, “Drugs classified as ‘investigational’ by the United States Food and Drug Administration (FDA) are normally *not* acceptable for use by ATCSs [Air Traffic Control Specialists]” (p5). It is curious that the FAA publishes an approved list for controllers who are held to nearly the same medical standard as pilots (U.S. Office of Personnel Management, 2024), but not for pilots. One can, therefore, assume a similarly intended prohibition, written or otherwise, likely exists for pilots although it is not publicly available. Meanwhile, on December 12, 2020, the FAA approved the COVID-19 vaccines for use by the U.S. Pilot population (Figure 2) with only minimal guidance, less than 24 hours after the FDA granted EUA status.

Figure 2

Statement by FAA

Holders of FAA-issued Airman Medical Certificates or Medical Clearances may receive the Moderna COVID-19 vaccine; however, a 48-hour “No Fly/No Safety-Related Duty” interval must be observed after each dose.

Individuals holding an Airman Medical Certificate or Medical Clearance should be reminded that they are prohibited from performing flight crewmember duties or air traffic control duties if they do not meet medical certification requirements, including those related to adverse events from medications that render them unable to perform such duties.

(Source: FAA, 2020)

The FAA’s publicly stated mission, “...to provide the safest, most efficient aerospace system in the world.” After reading the above statement, it is easy to question the agency’s handling of the CV-19 vaccines. Because the agency cites “transparency and accountability” to “the American public and our aviation stakeholders” (FAA, 2021d) as core values, data with regards to the CV-19 vaccines to substantiate these claims must exist. Yet, this researcher could find no evidence of any data collection or tracking efforts on the part of the FAA, stakeholder airlines, trade groups, or pilot unions to study the outcome of the FAA’s decision regarding the approval of the vaccines and their effects. A simple internet query returns several peer-reviewed research papers and/or ongoing studies examining the effects of CV-19 vaccine across various subgroups, communities, and professions including the largest to date, which included some 99-million participants published in February (University of Auckland, 2024). However, this researcher found no examination of the effects on commercial pilots as a specific subgroup or the aviation industry, as a whole, including, but not limited to, uptake statistics, efficacy, or adverse effects.

Without data, it is impossible to support claims that the COVID-19 vaccines are safe for pilots. Meanwhile, the media is flooded with reports of sudden, unexpected deaths and adverse reactions to the COVID-19 vaccinations, including among pilots. If for no other reason than to refute the conspiracy theorists, one would expect the FAA to consider data collection. Likewise, Congressional oversight of the agency could easily mandate data collection.

Purpose

The purpose of this study is to collect a sampling of data to determine uptake statistics, incidence of adverse reactions to the FAA authorized CV-19 vaccine, and pilot attitudes regarding mandates and future vaccine use among the U.S. commercial pilot population to determine if there is cause for concern for the safety of the National Airspace System. Through a survey of the pilots, an examination of the FAA's limited public statistics, Freedom of Information Act (FOIA) requests for data, and any other verifiable available sources, this research will seek to find common themes. Qualitative written comments collected from survey responses will provide detailed evidence examining the effects of the vaccine in commercial pilots regarding their personal social constructs and physical lives in the aftermath of the pandemic. The final intent is to determine if an underlying safety concern for the flying public exists and provide recommendations for regulators and stakeholders.

Research Questions

This research study will attempt to answer the following questions.

1. Is there a statistically significant portion of the U.S. commercial pilot population suffering adverse health effects from the COVID-19 vaccines?
2. If so, what complaints are most reported so that future researchers can examine possible interventions and pilots can be informed as to symptoms for which they should be alert?
3. Does the data suggest a larger study is warranted?
4. What can stakeholders learn from the CV-19 pandemic to better prepare the aviation industry for future possible health crises?

Significance

In addition to a general health survey, this study is timely and significant in its attempt to explore potential pilot health concerns as a result of mass vaccination, public and private mandates, and their influences on aviation safety, the airline industry, and the safety of the traveling public. This study will also add to the growing body of research about the effects of implementing mandatory pandemic-related policies on a specific subgroup/industry. The results may be used to examine the current pilot medical certification process; the approval process of new medical interventions by the governing authorities specifically regarding drugs available only under EUA or “experimental” classifications; and reinforce the need for efficacy tracking and data collection. Information contained herein may be used by members of Congress and other regulators to ensure proper FAA oversight and policy implementation. Finally, the results may inform other researchers in developing additional studies in the areas contained in this report.

Limitations

Because each sovereign nation took a separate and identifiable approach to the pandemic, the scope of this study is limited to U.S. based commercial airline pilots. While the study does include some military pilot participants and attempts to separately classify those who are considered “active duty” military vs. commercial pilots who have part-time military obligations, the FAA’s airmen statistics do not differentiate between civilian and military pilots who also hold civilian pilot certificates. In other words, the number of total Airline Transport Pilot Certificates reported by the FAA does not guarantee all are employed in the airline industry. Therefore, the civilian pilot population, as a whole, may be over-inflated. Potential solutions to overcome this problem are detailed later. However, due to the sheer size of the pilot population, only minimum required sampling size differentiations were observed when corrections were attempted.

Assumptions

This applied research assumes the voluntary participants are/were, in fact, commercial pilots employed in the U.S. aviation industry during the pandemic and the subsequent mandates, and that they will provide honest answers to all questions.

CHAPTER II

LITERATURE REVIEW

In preparing this literature review, it is important to remember this is a new and developing topic. Much research was warranted into the history of pandemic responses, in general, and vaccine development along with detailing the U.S. response, both scientifically and regulatorily, and is written to ensure one has a foundational knowledge of basic medical terms and conditions. To that end, not only were research papers consulted, but this section also examines information from the CDC's, NIH's, FDA's, FAA's websites. While not traditional, there is also value in addressing information found in the media as it points to the overarching narrative that was foisted upon the study cohort—COVID-19 vaccines are safe and effective, and doing one's part by accepting a vaccine will expedite the end of the pandemic and save the airlines.

The pandemic generated hundreds of scientific studies covering a myriad of topics. The challenge to any researcher is separating those of true scientific value from those rushed to market by authors attempting to say something—anything—merely to be first to comment on a new topic. A second challenge was deciphering the intent of the authors. Many researchers referenced in this work, point to possible vaccine adverse effect correlations then simply end with a call for more studies (Ahmed, et al., 2022; Bozkurt et al., 2021; Chatterjee & Chakravarty, 2023; Haseeb et al., 2022). That is fine

and correct, but because the topic of COVID-19 vaccine efficacy and effectiveness remains somewhat taboo, many published studies briefly touch on potential correlations but quickly retreat. The challenge was to determine if the retreat was for lack of data; for fear of dissuading public use; or for fear of possibly being shunned by the medical community. Finding quality information was difficult as many studies used small sample sizes or were merely metadata compilations of the aforementioned limited research. It was difficult to overlook what appeared to be an overarching intent to remain “politically correct,” for lack of a better term, so as to not speak against the established narrative promoted during the pandemic. This is evidenced by the numerous papers that point to compelling, even critical information, but begin or end with a disclaimer statement such as, “Nonetheless, it is the opinion of the authors that vaccination is a vital public health tool in the management of the COVID-19 pandemic” (Haseeb et al., 2022, para. 79).

And, why wouldn’t physicians and researchers be fearful? In his 2022 article, Gorski shamed and vilified anyone who questioned vaccine efficacy over the last decade claiming that those medical professionals who question vaccines “started before the pandemic, with antivaxxers marching with far-right militias...” (para. 2). Further he stated:

What physicians think about medical matters is important, because physicians are considered authorities in medical matters. So when physicians express doubt about vaccines and vaccine safety, it will have an effect...When antivaxxers gloat about how high a percentage of primary care physicians (PCPs) express antivaccine and vaccine-hesitant views,

they're correct that it's important in that it provides them a huge propaganda weapon (para. 14).

It is likely that few researchers and medical professionals wanted to be lumped in with “far-right militias.” Worse, some doctors who questioned the vaccines were threatened with action against their licenses for speaking out. At the height of the mandates, in an August 2021 interview on NPR, Lulu Garcia-Navarro spoke with University of Washington researcher, Rachel Moran who pointed out:

The Federation of State Medical Boards recently put out a statement that any doctors who, quote, "generate and spread COVID-19 vaccine misinformation or disinformation are risking disciplinary action by state medical boards, including the suspension or revocation of their medical license (para. 13)."

No definition of “misinformation or disinformation” was included in the statement, but it is easy to read this as a statement against challenging the vaccine position of those institutions. If one wants a quick overview of the pressure by the medical establishment to maintain a positive vaccine narrative, one has merely to google “doctors fear being shunned for their vaccine views.” The articles that appear are mostly related to how to combat vaccine hesitancy and “anti-vaxxers.” All this is to say, while vaccine hesitancy is real, so is factual data. The attempt to reduce one at the expense of the other, in this researcher’s opinion, leads the public to believe neither.

At the same time, it is important to understand the lived experiences that inform the study participants. Beames and her fellow researchers (2021) highlight the benefits of considering environment, messaging, and perceptions in one's scientific evidence, pointing out that including this data produces "higher-quality research, relevant outcomes with greater practical impact on the target population, increased likelihood that products and treatments will be accepted, increased trust in research and organizations, and increased empowerment and hope within those individuals who contribute" (para. 4). This concept is key to this exploration.

Based on their personal narratives, it appears many in the study cohort on both sides of the CV-19 vaccine issue simply want to be heard. Those living with what they believe are adverse vaccine effects may be lacking hope or harbor intense emotions, including anger. Including an exploration into their lived experiences while considering the tone in the nation; the messaging they were receiving at the time of their decision to be vaccinated; and what they perceived to be benefits or threats to their careers provides the rich context in which they frame their answers.

Contextual considerations require detailing the pilot medical certification process; the actions of the regulators, employers, and unions during this time; and, the media information study participants were receiving. Therefore, this section is generally broken down as follows:

- Vaccine Development History
- Pilot Medical Certification & the FAA
- Mandates
- The Grassroots Uprising

- Vaccine Injury Claims and the Media
- A search for Justifiable Data
- Admissions by the CDC
- A Risk/Benefits Analysis

Vaccine Development History

Traditional vaccines work to stimulate the body's immune response by introducing small, safe amounts of bacteria or virus. While this introduction does not cause the disease, the immune system recognizes the foreign substances and begin creating defenders known as antigens. Once vaccinated, if the body comes in contact with the disease-causing organism, it rapidly and forcefully mounts a defense through these antigens (FDA, 2020).

Variolation

The WHO (2024) reports that the idea of intentionally exposing a body to a pathogen in an attempt to stimulate a defense, known as variolation, can be tracked as far back as at least the early 15th century. Variolation was thought to be a way to ward off smallpox, and research into this concept continued for several hundred years. In 1879, Dr. Edward Jenner created the world's first successful vaccine using a form of cowpox to inoculate against smallpox. French researcher, Louis Pasteur, successfully created a rabies vaccine in 1879. Shortly thereafter, Dr. Anna Wessels Williams isolated the diphtheria bacteria. The late 1900s brought the Spanish Flu pandemic "making an influenza vaccine a U.S. military priority" (para. 17). These discoveries quickly led to vaccines to ward off yellow fever, pertussis, influenza, polio, hepatitis B, measles, mumps, and rubella, and all other traditional, antigen-producing vaccines we know today.

New Technology

The history of mRNA vaccine development, as told by Dolgin in 2021, began in the early 1980s at Harvard University. Messenger ribonucleic acid (mRNA) enzymes “transfer the information from DNA to the cell machinery that makes proteins” (Editors, 2017, para. 1). Scientists were searching for a way to synthesize the enzymes for use believing they could use this technology to fight diseases at their most basic level. The problem was finding the right mix so that healthy cells were not signaled to attack each other. Nearing the end of that decade, Dr. Robert Malone discovered that if he mixed fat droplets with the mRNA and introduced human cells, the human cells absorbed the mRNA and produced proteins. Research continued through the 1990’s with little success because the body’s immune system continued to attack the foreign messenger RNA, killing the host. Then, in 2005, University of Pennsylvania researchers Katalin Kariko and Drew Weissman discovered that modifying the mRNA could stop the immune system from attacking. After decades of failure due to the instability of the mRNA as a vaccine platform and numerous patent disputes, manufacturers finally took interest beginning first in the veterinary sciences, then returning to human use (Dolgin, 2021).

Development of COVID-19 Vaccines

Fast forward to the CV-19 pandemic in 2020. As panic spread around the globe, factories ceased production, workers and school children were sent home, and industries such as aviation ground to a halt. The U.S. Government introduced Operation Warp Speed—the official name given to the program designed to produce a COVID-19 vaccine, thought at the time to be the best path out of the pandemic. Because NIH had been doing research on coronaviruses for the years leading up to the pandemic, they were

quickly able to respond having already developed a “prototype,” customizable base vaccine (NIH, 2024). The Following excerpt from the NIH website concisely details the COVID-19 mRNA vaccine development.

Using their prototype coronavirus, the researchers studied the spike protein, which appears on the surface of coronaviruses. These spikes let the coronavirus latch onto cells in our body. When the body’s immune system sees the spike protein, it makes antibodies to try to protect the body from infection. This makes it a good vaccine target. Traditionally, researchers would try putting the spike protein in the vaccine. When injected, the vaccine would stimulate a person’s immune system to protect them from a particular coronavirus. But the team knew that during a pandemic, it would take too long to make large amounts of a specific spike protein. So, they studied a faster way to get a spike protein into the body. This new approach is to inject mRNA instructions for the spike protein into a person’s muscle. The muscle cells then make the spike protein. And then the body’s immune system makes the needed antibodies to protect itself.

Having this prototype approach, along with coronavirus research from labs around the world, made it possible for scientists to spring into action when the pandemic hit. Many vaccines take 10 to 15 years to reach the public. But the timeline for the COVID-19 vaccine was very different. The Vaccine Research Center worked with a company called Moderna to use this information to quickly customize their prototype approach to the

SARS-CoV-2 spike protein. By early February 2020, a COVID-19 vaccine candidate had been designed and manufactured. This vaccine is called mRNA-1273. By March 16, 2020, this vaccine had entered the first phase of clinical trials. Other vaccines, including a similar one from Pfizer and BioNTech SE, entered clinical trials not long after. On December 18, 2020, after demonstrating 94 percent efficacy, the NIH-Moderna vaccine was authorized by the U.S. Food and Drug Administration (FDA) for emergency use. Just days earlier, the similar Pfizer/BioNTech vaccine had become the first COVID-19 vaccine to be authorized for use in the United States (NIH, 2024).

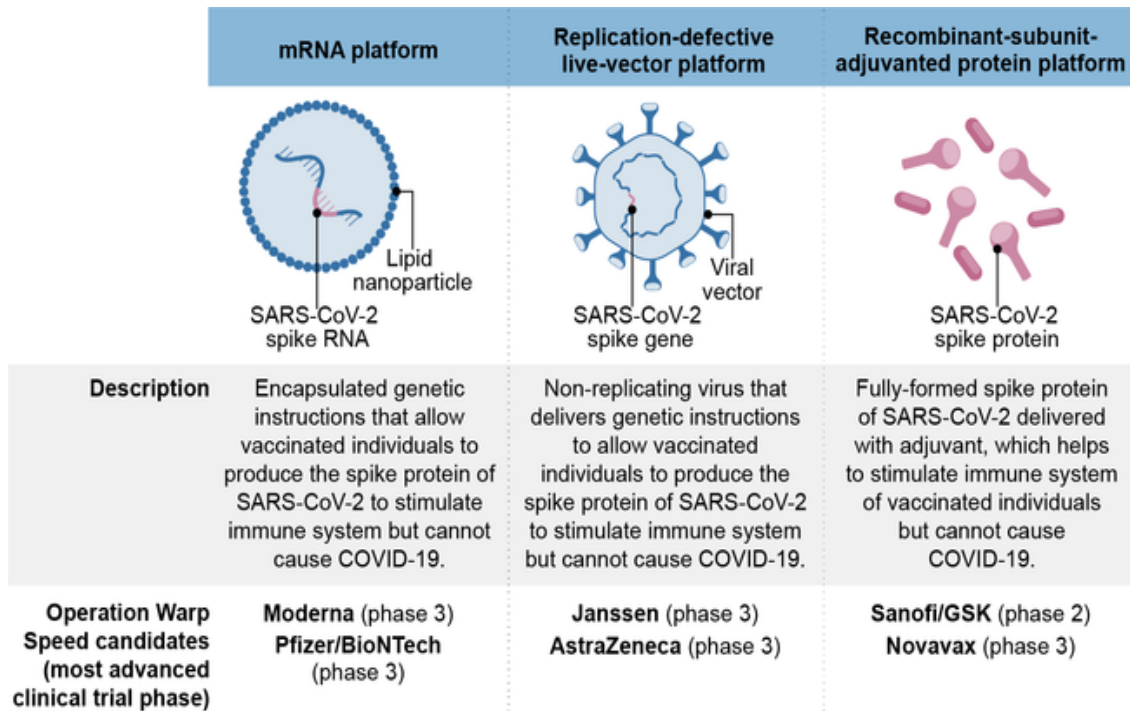
In partnership, HHS and DOD worked with the vaccine manufacturers to accelerate development with NIH handling the research while manufacturers conducted clinical trials. Simultaneously all were gearing up for production, and the U.S. military planned distribution logistics.

Vaccine Platform Technologies Supported by Operation Warp Speed

Six vaccine platform technologies were developed, five of which entered phase 3 clinical trials. Figure 3 details the final three. The mRNA platform vaccines—Moderna and Pfizer/BioNTech vaccines—received EUA’s from the FDA by December 2020 (GAO, 2021).

Figure 3

Vaccine Platforms



Source: GAO (analysis); Adaptation of images depicting vaccine technologies with permission from Springer Nature: *Nature* ("The Race for Coronavirus Vaccines: A Graphical Guide," Ewen Callaway) © 2020. | GAO-21-319

Note: Source (GAO, 2021)

The Government Accountability Office (GAO) was tasked with reviewing Operation Warp Speed’s effectiveness, and reported COVID-19 vaccines “generally followed traditional practices, with some adaptations” (2021, para. 2), and that the task force was working as an inter-agency team toward the goal of mitigating the challenges of getting the product to market. However, the GAO also found that because of the accelerated timeline, “some vaccine companies relied on data from other vaccines using the same platforms, where available, or conducted certain animal studies at the same time as clinical trials” (para. 3). As a result, the two

EUA vaccines, Pfizer and Moderna, were likely based on clinical trials that included a mere two months monitoring for adverse events (2021).

Vaccine Development Timeline

Johns Hopkins University (2024) presents a simplified overview of the traditional vaccine development timeline, summarized below. The website points out that for safety purposes, each trial phase follows the completion of the previous, none running concurrently, pointing to this timeline as the primary reason vaccine development takes nearly a decade. The steps, as Johns Hopkins explains, normally include:

1. Preclinical Trials—normally animal only testing;
2. Phase 1 Clinical Trials—small participant population (1-several dozen), assesses short-term effects, dosages, and immune response;
3. Phase 2 Clinical Trials—larger, more diverse population (several hundred) targeting different demographics for safety and immune response.
4. Phase 3 Clinical Trials—Assess Safety and Efficacy population in the tens of thousands, randomized with a placebo followed for months and/or years assessing short and long-term safety.
5. Regulatory Approval—FDA Approval normally 2-4 years
6. Manufacturing—typically scales up near the end of the approval process

7. Post-Licensure safety monitoring—reviewed for side effects that may only be detectable in large populations resulting in withdrawal of product.

Operation Warp Speed, on the other hand, completed all steps concurrently in 11 months resulting in commercial scale production for five of the six original manufacturers. By the end of January, 2021, manufacturers had released 63.7 million doses or approximately 30% of that for which they had been contracted (GAO, 2021). And while many Americans accepted the vaccine, many questioned the safety of a product brought to market so rapidly under an EUA. As of May 10, 2023, CDC reported 81.4% of the U.S. population had received at least one dose; 69.5% completed the series; but, only 17% were considered up to date with the booster (CDC, 2024a).

Emergency Use Authorization

Per the FDA’s website, the agency is charged with the “oversight of the safety, effectiveness and quality of vaccines” (2021, para 1.) If the Secretary of HHS declares that “circumstances exist to justify the emergency use of drugs and biological products,” the FDA may grant an EUA for any product under the following authority:

[Sections] 564, 564A, and 564B of the Federal Food, Drug, and Cosmetic Act as amended or added by the Pandemic and All-Hazards Preparedness Reauthorization Act of 2013 (PAHPRA) permits the Commissioner to authorize the emergency use of an unapproved medical product or an unapproved use of an approved medical product for certain emergency circumstances... (Office of the Commissioner (FDA), 2017, para. 1).

In general, once a Public Health Emergency is declared, the FDA has authority to extend regular use drug expiration dates; waive manufacturing best practices allowing a rush to market; allow emergency drugs to be dispensed without prescription; allow the CDC to “create and issue emergency instructions” for off label use of certain drugs; and, waive the “risk Evaluation and Mitigation Strategy Requirements” for fast tracking drugs, product, or vaccines to market (2017). However, as follows, EUA authority was not intended to be a permanent solution.

When an EUA declaration is terminated, then any EUA(s) issued based on that declaration will no longer remain in effect. The HHS Secretary’s EUA declaration will terminate on the earlier of: (1) a determination by the HHS Secretary that the circumstances that precipitated the declaration have ceased (after consultation as appropriate with the Secretary of Homeland Security or the Secretary of Defense), or (2) a change in the approval status of the product such that the authorized use(s) of the product are no longer unapproved (para. 21).

In the case of the COVID-19 Pandemic, the Secretary of HHS let the declaration of public health emergency expire on May 11, 2023. However, in what appears to conflict the above stated regulatory policy, the vaccine EUA’s remain in effect today. Pfizer’s marketing website states that on September 11, 2023, “Pfizer and BioNTech’s Received U.S. FDA Approval for 2023-2024 COVID-19 Vaccine” (Pfizer, 2023). The headline statement is somewhat in conflict with information (Figure 4) presented lower on the same page.

Figure 4

Pfizer Statement

AUTHORIZED USE

Pfizer-BioNTech COVID-19 Vaccine (2023-2024 Formula)* is FDA authorized under Emergency Use Authorization (EUA) to prevent coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in individuals 6 months through 11 years of age.

*Hereafter referred to as Pfizer-BioNTech COVID-19 Vaccine

EMERGENCY USE AUTHORIZATION

Pfizer-BioNTech COVID-19 Vaccine has not been approved or licensed by FDA, but has been authorized for emergency use by FDA, under an EUA to prevent Coronavirus Disease 2019 (COVID-19) for use in individuals aged 6 months through 11 years of age. The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of the medical product under Section 564(b)(1) of the FD&C Act unless the declaration is terminated or authorization revoked sooner.

Further exploration of the FDA’s and CDC’s websites shows only two vaccines are approved” for use in the U.S.—Pfizer’s “COMIRNATY” brand and Moderna’s “Spikevax.” Spikevax’s EUA was also reissued on in the fall of 2023 (FDA, 2023). No matter the status of either vaccine, the FAA can always rescind their approval for use by airmen.

Pilot Medical Certification & The FAA

The regulatory framework governing pilot medical eligibility and certification, contained 14 CFR Part 67 details a variety of subjects from specific medical conditions to required disclosures and record-keeping. Pilot medical eligibility is determined through a three-tiered, progressively more stringent medical certification system. Commercial pilots (and pilots receiving pay for services who are otherwise not required to maintain an

Airline Transport Pilot (ATP) qualification) must maintain at least a Second Class Medical Certificate that requires an annual flight physical from an FAA designated Aviation Medical Examiner (AME). ATPs (pilots who are, generally speaking, certified to be airline captains) require much more stringent First Class Medical Certificates issued semi-annually. A First Class requires an electrocardiogram (EKG) at the first examination after reaching age 35 and on an annual basis after turning 40. EKGs conducted in AMEs' offices are sent directly to the FAA via datalink. Private and recreational pilots are only required biannual Third Class medical certificates with minimum standards. While merely a nuanced detail, suffice it to say, each class of certificate, upon expiration, becomes valid for privileges under the next lower class for the remaining balance of that certificate's validation period. In other words, a First Class expires for ATP privileges at the end of six months after date of issue. It then becomes valid for an additional 6 months for Second Class privileges, since Second Class medicals are valid for a cumulative year. Both First and the Second Class Certificates then revert to Third Class privileges for an additional year as a Third Class Medical is valid for a cumulative two years. No class can ever be valid for more than two years. The need for a thorough understanding of this topic is will be evident when the study data is presented.

The FAA publication, *Pilot's Handbook of Aeronautical Knowledge*, lists 15 medical conditions (listed below) that either by history, or by diagnosis, disqualify a pilot for a medical certificate. Regardless of past or current treatment, each requires a discretionary review process and an individualized authorization from the Federal Air Surgeon or her representative known as a "Special Issuance" (SI) letter of authorization (2023b).

- Diabetes mellitus requiring oral hypoglycemic medication or insulin
- Angina pectoris
- Coronary heart disease that has been treated or, if untreated, that has been symptomatic or clinically significant
- Myocardial infarction
- Cardiac valve replacement
- Permanent cardiac pacemaker
- Heart replacement
- Psychosis
- Bipolar disorder
- Personality disorder that is severe enough to have repeatedly manifested itself by overt acts
- Substance dependence (including alcohol)
- Substance abuse
- Epilepsy
- Disturbance of consciousness and without satisfactory explanation of cause
- Transient loss of control of nervous system function(s) without satisfactory explanation of cause (p. 17-2).

In addition to the mandatory list, the text cites many more potentially “grounding” conditions including “cancer, kidney stones, neurologic and neuromuscular conditions including Parkinson’s disease and multiple sclerosis, [and] certain blood disorders.” All listed require a discretionary determination by the FAA before an AME may issue a pilot medical certificate (2023b, p. 17-2).

FAA designated AMEs are private medical doctors certified by the FAA's Office of Aerospace Medicine who perform flight physicals on behalf of the Federal Air Surgeon. These AMEs may or may not be pilots, and their areas of practice need not be related to aviation. Some AMEs run pilot certification-only practices that can be quite lucrative because most do not accept insurance, only cash payment. Each exam is several hundred dollars per visit and charge additional for EKGs, when required. Other AMEs merely supplement their unrelated practice by doing FAA medical certifications between their regular patients.

The rapport between an AME and a pilot can be unique. Some pilots develop career-long relationships with their AMEs with whom they consult on a myriad of medical issues regarding their licensure. Others prefer to simply get their certification with the least interaction possible for fear of jeopardizing their careers. An AME is rarely a pilot's treating physician.

Because their livelihoods depend on passing their annual or semi-annual medical certifications, many pilots seek out AMEs who are known across the industry as requiring pilots to merely meet minimum standards versus those AMEs who delve into a pilot's complete health history. No matter which, until an official application (FAA Form 8500-08) for a pilot medical is submitted via the FAA's online MedXpress system, the agency has no way to know a pilot seeks a certification. Pilots routinely let their medicals expire. For example, if an airline pilot is due in January and June (expires on 1/31 and 6/30), and he has a month of vacation in February, he is free to work until the end of January, then reapply at the first of March, post-vacation, before he returns to work. This action effectively resets his due months to March and August, buying him a free month or two,

or at least delaying his next financial expense. The FAA does not track these lapses because they have no way to determine if the pilot was, in fact, on vacation or suffering an illness, and thereby did not reapply while seeking treatment.

The FAA does track visits to medical professionals whom pilots see between applications through the disclosure requirement on the MedXpress application (under the penalty of law). If a pilot suffers an illness; does not visit a medical professional; merely reapplies when he is due; and, he chooses not to report his condition, there is no means for identifying or tracking. In fact, many pilots provide the FAA minimal information to ensure their employment is continuous. Most often, in the case of a major, disqualifying illness, a pilot merely stops flying until he is well, then reapplies with the help of the treating specialist to ensure the FAA has the proper testing and reports to show the pilot satisfies the FAA's standard to return to work. There is no obligation to report medical conditions to the FAA until after the fact, at the time of the next application.

If, however, an ailment is detected during an AME visit (bad EKG, failed eye test, etc.) 14 FAR Part 67 provides the AME guidance to as to whether to issue the pilot a medical certificate or defer the pilot to the review process. Even if the AME issues, often times, months after issuance, a pilot will receive a letter from the FAA, requesting additional information. Data gathering may determine that the issue is merely an anomaly or, the FAA could require additional testing/information and then issue an SI after corrective medical treatment. An SI letter contains the medical terms with which the pilot must comply to maintain his medical qualification (more frequent checks, directions to follow a specific treatment protocol such as a CPAP machine in the case of sleep apnea, specific medication, etc.). If, on the other hand, the FAA's publication,

Guide for Aviation Medical Examiners (2024) directs an AME to defer for further review, and the pilot is immediately grounded. This is known as a Deferral. While deferred, a pilot works with his specialist and his AME to eventually achieve an SI. If that is not possible, he is permanently medically disqualified. Pilots know the process and often delay application when suffering disqualifying conditions. They avoid further scrutiny while seeking treatment so as to not be officially deferred. Once well, they reapply seeking a special issuance (SI) letter.

Overseen by the Federal Air Surgeon, Dr. Susan Northrop, the FAA's Civil Aero Medical Institute (CAMI), centered in Oklahoma City, OK, provides AMEs training and guidance regarding pilot medical certification, collects application data, oversees certification, issues SI letters, and processes deferrals. CAMI is also the FAA's research arm. They explore topics that enhance aeronautical education while maintaining several databases of interest in this study; test new interventions; and determine "best practices" with regards to human factors across every aspect of civilian aviation. CAMI publishes general pilot medical statistics that can be retrieved from the FAA's latest "2022 Aerospace Medical Certification Statistical Handbook" which includes medical certification records submitted between January 2015-December 31, 2022.

Unfortunately, there is no means to use the CAMI data to determine the number of actively employed U.S. pilots due to the situation explained above whereby pilots are free enter and exit the system and reset their medical certification "due months."

NTSB 830

The National Transportation Safety Board (NTSB), as stated on their website, "is an independent federal agency charged by Congress with investigating every civil

aviation accident in the U.S. and significant accidents in other modes of transportation” (NTSB, 2024). The board consists of 5 members nominated by the President and confirmed by the U.S. Senate. The Board’s statutory authority is outlined in 49 USC 1133, and each member serves a 5-year term. Founded in 1926, the Board is the final determiner of accident causation in the U.S. Set forth in 49 CFR Part 830, (Figure 5) the Board requires certain mandatory reporting.

Figure 5

NTSB Mandatory Reports

[53 FR 36982, Sept. 23, 1988, as amended at 60 FR 40112, Aug. 7, 1995; 75 FR 51955, Aug. 24, 2010; 87 FR 42104, July 14, 2022]

Subpart B - Initial Notification of Aircraft Accidents, Incidents, and Overdue Aircraft

§ 830.5 Immediate notification.

The operator of any civil aircraft, or any public aircraft not operated by the Armed Forces or an intelligence agency of the United States, or any foreign aircraft shall immediately, and by the most expeditious means available, notify the nearest National Transportation Safety Board (NTSB) office,^[1] when:

- (a) An aircraft accident or any of the following listed serious incidents occur:
 - (1) Flight control system malfunction or failure;
 - (2) Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness;
 - (3) Failure of any internal turbine engine component that results in the escape of debris other than out the exhaust path;
 - (4) In-flight fire;
 - (5) Aircraft collision in flight;
 - (6) Damage to property, other than the aircraft, estimated to exceed \$25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less.

Of particular interest is 830.5 (a) (2) *Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness*. U.S. airline operators are governed under 14 CFR 121 and mandated, based on NTSB 830, to report any inflight crew incapacitations or illnesses, no matter the cause. While post-accident investigation

and final determinations are publicly available in the NTSB database, using the online query function searching words such “incapacitation” or “illness” netted only one unrelated result. All other retrieved results were from reports prior to 2011.

Federal Aviation Administration & COVID-19 Vaccines

The FAA’s website states that it is tasked with “...provid[ing] the safest, most efficient aerospace system in the world...”and that it is “...accountable to the American public and our aviation stakeholders” (FAA, 2021d, para. 1). The agency is also accountable to the U.S. Congress as a branch of the Department of Transportation (DOT). At the start of the pandemic, the FAA was fresh off the highly publicized Boeing 737 Max debacle leaving some suggesting the administration was searching for a way to help shore up confidence in the industry (Zafft, 2021). Passenger traffic and revenue were down, as previously discussed. Labor unions feared for their survival because their income stream is dependent upon their members’ continued employment. As the pandemic broke, many, such as the United Airlines Master Executive Council (MEC) of ALPA, accepted wage and schedule concessions (Muntean et al., 2020). Recovery was paramount for the survival of the industry—the industry on which the FAA depends for its very existence. As with so many other industries, the aviation sector put all hope in the development of a vaccine.

At the same time, in search of replacement revenue, many airlines turned to hauling vaccines and medical supplies such as personal protective equipment (PPE). IATA calculated, “flying one dose to every human would fill 8,000 747’s” (Goldstein, 2020). While hope was on the horizon, because vaccines needed to remain supercooled, they required dry ice, which the FAA classifies as a dangerous good. Consider the

massive quantity needed to fill those 747's. As a result, in October 2020, the FAA established the Vaccine Transport Team which developed the initial rollout plan for transportation (FAA, 2022c). The Team's FAA website states that concurrent with the agency's work to establish the logistics necessary to move the supply of vaccine across the globe, it was, at the same time, proactively working toward the approval of the vaccines for commercial pilots. "The FAA is evaluating the use of each vaccine by medical certificate and medical clearance holders as soon as the U.S. Food and Drug Administration (FDA) issues an emergency use authorization..." (para. 10).

December 12, 2020, only one day after the first vaccine received FDA EUA approval, then FAA Federal Air Surgeon, Dr. Michael Berry, approved the Pfizer/BioNTech vaccine for use by U.S. airline pilots (FAA, 2022c). Following shortly thereafter, on December 19, again, only one day after EUA issuance, the FAA approved the Moderna Vaccine (Shepardson, 2020). The Johnson & Johnson Janssen COVID-19 vaccine was approved by the FAA on February 27, 2020 (FAA, 2021a); however, when the CDC and FDA recommended pausing its use for further study due to numerous adverse event reports, the FAA, on April 19, 2021, issued the following statement:

The Office of Aerospace Medicine is closely following the FDA and CDC Johnson and Johnson Vaccine pause recommendation. Once the outcome of the CDC ACIP deliberations is known, policy for use by airmen and air traffic controllers will be amended if it is indicated. If you are offered a J&J vaccine outside of the U.S. during the pause, the 48-hour "No Fly/No Safety-Related Duty" interval must still be observed after the injection (FAA, 2021c, para. 1).

The FAA's only other update to its J&J vaccine policy was a December 23, 2022, statement that the vaccine was, again, approved for use (unable to quote announcement, since removed). After the J&J EUA was rescinded, in June 2023, its use was discontinued (Cattan, 2023).

FAA Drug Certification Processes

Considering the critical nature of airmen health certification and the FAA's ultimate responsibility to the flying public as the sole protector of safety, the rapid approval of an EUA vaccine is worthy of exploration. In a 2013 interview published in the FAA's bi-monthly magazine, *FAA Safety Briefing*, then Federal Flight Surgeon, Dr. Michael Berry reiterated the FAA's long-standing policy of waiting at least a year after a drug receives FDA approval before considering it for use by pilots (Parson, 2013). The article details the FAA's previous procedures stating that consideration normally begins a process of observed use by a small group of airmen before any drug is authorized for general use. "The FDA obviously does extensive testing," Berry said (p. 30). But, because testing involves only a small sample size, "We wait at least a year to let the FDA establish a more complete profile of benefits and side effects before we commit the resources required for aviation evaluation" (p. 30). Berry explained that the FAA does not merely look at a drug's effects in isolated, clinical settings. Rather, they take into consideration altitude, pressurization, and other areas unique to the flying environment.

Our primary concern is not just about the drug and its side effects, but also about the underlying medical condition it is intended to treat....New information emerges almost every day, and we are constantly re-evaluating our policies on the basis of that. Sometimes, we get adverse

information about a drug's effects after we have accepted it for use in aviation, and we have occasionally had to withdraw our acceptance of that drug. At other times, new information acquired over several years of use persuades us that we can accept one we initially declined to allow (p. 29).

Yet, in the case of the COVID-19 vaccines, Dr. Berry appears to have violated his own standards by authorizing use of an EUA-only drug for the first time in the history of the FAA only hours after FDA approval. In the same 2013 article (Parson), Dr. Berry explained that the FAA's normal drug evaluation protocol is a very intense process conducted by the *Pharmacy and Therapeutics Committee* which is composed of a small group of FAA resident physicians at the CAMI. The committee begins by "examining the FDA's product label for officially approved use," (p. 30). They also review the "FDA's research, including post market safety reviews, academic research, and publications such as PubMed" (p. 30). The research group examines how the drugs have historically interacted with other medications, something that was not examined in the COVID-19 vaccination approval process. In the end, if the committee "reaches consensus on the possible aeronautical use of a drug," the committee chairman makes a recommendation to The Federal Air Surgeon, who has the ultimate approval power (p. 30). Berry also conceded that "There is simply no way we could evaluate every new drug that appears" (p. 30). Instead, he said that the FAA often chooses the following:

...to evaluate a drug primarily when there appears to be an appropriate cost-benefit ratio. If there are a number of airmen with a given condition who request acceptance of a new drug to treat that condition, there is obviously a benefit in committing the resources to review it (p. 30).

While there may or may not have been a groundswell of requests on the part of individual airmen for the COVID-19 vaccines in December of 2020, it is likely, based on the previously detailed economic conditions, that other stakeholders such as the airlines, pilot unions, and the federal government were pushing for approval. No matter, Berry's comments raise the following questions:

1. What evaluation studies were conducted in the time leading up to the EUA that gave CAMI and the Federal Air Surgeon confidence that flight safety would not be compromised if the vaccines were approved for commercial airmen use?
2. Is that evaluation data available for researchers to review?
3. What follow-up study data was gathered to validate the safety of the vaccines among the commercial pilot population warranting the FAA's rapid approval, and the continued use?
4. Who is overseeing the Federal Air Surgeon's decision to continue allowing an EUA drug to be used, long after the Pandemic declaration was rescinded, without proper scientific research as to the effects. In other words, the pandemic has been declared over. Why is the FAA still allowing an unstudied drug to be used by U.S. airmen?

Airmen Responsibility

The ultimate responsibility for a pilot's health, including an adverse reaction to a medication, lies with the individual airman. Federal Aviation Regulations (FARs) (Federal Register, 14 CFR Part 61) prohibits a person from acting as pilot-in-command or as a required pilot flight crew member while that person:

- (1) knows or has reason to know of any medical condition that would make the person unable to meet the requirements for the medical certificate necessary for the pilot operation; or,
- (2) Is taking medication or receiving other treatment for a medical condition that results in the person being unable to meet the requirements for the medical certificate necessary for the pilot operation (FAR 61.53)

Further, 14 CFR Part 91 (Federal Register) states, “No person may act or attempt to act as a pilot crew member of a civil aircraft...While using any drug that affects the person’s faculties in any way contrary to safety” (FAR 91.17).

Placing medical safety responsibility for a vaccine authorized under an EUA on the airmen the FAA is charged to protect, while, at the same time, many of those pilots were under regulatory and/or corporate mandates that threatened their livelihoods, demonstrates the ultimate failure of the systems established to protect them. At the time the FAA approved the vaccines for use, little clinical data was available as to potential side effects. Even less, if any, data existed as to how the vaccines would interact with other medications or the long-term effects on pilots’ certifications. On face value, it appears the FAA merely accepted the words of the FDA and the manufacturers without doing their normal inquiry. Did they consider the intense environment in which pilots work (pressurization, lower oxygen environments, and higher radiation due to high altitude flying)? Ultimately, these actions not only potentially jeopardized the health of the pilot cadre, they likely violated the accountability mandate with which the FAA is

charged as overseer and ultimate protector of the national airspace system and the flying public.

Mandates

Once readily available, the public was slow to accept the COVID-19 vaccine in certain populations. Unsurprisingly and likely because of the requirement to legally certify their fitness for duty under the FARs prior to every flight, many pilots were less than eager to participate. A lack of solid foundational, long-term data may have played a role. Consequently, enticements were offered, then mandates were imposed.

Private Sector

In the Spring of 2021, the United Airlines pilots' branch of ALPA worked with airline management to monetarily incentivize its pilots to take the vaccine through additional pay (Pletz, 2021). With less than robust participation, on August 6, 2021, United's CEO Scott Kirby announced a company-wide mandatory vaccination policy (Neuman, 2021). Nearly 2000 United employees who had sincere religious or medical objections to the vaccines were threatened with termination for seeking exemptions through the reasonable accommodation process afforded under Title VII of the 1964 Civil Rights Act, as amended, and the Americans with Disabilities Act. Both of these laws are overseen by the Equal Opportunity Employment Commission (EEOC, 2002). The employees also filed a class action complaint in the Northern District of Texas. The presiding judge, Hon. Mark Pittman wrote:

Mr. Kirby publicly cautioned that "very few" religious exemptions would be granted. *Id.* Mr. Kirby then publicly warned "any employee [who] all the sudden decided I'm really religious" would unequivocally be "putting

your job on the line. You'd better be very careful about that." (2021, para. 39).

While United managers testified that its private mandate was strictly for "safety," Judge Pittman, in the same opinion, called this claim "pretextual." Many believe the true goal of United was the ability to market the airline as the only "fully vaccinated airline" in an effort to lure customers back into the air (2021, para. 39).

Such statements paint a vivid picture of United's perspective on employees who requested religious exemptions. United's subsequent actions in "accommodating" these employees suggest that United's actions may not have been motivated by safety concerns. Instead, United's actions may be viewed as merely pretextual (Pitman, 2021).

In the end, Pittman did not grant a preliminary injunction which forced the named plaintiffs and almost 2000 United employees, including 354 pilots, to appeal to the Fifth Circuit while being placed on indefinite, unpaid leave, effectively terminated (Giang-Paunon, 2022). The employees prevailed on appeal and were returned to work at the end of March 2022. Meanwhile, the case for damages is ongoing (*Sambrano v. United Airlines*, 2021).

Likely emboldened by United's initial actions, Hawaiian Airlines and cargo operators Kallita Air and Atlas Air Cargo soon followed presenting their pilots the choice of vaccination or termination (Josephs, 2021b). All have ongoing litigation. United Airlines' vaccine mandate remained in place for all pilots, flight attendants and new employees until April 2023 when it was quietly rescinded (L. Cox, personal communication, November 8, 2023).

Government Contractor Mandate

When other airlines did not follow United's lead, the Biden Administration implemented Executive order 14042—Federal Contractor Mandate (*EO 14042* 2021). The majority of domestic airlines carry the U.S. Postal Service's mail and/or have other government contracts. EO14042 appeared to be a quick attempt to do what the CEOs of the remaining airlines would not do. The Federal Contractor Mandate was enjoined in the U.S. 6th Circuit on December 7, 2021, providing a reprieve for many pilots (Boyarsky, 2023).

OSHA Mandate

As a backstop for those airlines without government contracts, simultaneously through OSHA, the Biden Administration issued a mandate on employers with over 100 workers (OSHA, 2021). While the airlines were in the midst of enforcing this mandate, it was overturned by the U.S. Supreme Court on January 23, 2022 (*National Federation*, 2022). At each of these various steps along the way, a number of pilots panicked acquiescing to the vaccine out of fear they would lose their careers.

Unlike at United, until overturned, both the Executive Order and the OSHA mandates allowed for the “reasonable accommodation” exemption process to keep people employed. In fact, facing a groundswell of rebellion from discontented employees, most airlines refused to follow United's plan to remove the unvaccinated from their property, either by termination or effectively terminating them through indefinite, unpaid leave. Some suggest that Southwest Airlines pilots staged a “sickout” in October 2021 in silent protest of the Executive Order and OSHA mandates (Palmer, 2021). As a result, Southwest quickly followed Delta, American Airlines, and many others by granting

reasonable accommodation exemptions to anyone who wanted one. With the paperwork in order, the pilots merely continued to fly.

Throughout the fall of 2021, another way in which pilots pushed back was by forming various grass-roots organizations. Airline Employees 4 Health Freedom (AE4HF), for example, began with over 3000 United pilots. By the time the *Sambrano v. United Airlines* case entered federal court in September 2021, their numbers had fallen to just under 1000 pilots. On November 8, 2021, when their request for a preliminary injunction was denied, the 354 remaining unvaccinated United pilots were effectively terminated—placed on unpaid, indefinite leave without pay, benefits, or access to any retirement savings. Sixteen were terminated (Hals & Singh, 2021). Almost all have returned to work, albeit under very restrictive terms. Each remains unvaccinated today (Chokshi, 2022; L. Cox, personal interview, 2023).

Other groups such as the Southwest Freedom Flyers, a grass roots organization of Southwest employees who oppose mandates, were never forced into court as their employer dismissed the idea when the OSHA and Federal Contractor mandates were overturned. In a personal interview, Southwest Freedom Flyer leader, Captain Tom Bogart, reports that while the airline officially states that 97% of its workforce is vaccine compliant, only their Human Resources department knows how many pilots are vaccinated or received Reasonable Accommodations (January 2024). Bogart further suggests, based on his organization's membership data, that at the height of the “push back” approximately 25-30% of the Southwest pilots remained unvaccinated. To date, there is no official statistic tracking the number of unvaccinated commercial pilots in the U.S.

U.S. Military Mandate

On August 24, 2021, the DOD, under Secretary Lloyd Austin, imposed mandates on all military service personnel, including pilots (Winkie, 2022). Individual service deadlines were as follows: Army-December 15, 2021; Air Force-November 2, 2021; Navy & Marine Corp-November 28, 2021, and National Guard-June 20, 2022. At the time of the announcement, Army spokesman Lt. Col. Terence Kelley stated that 80% of service members had accepted their first dose (para. 7). By December 16, 2021, 97% of U.S. active-duty forces were fully vaccinated (Liebermann, 2021). The military vaccine mandate was officially removed January 10, 2023, by Austin due to a requirement contained in the annual defense budget authorization bill. Figure 6 details the four vaccine mandates based on applicability, implementation date, and outcome.

Figure 6

Federal Vaccine Mandates

Status of Federal Vaccine Mandates

Mandate Applicability	Details	Deadline	Implementation	Status
Federal Contractor	Must be vaccinated by unless granted medical or religious exemption	1/18/22	Executive Order 14042	Suspended 12/7/21 Preliminary Injunction
Private Sector Employees	Businesses with +100 employees must be vaccinated or weekly testing	1/6/22	OSHA Emergency Standard	US Supreme Court Ruled OSHA exceeding authority. Withdrawn 1/25/22
Federal Government Employees (Includes FAA employees)	Must be vaccinated unless granted medical or religious exemption	11/22/21	Executive Order 14043	Suspended 1/25/22 while in litigation
Military Members	Must be vaccinated unless granted medical or religious exemption	11/2/21	Sect. of Defense 8/24/21 Memo	Rescinded 1/11/23 Due to requirements contained in budget bill

Sources: Britzky, H. 2023
Hall, R. 2023
Kagan, A.M. 2023
Stilestein, N. 2022

A Grassroots Uprising

Many who questioned the vaccines, or what was reported as science during the pandemic, were quickly silenced or de-platformed on social media sites such as “X” (formerly Twitter) (Clark, 2023). Internal emails show that the Stanford Internet Observatory’s Virality Project “coordinated with other academic institutions and government-funded non-profits to monitor and shape de-platforming policy” (para. 2). Specifically, the Virality Project identified and targeted “viral posts of individuals expressing vaccine hesitancy or stories of true vaccine side effects” (para. 5). Questioning what is generally accepted is the foundation of scientific inquiry. Yet, in a nation that holds one’s right to freely express their ideas as an inalienable right, at the height of the pandemic, many who professed alternative viewpoints were labeled “crazy anti-vaxxers” in the media and even in a 2022 study published in *Nature* (Miyazaki et

al.). Careers were ruined and medical licenses were rescinded for simply for expressing opinions critical of the NIH, the FDA, or the White House Coronavirus Task Force (Strozewski, 2022; Hitzik, 2021). Medical professionals who did not agree with the government's approach found themselves on the outside (Bergengruen, 2021). Some of these doctors collaborated and formed research, treatment, and/or advocacy groups such as "America's Front-Line Doctors," and "The Great Barrington Declaration." One of the oldest physician organizations, the Association of American Physicians and Surgeons, an alternative to the American Medical Association, was targeted by the media and labeled as a source of disinformation (Gorski, 2022). Through information exchanges based on their ever-changing experiences treating patients during the pandemic, these physicians learned what worked and what did not. Their evolving protocols included using off-label common drugs such as hydroxychloroquine and ivermectin. Debating the efficacy of such interventions is outside the purview of this study. Suffice it to say, many alternative treatments were later proven effective through numerous research studies that are now published on the National Institute of Health's website and archived in the National Library of Medicine (Nabi-Afjadi et al., 2023). Through legal action the FDA was forced to remove its derogatory social media posts referencing ivermectin as "horse de-wormer" (Stieber, 2021). What is important to understand is that many of these "grass roots" movements began in the medical community, itself, and carried potentially career-ending consequences.

One outspoken opponent of U.S. public Coronavirus health policy is Dr. Jay Bhattacharaya, Professor of Medicine, Economics, and Health Research Policy at Stanford University. In October 2020, Dr. Bhattacharaya, a vaccine advocate, put his

career on the line by standing in opposition to lockdowns, masking, and social distancing as a co-author of the *Great Barrington Declaration*. Together with Drs. Martin Kulldorff (Harvard) and Sunetra Gupta (Oxford), the three gathered almost one million signatures from “epidemiologists and public health scientists” stating they “have grave concerns about the damaging physical and mental health impacts of the prevailing COVID-19 policies...” (Great Barrington, 2023). Finally, in January of 2024, in closed-door testimony before The U.S. House of Representatives, former Coronavirus Task Force leader, Dr. Anthony Fauci, is reported to have admitted that no scientific foundation ever existed for requiring masking and social distancing, proving Dr. Bhattacharaya’s position (Phillips, 2023; Editorial Board, 2024). Dr. Robert Malone, the man credited with discovering the mRNA technology, himself vaccinated, also warned against mandatory vaccination and was discredited for spreading “false information” (Bella, 2022). Others include Dr. Peter McCullough, cardiologist and leading voice in adverse effects such as myocarditis and pericarditis, who testified before Congress on several occasions advocating for early treatment interventions and against vaccine mandates (McCullough, 2022; Press Release, 2022). Dr. Paul Alexander, a public health specialist for Operation Warp Speed, and Dr. Ryan Cole have also remained steadfast and vocal in their opposition to the vaccines due to their potential adverse effects, at great cost to their careers (Hope, 2022; Jankowicz, 2021; Dutton, 2021).

Vaccine choice advocacy groups such as Children’s Health Defense Network and the Informed Consent Action Network (ICAN), fought against the mandates through FOIA requests and data collection. When the pilot mandates were announced, these groups began tracking individual cases of what they believed were vaccine adverse

effects. As a result of push back from the FDA and pharmaceutical giant, Pfizer, ICAN brought suit in the Northern District of Texas forcing Pfizer to disclose clinical trial documents (Siri, 2022). As word spread through the efforts of organizations such as Businessman/Entrepreneur Steve Kirsh's *Vaccine Safety Research Foundation* and Senator Ron Johnson (R-Wisconsin), the voices began to unite. Airline pilots began coming forward insisting that their newfound medical maladies were the result of the CV-19 vaccine (Odenewu, 2022). Claims were not limited to only the civilian pilots. Military pilots also spoke compelling U.S. Army Flight Surgeon, LTC Dr. Theresa Long, and Army Special Forces physician, LTC Pete Chambers, to invoke the Whistle Blower Protection Act. Long testified both before Congress and in the case *Navy Seal 1 v. Austin* (Salai, 2021).

Fearing for the safety of the entire aviation industry, on December 15, 2021, a thoroughly cited letter authored by Robert F. Kennedy, Jr., various attorneys, and Drs. McCullough, Cole, Long, and Chambers, was sent to the FAA, the DOT, and the leaders of major airlines warning of the potential dangers to both the pilot population and the flying public (Kennedy et al., 2021). When no response was received, Sen. Johnson wrote to the newly appointed Federal Air Surgeon (FAS), Dr. Susan Northrop, who assumed the position after former FAS Berry retired at the end of 2020 (Hisel, 2023). Sen. Johnson's letter asked Northrop and the FAA to investigate, but Northrop said she knew of only one pilot with medical documentation, and no matter, it is always the individual pilot's responsibility to "ground themselves" if they feel they are not medically qualified (para. 10).

As with any controversial topic, rumors abound and sides are quickly chosen. Anecdotal evidence surrounding vaccine efficacy and adverse effects appeared as soon as the COVID-19 vaccines became available. Reports were mostly downplayed in the media and across social media giving rise to even more salacious attempts to connect the most remote airline incident to a COVID conspiracy. For example, a Southwest Airlines pilot suffered a ruptured appendix in flight which was quickly credited to vaccine harm, even though the pilot was unvaccinated (T. Bogart, personal interview, January 8, 2024). Irresponsible reporting, such as this is, as harmful to scientific inquiry (and the airline industry) as is the refusal by some in the scientific community to consider vaccine injury is possible. As a result, it may be some time before truth is known, no matter what that may be. Even in 2024, despite the widespread publication of the largest study to date, (University of Auckland, 2024) a simple internet search for information on the vaccine's efficacy and potential adverse effects results in pages of "fact check" internet posts stating that the vaccines are safe and effective and that those suggesting otherwise are part of the "anti-vax conspiracy" movement. The vaccines may be safe for use by pilots, but without scientific inquiry, those claims are as unfounded as the null hypothesis.

Vaccine Injury Claims

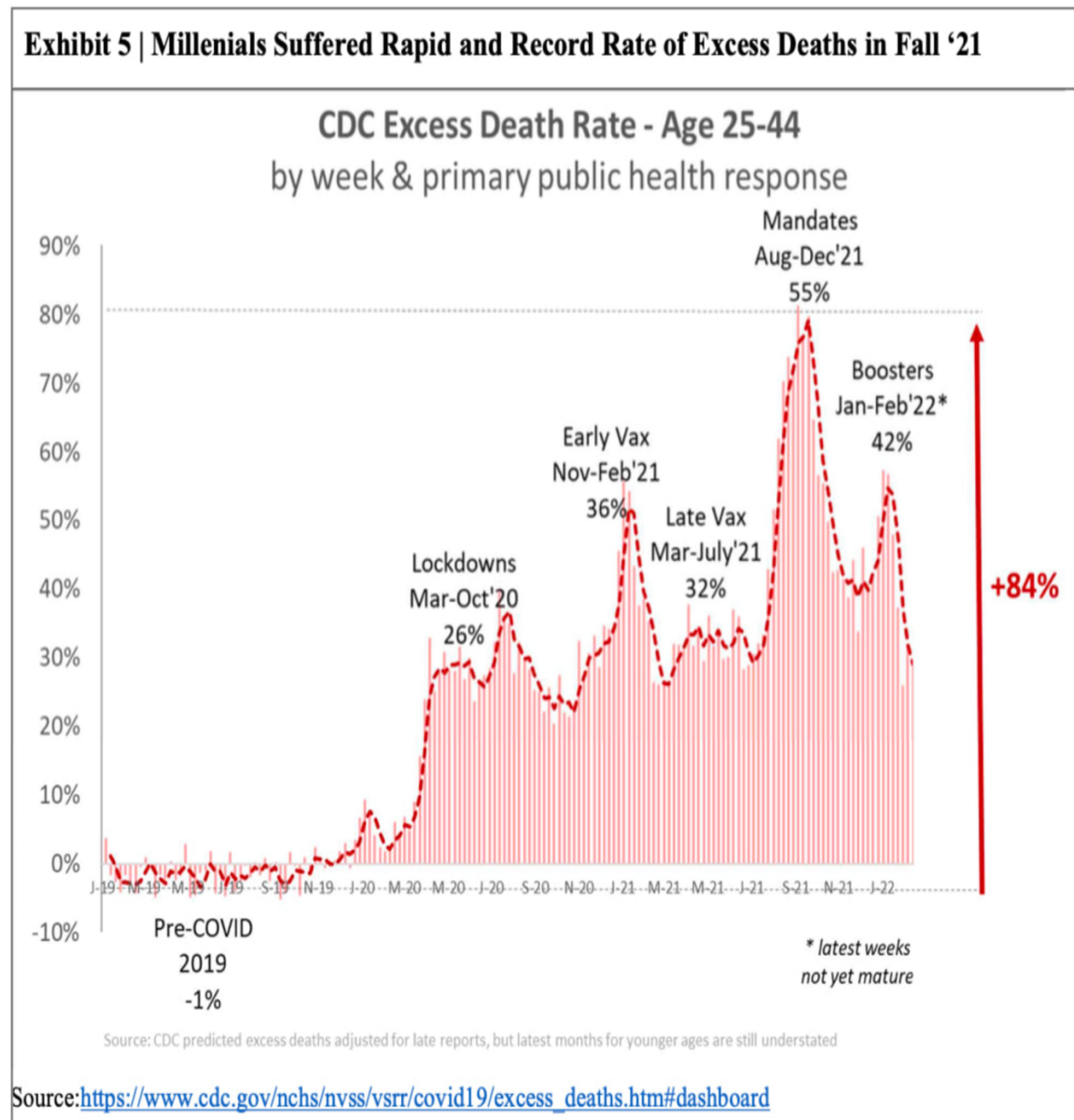
When the media begin reporting a rise in sudden deaths, especially in younger people and athletes, Dr. Joseph Mercola (2022) published statistics in his health newsletter, stating that "media outlets around the world have started highlighting a medical phenomenon called 'sudden adult death syndrome'...[or] sudden arrhythmic death syndrome (SADS)" (para. 2). Citing information from the Cleveland Clinic, among other sources, Mercola explains that SADS is caused by underlying factors that

“include undiagnosed myocarditis, inflammatory conditions and other conditions that cause irregularities in the electric system of the heart, thereby triggering cardiac arrest,” (para. 2), and until recently was rare. Pointing to data compiled by the International Olympic Committee regarding arguably some of the healthiest among us, Mercola states the data “shows 1101 sudden deaths in athletes under the age of 35 between 1966-2004” (para. 10) resulting in an average annual rate of “29 sudden deaths per year” (para. 10). Then, he compares the one-year period between March 2021-March 2022 writing, “at least 769 athletes have suffered cardiac arrest, collapsed, and/or have died on the field, worldwide,” (para. 10) including a 420% increase among FIFA soccer athletes in 2021 (2022a).

At the same time Mercola was gathering his data, former Black Rock Executive Portfolio Manager and statistical analyst, Edward Dowd, was studying all-cause mortality rates. In his book, “Cause Unknown,” Dowd uses CDC data demonstrating (Figure 7) that between 2020 and 2021, a drastic shift occurred in excess deaths (deaths not due to natural causes) from people over 65 to those under. He also states that at the same time, it was widely known that the CV-19 virus had more adverse effects for those older and those with co-morbidities (2023). While some suggest the increase was due to drugs and suicides, Dowd, a trained statistician, posits “it is statistically impossible that in a three month period, all those events were up simultaneously across the country” (para. 9, 2024). Dowd’s work has been mostly ignored and lumped in with the “grassroots anti-vax” crowd.

Figure 7

CDC Excess Death Rates-Age 25-44, Fall 2021



(Source: Dowd, 2023)

Pilot Stories—Making the Case for Inquiry

As compelling as are Mercola's and Dowd's efforts sifting through verifiable data, so are the individual stories of pilots highlighted in the media over the past three years. While some reports indicate cause, others do not. However, if the healthiest among us (athletes) are suffering at the rates detailed above, perhaps it is time to examine the stories of those responsible for the safety of the flying public.

Cody Flint

Agriculture Pilot Cody Flint's case made national headlines in November 2021, when he testified as a panel witness at a hearing hosted by Sen. Ron Johnson (2021). Flint said he received the first dose of the Pfizer BioNTech vaccine on February 1, 2021, and within 30 minutes developed severe a headache. He waited the FAA's mandatory 48-hours before flying. Then, after takeoff, his headache returned causing tunnel vision and vertigo. Flint managed to land his plane without injury to himself, those on the ground, or property. His doctor performed six spinal taps and two surgeries over the next six months to relieve pressure from brain swelling concluding Cody's symptoms were the result of a reaction to the vaccine or severe head trauma, the latter of which Flint insists was not the case. Flint remains grounded without an FAA Flight Medical Certificate or ability to earn a living (Flint, 2023).

Captain Robert "Bob" Snow

In a video interview, Snow, a 31-year American Airlines pilot, said, "On November 7th, I was mandated to receive a vaccine. Quite literally I was told if I did not receive the vaccination I would be fired, [and the order came] from our Director of Flight," as a result of the Federal Contractor order (Bingham, 2022, para. 2). On April 9,

2021, Snow suffered a heart attack only six minutes after landing his Airbus A321 at Dallas Ft. Worth International Airport. Under the care of Cardiologist, Peter McCullough, Captain Snow credits his heart attack directly to the vaccine and remains grounded without a FAA medical Certificate (2022).

First Officer Steven Hornsby

Hornsby is a 52-year-old pilot for United Airlines, U.S. Marine Corp veteran, and once-active weightlifter and cyclist who passed 24 medical exams in the previous 12 years including annual Electrocardiograms (EKG) with no signs of cardiovascular or health issues (Odunewu, 2022). Twelve days after receiving the Pfizer BioNTech COVID-19 vaccine, Hornsby suffered severe chest pains. Medical professionals discounted any ties to the vaccine and refused to report his conditions in VAERS, instead diagnosing him with high blood pressure likely due to stress or a musculoskeletal issue. Hornsby's chest pains continued until his December 2021 FAA flight physical at which time he was due for his mandatory, annual EKG. Steven's AME discovered heart arrhythmia and required Hornsby surrender his medical certificate and wear a heart monitor. Shortly thereafter, a doctor determined Hornsby had vaccine-induced myocarditis, an inflamed heart, and excessive fluid around his heart (2022). Hornsby stated he believes pilots with similar symptoms are flying, fearful that reporting their condition will ground them (2022).

Captain Patrick Ford

On Saturday, November 19, 2022, the pilot of an American Eagle Embraer 175, operated by Envoy Air, suffered a fatal heart attack on takeoff from Chicago's O'Hare International Airport. It is believed that Captain Patrick Ford, age 54 and U.S. Navy

veteran (Legacy, 2022), was receiving initial instruction from and assisted by Captain Brandon Hendrickson. When Captain Ford slumped over the controls shortly after takeoff, Captain Hendrickson took command and safely return the flight to O'Hare. Once on the ground, paramedics quickly boarded the plane near the runway, but they could not save Captain Ford. He was pronounced dead at the hospital (Holt, 2022). No further information is reported.

While these stories are not isolated, they are also not easily discoverable. A thorough and tedious internet search yielded this sampling of other incidents, but scant information is available about each.

All Nippon 216

April 18, 2021, an ANA Boeing 787 was enroute from Tokyo to Paris when, at 41,000 feet, the captain showed signs of a stroke. After declaring an emergency, the first officer diverted the flight to Novosibirsk Tolmachevo Airport in Russia, and landed safely where the captain was taken to the local hospital. No other information is available (Petrauskaite & Peters, 2021).

Birman Bangladesh Airlines 022

August 27, 2021, a Boeing 737 was enroute from Muscat, Oman to Dhaka, Bangladesh when Captain Nawshad Quaiyum, 49, suffered a massive heart attack. The first officer declared an emergency and diverted into Nagpur, India. Hospital officials reported that the pilot initially suffered a heart attack, and a CT scan revealed he also experienced a brain hemorrhage. Post-cardiac arrest, the captain was in a coma and on ventilator until he passed away three days later (Crump, 2021; Chattopadhyay, 2021).

American Airlines 2740

October 15, 2021, an Airbus A320 was enroute from Dallas Ft. Worth to Ft. Meyers, FL. On descent into Ft. Meyers, the captain began convulsing as he suffered a fatal heart attack. Because the autopilot was engaged, the first officer was able to unstrap, remove the captain from his seat, and administer CPR. As soon as the first officer realized his efforts were useless, he returned to his seat, declared an emergency, and performed an uneventful landing in Ft. Meyers. Reports of the story can no longer be found in U.S. media, but the Australian media reported, “It was later determined that the PIC had a fatal heart attack caused by myocarditis...” (Australian National Review, 2021, para. 3).

Westjet 1590

December 7, 2021, a Boeing 737 Max was enroute from Calgary to Atlanta, when a call went out to the passengers for medical assistance. First Class passenger White reported, “as luck would have it, one doctor came forward and two nurses” (Herring, 2020, para. 7). The pilot was removed from the cockpit for medical assistance, but he collapsed shortly afterwards. “They were able to get him talking again after they got him on the floor, but they were working on him pretty feverishly” (para. 9). The plane diverted back to Calgary where the pilot was taken for medical care. Westjet has since declined to comment or provide any details about the pilot’s condition (Herring, 2021).

Easy Jet 6938

June 6, 2022, an Airbus A320 was enroute between Greece and Edinburgh, UK. When the captain left the flight deck for a restroom break and failed to return, the first officer was informed that the captain was incapacitated. The first officer landed without

incident where emergency medical assistance met the airplane. The incapacitated captain was taken for medical attention. No other details are available (Lim et al., 2022).

JetSMART 3266

July 29, 2022, an Airbus A-320 was enroute from Buenos Aires to Cordoba, Argentina, when the captain became unconscious. The first officer declared an emergency for “a crew member suffering a medical condition” (Díaz, 2022, para. 1). The flight landed without incident, after which the captain received medical care. No other details are available (2022).

Ikar Airlines/Pegas Fly

September 18, 2022, a Boeing Jet was enroute from Novokuznetsk to St. Petersburg, Russia. When the captain fell ill, the first officer conducted an emergency landing in Omsk Oblast, Russia. Even though the medical team was standing by, the captain died before he could be treated (Roscoe, 2022; Phillips, 2022).

Austrian Airlines 87

October 22, 2022, a Boeing 767-300 departed Vienna, Austria, for New York’s JFK Airport, but returned after takeoff due to an incapacitated pilot who fell ill during climb out at 26,000 feet. The aviation Herald reported the return to Vienna and the subsequent cancellation resulted from “the first officer having a medical issue.” No further details are available regarding the pilot’s condition or treatment (Hradecky, 2022).

Flydubai 1942

October 27, 2022, a B737-800 was enroute Tashkent, Uzbekistan, to Dubai. With only an hour of flight remaining, the captain lost consciousness. The first officer

declared an emergency in Iranian airspace and diverted to Shiraz, Iran. The captain was taken for medical treatment; however, no further details are available (Pande, 2022).

Latam 505

August 14, 2023, a B787 was enroute from Miami to Santiago, Chile. Nearly three hours after takeoff the captain, age 56, complained that he was not feeling well. When he left the cockpit to use the lavatory, he passed out. Flight Attendants performed CPR to no avail. The flight diverted to Panama without incident where the captain was declared dead (Velani, 2023).

Indigo Pilot

August 17, 2023, a 40-year-old Indigo pilot collapsed at the boarding gate at Nagpur, India, just minutes before departure. The pilot was rushed to the hospital where he was pronounced dead due to sudden cardiac arrest (HT Correspondents-New Delhi, 2023).

Qatar QR579

August 16, 2023, an off-duty 51-year-old SpiceJet pilot who was deadheading on Qatar Airlines died midflight enroute between Delhi, India, to Doha, Qatar (Syme, 2023).

Alaska Airlines Pilot

September 23, 2023, a 37-year-old Alaska Airlines captain collapsed and died suddenly in his hotel room on a Seattle layover. When he failed to arrive for the scheduled transportation to the airport, the crew went to his room only to discover his demise. No foul play is suspected (Airlive, 2023).

Airline Employees 4 Health Freedom (AE4HF)

The Texas based non-profit was organized by United Airlines employees who sought Reasonable Accommodations/exemptions in lieu of their employer's vaccine mandate and filed a legal complaint in the Northern District of Texas, Fifth Circuit, to enjoin their company's mandate. Through their organizing and educational efforts, airline employees suffering what they believe were CV-19 adverse effects began reaching out for help. As the numbers grew, the organization began tracking cases through their Medical Officer, who collected and de-identified personal stories from over 120 United employees and many more from pilots employed by other airlines. Co-founder, Captain Laura Cox sat down for a personal interview in November 2023, and detailed the organization's efforts.

Rarely a week goes by that we do not receive a call or email from a United Employee or an employee of another airline who is looking for help because they believe they are vaccine harmed due to the mandates. Some are seriously injured including cardiac and neurological issues. A few have tried to continue flying until they can find help (2023).

Cox pointed out that to her knowledge, other than the AE4HF volunteer submission portal, no one, including the FAA, is collecting data or doing research into incidents among commercial pilots on a large scale. She also said many members of her organization, which includes at least 350 unvaccinated United Pilots, routinely report conversations with their AMEs who tell stories about the number of pilots who are suddenly no longer able to pass their FAA exams (2023). At United Airlines, a company with over 16,000 pilots, the report of the death of a pilot co-worker, Cox states, "used to

be a rarity.” However, since the mandate in August of 2021, “the reports of deaths among pilots are rising at an alarming rate, often with mysterious circumstances” (2023). She listed the following reports gathered over the past three years from union/company announcements and employee message board posts:

1. A pilot dying on a treadmill while working out on a layover in Australia;
2. A pilot dying of a massive heart attack while canoeing;
3. A pilot dying in bed of a massive heart attack hours after receiving a booster;
4. A pilot dying while exiting customs in the San Francisco Airport just after a flight;
5. A pilot passing out in the cockpit while taxing;
6. Multiple sudden cases of Guillen-Barre Syndrome;
7. A pilot suffering a stroke while in the simulator at the Denver training center;
8. A female pilot suffering stroke-like event while in new-hire, basic indoctrination class.
9. Multiple aggressive terminal cancer diagnoses resulting in fatalities; and
10. Several pilots who suffer “long-COVID” (2023).

Even more alarming is the number of calls Cox says she receives from pilots who are suffering, but who are unwilling to report their condition to their doctors for fear of losing their certification. For example, she says she was contacted by a female pilot who

reported experiencing heart palpitations while taxiing for take-off, but who says she felt much better after takeoff! While the pilot's condition is concerning, the fact that she so feared for her career that she continued the takeoff is alarming. Equally concerning is the fact that all of these events happened at only one airline, although Cox said she hears similar stories from union leaders and friends across the industry.

It is alarming the number of pilots who have died in the past year. It seems not a week goes by without receiving a company notice of a loss. Prior to the pandemic it was rare to hear about a pilot death in two consecutive months (2023).

A Search for Scientific Data

While Cox's organization's efforts provided a non-scientific basis to motivate this research, none of that data was included, nor were those confidential, anonymous reporters solicited for participation in this study. This author is a member of the AE4HF Board of Directors and a co-founder; however, all vaccine harm reports are deidentified and held in the strictest confidence by the AE4HF Medical Officer before the data is presented to the Board of Directors for review. Thus, the need exists to review outside reporting systems in search of other data.

VAERS

The Vaccine Adverse Event Reporting System (VAERS) was established in 1990, as a passive reporting system co-managed by the FDA and the CDC. The program's purpose is to serve as an early-warning system to detect safety-related problems in licensed vaccines via "safety signals," (VAERS, 2024). Although anyone can make a VAERS report, healthcare professionals are required to detail adverse reactions. Because

VAERS is a passive system, few medical professionals are compelled to file reports, and many claim the system is difficult to use; therefore, the data is not all-encompassing and is most valuable for spotting trends and developing patterns. The VAERS website lists the following objectives (2024).

- Detect new, unusual, or rare vaccine adverse events;
- Monitor increases in known adverse events;
- Identify potential patient risk factors for particular types of adverse events;
- Assess the safety of newly licensed vaccines;
- Determine and address possible reporting clusters (*e.g., suspected localized [temporally or geographically] or product-/batch-/lot-specific adverse event reporting*);
- Recognize persistent safe-use problems and administration errors;
- Provide a national safety monitoring system that extends to the entire general population for response to public health emergencies, such as a large-scale pandemic influenza vaccination program.

The intent to collect data, a noble pursuit indeed, is only as valuable as its timeliness. Initially, the CDC and FDA indicated they would monitor VAERS on a weekly basis, searching for “potential new safety concerns for COVID-19 vaccines,” through what is known as Proportional Reporting Ratio (PRR) analysis whereby researchers compare rates of types of adverse events post-COVID vaccination to rates of the same adverse event after other vaccines (Stieber, 2023, para. 9).

Josh Guetzkow, PhD, a senior lecturer at the Hebrew University of Jerusalem, former Harvard Post-Doctoral fellow, and writer at the *Defender* (a publication of Children’s Health Defense Network) began tracking the VAERS data and subsequent releases. Dr. Guetzkow reported that while CDC and FDA made their initial commitments to weekly VAERS monitoring, and VAERS is listed as an early warning system, neither began examining the data until 2022, fifteen months after the EUAs for the COVID-19 vaccines were issued (2023). Further he stated that when the CDC finally began examining the data, it only covered the previous five months. Guetzkow’s own analysis is compelling. He writes, “As of early September, there have been 14,506 deaths reported to VAERS for COVID-19 vaccines, compared to 8673 for the preceding 30 years for all other vaccines. That is already more than 50 times the annual average...” (2021, para. 1). As a result, Children’s Health Defense Network submitted several CDC and FDA Freedom of Information Act (FOIA) requests, which went unanswered. Then, suddenly and without warning, a FOIA request by news agency, Epoch Times, was answered. Zachary Stieber reported the receipt of the CDC’s PRR spreadsheets stating, “The U.S. Centers for Disease Control and Prevention (CDC) found more than 700 signals that the vaccines could cause adverse events—including acute heart failure and death—in May 2022...” (2023, para. 2).

However, as recently as February 15, 2024, Dr. Daniel Jernigan, Director of the National Center for Emerging and Zoonotic Infectious Diseases at the CDC, testified at the U.S. House Subcommittee on the Coronavirus Pandemic stating, “To date, CDC staff have analyzed data from over a million VAERS adverse event reports from healthcare providers, patients, and their families to monitor for new and emerging safety concerns”

(p. 7). That data has not been made available to researchers outside the CDC. In his testimony, Dr. Jernigan further states:

...the American public challenged CDC to undertake the most comprehensive and intensive vaccine safety monitoring effort in U.S. history. The rigorous approach that CDC and our partners bring to vaccine safety monitoring reflects a commitment to protecting the health of all Americans. Our efforts to provide timely and well-researched vaccine safety information to clinicians, policymakers, and the public through evidence-based recommendations, published studies, and engagement with interagency and external partners highlight our commitment to transparency as a core value. The conclusions from the data collected as part of this historic effort is clear—COVID-19 vaccines are safe and effective (p. 8).

It is curious that Dr. Jernigan made his prepared statement only four days prior to the release of a worldwide, 99-million participant study that was partially funded by the CDC, conducted by the Global Vaccine Data Network (GDVN). The study is detailed later in this chapter.

Meanwhile, the battle to access the VAERS data has been ongoing since the vaccine rollout led, in part, by Sen. Ron Johnson. Through various written demands and published responses, Senator Johnson shined a light on the legal loopholes used by the CDC and FDA to protect their data analysis of the VAERS system (Lucas, 2024). This researcher found searching the VAERS database to be onerous, non-intuitive, and not user-friendly.

Vaccine Safety Dataline (VSD)

Developed in 1990, the VSD bills itself as “a collaborative project between CDC’s Immunization Safety Office, integrated healthcare organizations, and networks across the United States” (CDC, 2023b, para. 1). Their website reports data is collected at 13 different sites based, in part, on information identified through the VAERS reporting system. Only two studies are currently published on their website and are unrelated to the COVID-19 vaccines. VSD data sharing to those outside the CDC and the VSD network is at the discretion of the agency and requires a Restricted Data Submission Request to the Research Data Center in Maryland (2023).

V-SAFE

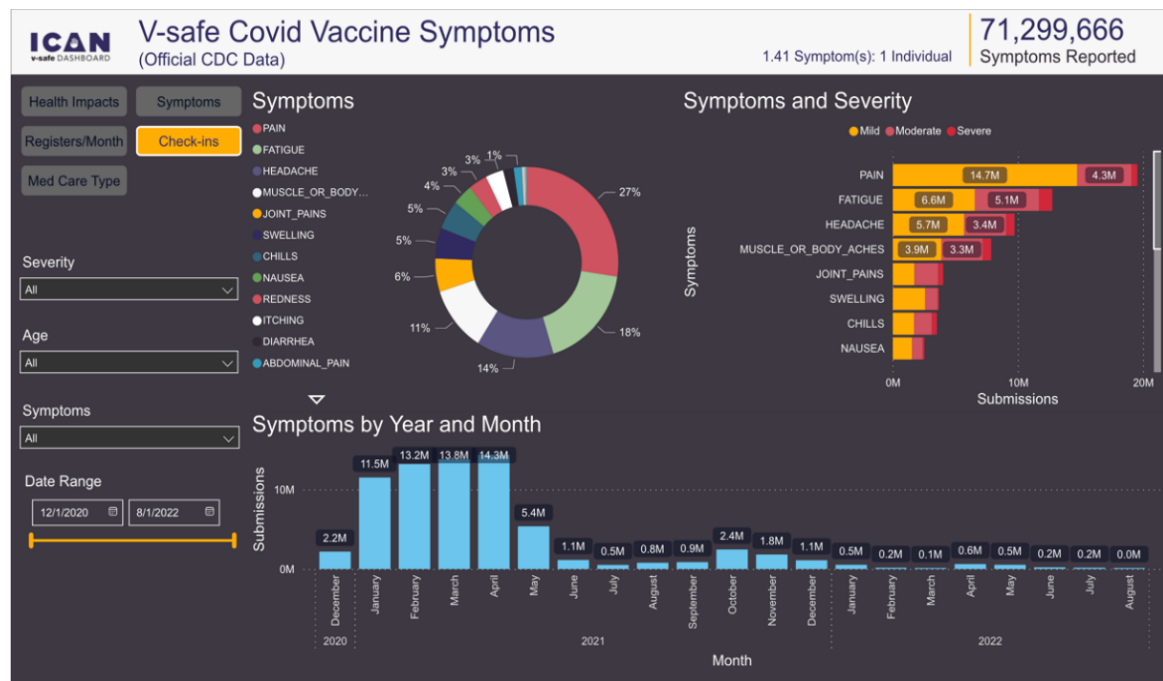
Established in December 2020, the CDC’s mobile device application, V-SAFE, “lets you share with the CDC how you, or your dependent, feel after getting a COVID-19 vaccine” (CDC, 2024b, para. 1). While likely full of very useful data, the V-Safe database was, until very recently, unavailable for public or research review. Through the efforts of attorney Aaron Siri at Siri & Glimstad, LLP, on behalf of ICAN, the first tranche of data was received in October 2022 (Greene, 2022). Attorneys for ICAN released a public statement upon receipt of the V-Safe data reporting that 7.7% of users (782,913 people) experienced a COVID vaccine health event “requiring medical attention, emergency room intervention, and or hospitalization” (ICAN, 2022, para. 6). ICAN developed a “dashboard” (Figure 8) displaying their VSafe data analysis (ICAN, 2024). In January 2024, a federal judge ordered the release of over 7.8 million additional free text submissions to be completed within one year, the first tranche of which was

presented to ICAN on February 15, 2024. In a video overview of the data, Attorney Siri summarized the data presented in the ICAN sample dashboard (Figure 8), stating:

- 1 in 1,300 individuals reported experiencing Bell's palsy (facial paralysis) in the initial few days after vaccination.
- 1 in 906 individuals reported disturbances in their normal menstrual cycle following vaccination.
- 1 in 450 individuals reportedly experienced shingles after receiving the vaccine.
- 1 in 160 individuals reported tinnitus or ringing in the ears.
- 1 in 143 individuals experienced heart palpitations after vaccination during the initial reporting period (2024).

Figure 8

ICAN V-Safe Dashboard Sample



Aviation Safety Reporting System (ASRS)

Shifting gears toward a discussion of potential aviation-specific data sites, in May 1975, as a result of past accidents and in an attempt to gather data to improve flight safety, the Aviation Safety Reporting Program was introduced. A year later, the program was finalized and established as a joint partnership between the FAA and the National Aeronautics and Space Administration (NASA) to study and analyze pilots, air traffic controllers, cabin crew, dispatcher maintenance technicians, ground personnel and other stakeholders (ASRS, 2024). Developers posited that the best way to identify trends and improve safety was through a voluntary, self-reporting system. In exchange, the reporter receives immunity and is sheltered from prosecution so long as they meet the conditions outlined in FAA Advisory Circular 00-46 (FAA, 2021b). All data is deidentified, and online queries are available. The ASRS reporting system, when queried for “inflight incapacitation,” “crew or pilot illness,” “vaccine” etc., yielded no useful results.

Aviation Safety Action Program (ASAP)

Similar to the ASRS, the Aviation Safety Action Program (ASAP), administered by the MITRE Corporation, is a voluntary, non-punitive, self-disclosure program whereby an airline pilot can report safety-related incidents in an effort to enhance air carrier safety. Through a joint partnership between the FAA, the certificate holders, and in many cases the employee’s labor organization, the pilot is assured immunity from prosecution (FAA, 2022a). Similar programs are available at many carriers for members of other work groups. Unfortunately, the information is protected from public disclosure and inaccessible.

Inflight Incapacitation Data Registry (IDR)

In their report entitled, Incapacitation Data Registry Evolution, DeJohn et al., (2018) detail the history of the FAA Inflight Incapacitation Data Registry (IIDR) database. They point to Title 14 CFR 61.53 and 91.17, which provide the framework for the FAA's 1996 Order 8025.1D: Medical Responsibilities in Aerospace Incidents and Accidents (2021).

...the Civil Aerospace Institute (CAMI) shall obtain, store, and analyze incident, accident, autopsy and toxicology reports, medical certification information, aircraft occupant injury data, inflight aircrew incapacitation data and human performance information on airmen involved in aerospace incidents and accidents (p.2).

At the time of their report in 2018, the authors state the database contained over 1100 events (DeJohn et al., 2018). A detailed review of the database based on specific queries was requested via FOIA (Appendix A); however, those requests have either been deferred or have gone unanswered.

DeJohn et al., put forth two inflight incapacitation definitions: “any condition that renders a pilot incapable of performing inflight duties;” and/or “a situation that prevents a pilot from performing normal or emergency functions” (p. 837). Further, they indicate that the most common causes of incapacitation include loss of consciousness, gastrointestinal, neurological, and cardiac related events. The basis for their study was pre-pandemic data received between 1995-2015, leading them to conclude that while rare, cardiac emergencies were among the most common, serious events (2018). DeJohn et al., found that “173 U.S. airline pilots experienced an inflight medical incapacitation of

which 23 were cardiac-related” (p. 839). All had FAA First Class Medical Certificates and ranged in age from 34-63 years of age. Nine died, but only one was operating under a Special Issuance Medical Certificate, which was for myocardial infarction (heart attack). Two of the 14 survivors had Special Issuance Medicals, “one for atrial fibrillation and another for apical hypertrophic cardiomyopathy, premature atrial contractions, and bradycardia” (p. 839). Further, of the 23 incapacitations, 15 were “either not on any cardiac medications, had not been evaluated for cardiac medical conditions, or both” (p. 839). The researchers summarized:

...as a result of these rigorous medical selection standards, airline pilots are normally healthier than the general population. This is especially true for cardiovascular and cerebrovascular diseases, which are important causes of inflight incapacitation. However, although the present rigorous medical standards greatly reduce the probability of an inflight medical event, routine medical examinations cannot accurately predict inflight incapacitation (p. 838).

Available research based on the IDR is limited. An article by Plotnikov (2021) entitled, “Evaluating of Incapacitation of the Civil Aviation Flight Crew,” and based on DeJohn’s report, details the difference between “complete” incapacitation and “temporary or partial” incapacitation as the ability of the incapacitated pilot to perform non-critical functions such as checklist reading, stressing the need for pre-planning for the possibility of both pilots becoming incapacitated. Plotnikov further states that incapacitation events, both partial and complete, have traditionally occurred, on average,

one time in every 2 million flight hours (2021). To date, no other examinations of the FAA's Incapacitation Registry have been published.

Major Morbidities

To understand how the CV-19 vaccine can adversely affect a pilot, one must understand what researchers believe it does to the body. In May 2023, Drs. Halma, Plothe, Marik, and Lawrie authored, "Strategies for the Management of Spike Protein-Related Pathology," detailing what is called "post-COVID-19 Vaccine Syndrome (PVS)." PVS occurs when "a temporal correlation between receiving a COVID-19 vaccine and the beginning or worsening of a patient's clinical manifestations is sufficient to make the diagnosis of a COVID-19 vaccine-induced injury when the symptoms are unexplained by other concurrent causes" (para.19). Like the virus itself, PVS symptoms are caused by spike-shaped protein. However, in the case of the vaccine, the spike protein is artificially introduced. They point to the new technology delivery system, the lipid nanoparticles in which the mRNA is encapsulated, as the potential culprit (2023).

According to Halma et al., prior to the COVID Vaccine EUAs, the technology had never before been used in humans, and was only previously successful in "small molecules...to deliver RNA" (para. 3). Further, they explain that contrary to the belief that the spike proteins remain in the injection site, "the contents and products of the COVID-19 vaccines have been found in the blood stream of most vaccinees studied within hours to days" (para. 4). Once in the blood stream, the spike protein, be it by infection or vaccine induced, behave generally in the same manner affecting body systems except that in some cases, the artificially induced spike protein, due to their delivery system detailed above, can more easily cross the blood/brain barrier, "result[ing]

in inflammation and immune activation in organs and tissues distant from the injection site” (para. 6). Previously, Ndepen et al. (2021) pointed to the lipid nanoparticles, which they state cause, “rapid and robust inflammatory responses, characterized by massive neutrophil infiltration, activation of diverse inflammatory pathways, and production of various inflammatory cytokines and chemokines” (para. 1). More recently, Lee et al., in their paper summarizing various studies, concluded that the effects of lipid nanoparticles include “myocarditis, vaccine induced thrombotic thrombocytopenia, IgA vasculitis, autoimmune disorders, and others” (2023, para. 22).

In recalling the FAA’s list of sixteen medical conditions that disqualify pilots, it is worthy to note that at least ten include known possible adverse effects of the CV-19 vaccines and/or PVS. The CDC’s own website cites four major areas of concern regarding side-effects of the CV-19 vaccine (aside from unclassified death) (2023b).

Anaphylaxis

The Mayo Clinic defines anaphylaxis as a “a severe, potentially life-threatening allergic reaction...[which] can occur withing seconds or minutes of exposure to something” to which a person is allergic such as peanuts or bee venom (2024, para. 1). While the CDC (2023c) states that “anaphylaxis after COVID-19 vaccination is rare (approximately 5 per 1 million doses), it is possible, is immediately treatable by healthcare providers, and is not isolated to only the CV-19 vaccine” (para. 5). It stands to reason that due to the extremely close proximity of reaction to the time of injection, anaphylaxis as a result of vaccination rarely causes inflight incapacitations; however, if one passes out from a reaction if this type, it is likely cause for reporting the incident to the FAA.

Guillain-Barre Syndrome (GBS)

The Mayo Clinic defines GBS as a “rare disorder in which your body’s immune system attacks your nerves” (Mayo Foundation, 2022, para. 1). Early onset symptoms include tingling sensations in the hands and feet which can quickly spread, “eventually paralyzing your whole body resulting in a medical emergency” (para. 2). Mayo further states that while there is no known cure, treatments exist to manage symptoms and reduce duration which may last up to several years. While most afflicted eventually recover, severe cases can be fatal. The CDC states:

Based on a recent analysis of data from the Vaccine Safety Datalink, the rate of GBS within the first 21 days following J&J/Janssen COVID-19 vaccination was found to be 21 times higher than after Pfizer-BioNTech or Moderna (mRNA COVID-19 vaccines). After the first 42 days, the rate of GBS was 11 times higher following J&J/Janssen COVID-19 vaccination (2023c, para. 10).

Few have studied GBS more thoroughly than Austrian Researcher, Clinical Neurologist, and Professor of Neurology at the University of Vienna, Dr. Josef Finsterer who has over 1300 research publications listed in his portfolio. At the beginning of the pandemic, Finsterer focused on GBS as a result of the CV-19 infection. After the release of the vaccines, Dr. Finsterer noted a steady rise in GBS cases, post-vaccination in people who had not had the virus or who were not recently infected. In a May 2022 letter to the editors of the CDC’s publication, *Emerging Infectious Diseases*, Dr. Finsterer detailed his study, “*Guillain-Barre Syndrome(GBS) Associated with COVID-19 Vaccination*,” in which he and his colleagues examined two separate research groups—a review of 19

patients for whom data were collected through June 2021 and a later group of 53 patients.

Finsterer concluded:

Available data suggest that SCoVaG (GBS) is a rare complication of the SARS-CoV-2 vaccination, irrespective of the vaccine brand used... Whether the beneficial effect of the SARS-CoV-2 vaccination outweighs the risk for adverse events (e.g., Guillain-Barre syndrome) remains a matter of discussion (para. 5).

After further study, two year later, Dr. Finsterer no longer believed that GBS post-vaccine was rare. On January 4, 2023, on behalf of himself and his research colleagues, the doctor published a letter to the editor of the *British Journal of Clinical Pharmacology* challenging the conclusions of other researchers who he believed were attempting to discount the ties between GBS and the COVID-19 vaccine stating:

We disagree that GBS associated with SARS-CoV-2 vaccination is rare. SARS-CoV-2 vaccination associated GBS has been reported in at least 400 patients worldwide and it can be speculated that many more cases occurred without being reported in the literature (p. 1224).

Most recent research presented by the Global Vaccine Data Network (GVDN), cited later, appears to confirm Dr. Finsterer beliefs; however, the CDC maintains that GBS is not a concern with the mRNA vaccines (Pfizer & Moderna) (2023c).

Thrombosis

The Cleveland Clinic defines thrombosis as a “serious condition where one or more clots form inside your blood vessels” (Thrombosis, 2024, para. 1). These clots can

block blood flow at the site or break loose and move to the brain causing a stroke, or move to the heart causing a heart attack, both of which could be critical to a pilot in flight (2024). Thrombosis with thrombocytopenia syndrome (TSS), was first documented in February 2021, in users of AstraZeneca and two months later in Johnson & Johnson users (Hafeez et al., 2021). On April 13, 2021, vaccine-induced immune thrombotic thrombocytopenia (VITT) showed statistically significant manifestations to a level that warranted the FDA to pause its recommended use of the J & J vaccine (CDC, 2023c). By August 2021, the CDC Reported, “TTS is a rare but potentially life-threatening syndrome associated with adenoviral-vectored COVID-19 vaccinations that involves acute venous or arterial thrombosis and new onset thrombocytopenia” (Oliver et al., 2022, para. 3). Based on research during the “pause,” the CDC determined that cerebral venous sinus thrombosis (CVST), was the most likely thrombosis associated with the vaccine. “CVST is a potentially fatal neurological condition ...usually caused by brain herniation secondary to a large hemorrhagic lesion, followed by herniation due to multiple lesions or to diffuse brain edema” (See, 2021, p. 5). In other words, lesions or brain bleeds caused by the vaccines were possibly causing strokes. The CDC reported that 54 cases of TSS were identified in Johnson & Johnson COVID-19 recipients between March 2-August 31, 2021, the majority of which resulted in CVST. As a result, the FDA updated its EUA vaccine provider fact sheet. While these warnings are critical in nature, the CDC’s website still reports occurrence of TSS of any variety is rare, apparently downplaying the risk/benefit analysis (2023c). Meanwhile, a rise in strokes due to the vaccine were noted as early as 2021 (Scully et al., 2021).

Myocarditis and Pericarditis

The CDC defines Myocarditis as inflammation of the heart muscle, and pericarditis as inflammation of the outer lining (pericardium) of the heart (2023e). Both have become household words due to their association with the CV-19 vaccines. The CDC states that incidents of each “have rarely been reported” (para. 1) in conjunction with the vaccine, but several studies point to conflicting information. A 2021 study published Bozkurt et al., states that the CDC Advisory Committee on Immunization Practices identified a likely link between the Pfizer and Moderna vaccines and myocarditis and pericarditis. However, while they argue that the benefits outweigh the risks, the researchers do not discount or discredit the fact that risks are present. “Despite these rare cases of myocarditis, the benefit-risk assessment for COVID-19 vaccination shows a favorable balance for all age and sex groups” (p. 480). In January 2022, Oyster et al., reviewed 1626 cases of myocarditis reported in the Vaccine Adverse Event Reporting System (VAERS) between December 2020 to August 2021 concluding that “reporting rates within 7 days after vaccination exceeded the expected rates across multiple age and sex strata. The rates of myocarditis cases were highest after the second vaccination dose...” (p. 1). The study concluded young adult and adolescent males were at highest risk based on passive observation of the database. Several follow-on studies such as the Khan et al., (2022) concurred, finding that 94% of the patients were males with a median onset age of 22 for myocarditis of which 85% developed symptoms after the second doses of the Pfizer BioNTech and Moderna vaccines. In June 2022, Ahmed et al., did a systematic review of publications finding sixty-two studies on COVID-19 vaccine related myocarditis. The Pfizer-BioNTech was called out in 72.4% of the cases

and Moderna in 23.8% (2022). More recently, the Global Vaccine Data Network (GDVN), of which the CDC is a member and financial supporter, examined 99,000,000 reports finding safety signal markers across all ages and brands for cardiac abnormalities (University of Auckland, 2024). All this is to say, that while the data clearly points to increased risk for cardiac complications, specifically myo- and pericarditis among CV-19 vaccine users, the CDC still recommends “that everyone ages 6 months and older get and updated COVID-19 vaccine...The benefits of vaccination outweigh any known risks” (2023e, para. 8).

Risk/Benefit

After the April 13, 2021, CDC and FDA recommended “pause” of the Johnson & Johnson vaccine due to reports of TTS, the CDC’s Advisory Committee on Immunization Practices (ACIP) convened two emergency meetings (ACIP, 2021a; ACIP, 2021b). While they did publish a warning regarding “rare clotting events after vaccination primarily among women aged 18-49,” the committee reaffirmed its position that the benefits of the vaccine outweigh the risks (MacNeil et al., 2021, para. 2). The ACIP again reaffirmed that position in July 2021, after an increased number of cases of GBS were identified among Johnson & Johnson users, concluding that the benefits of COVID-19 vaccination in preventing COVID-19 morbidity and associated mortality outweighed the risks for these rare, but serious adverse events (Oliver et al., 2022).

In contrast, Claussen’s paper, “U.S. Covid-19 Vaccines Proven to Cause More Harm than Good Based on Pivotal Clinical Trial Data Analyzed Using the Proper Scientific Endpoint, ‘All Cause Severe Morbidity’,” argues that the clinical trial design, which led to the EUA’s, was “dangerously misleading” because the studies did not use

the proper critical endpoints (2021, p. 2). When Dr. Classen compared the study data from Pfizer, Moderna, and Janssen with what researchers outside of vaccine research consider the standard, he concluded:

Results prove that none of the vaccines provide a health benefit, and all pivotal trials show a statically significant increase in “all cause severe morbidity” in the vaccinated group compared to the placebo group. The Moderna immunized group suffered 3,042 more severe events than the control group ($p=0.00001$). The Pfizer data was grossly incomplete but data provided showed the vaccination group suffered 90 more severe events than the control group ($p=0.000014$), when only including “unsolicited” adverse events. The Janssen immunized group suffered 264 more severe events than the control group ($p=0.00001$). These findings contrast the manufacturers’ inappropriate surrogate endpoints (p. 1).

In regards to general population risk, Claussen warns, “Scientific principles dictate that the mass immunization with COVID-19 vaccines must be halted immediately because we face a looming vaccine induced public health catastrophe” (p.1). Reports from VAERS showed that in December of 2022, there were over 1.4 million cases of COVID-19 vaccine adverse reactions including more than 32,828 deaths (Hoft, 2022b).

Increased Susceptibility

In addition to possible adverse effects, some argue that the vaccines may actually increase one’s chances of contracting COVID-19 or are ineffective. A Cleveland Clinic study of the bivalent vaccines involving 51,011 participants found the risk of getting COVID-19 increased “with the number of vaccine doses previously received” (Shrestha

et al., 2022, para.2). Further, the researchers found that at the time mandates were imposed across the airline industry, when the “Omicron” strain was predominant, “the current bivalent vaccines were about 29% effective overall in protecting against infection...” (para 25).

Protection

Others argue that even though the vaccines do not keep people from contracting COVID-19, they protect against severe outcomes including hospitalization. However, the data appears to show the opposite. According to data from the CDC’s online hospitalization tracking dashboard, (COVID-NET) hospitalizations for 18–64-year-olds increased 11% since the vaccine rollout and 74% for children under 18 (CDC, 2023d). Wagenhäuser et al. (2022) conducted an observational study at the University Hospital in Wuerzburg, Germany finding:

The rate of adverse reactions for the second booster dose was significantly higher among participants receiving the bivalent 84.6% (95% CI 70.3%–92.8%; 33/39) compared to the monovalent 51.4% (95% CI 35.9–66.6%; 19/37) vaccine ($p=0.0028$). Also, there was a trend towards an increased rate of inability to work... (para. 1).

In November 2022, the Washington Post published an article entitled, “Vaccinated people now make up a majority of COVID deaths,” reporting that over half of the August 2022 coronavirus deaths were among the vaccinated (2022). The article further cited a Kaiser Family Foundation study in which researchers found that in September 2021, the vaccinated comprised only 23% of SarsCOV2 fatalities. That number jumped to 42% between January and February of 2022.

Side-Effects

Nations such as Switzerland, Denmark, Norway, France and the United Kingdom have severely reduced or dropped their CV-19 vaccine recommendations due to increased risk of adverse physical effects (Schemmel, 2023). A multi-nation Nordic cohort study of 8.9 million participants found “increased risk in myocarditis in 12-to-39-year-old-males...within 28 days of vaccination” (Hviid et al., 2024, para. 11). Coauthored by MIT professor and risk management expert, Retsef Levi, the *Nature* article “Increased Emergency Cardiovascular Events Among Under-40 Population in Israel During Vaccine Rollout and Third COVID-19 Wave,” reveals a 25 percent increase in cardiac emergency calls for 16–39-year-olds from January to May 2021, compared with the previous two years (Sun et al., 2022). Finally, a Thai study published in *Tropical Medicine and Infectious Disease* found cardiovascular manifestations in 29.24 percent of the adolescent cohort—including myopericarditis and tachycardia (Mansanguan et al., 2022).

As researchers around the world study the data, more are calling for a halt to the COVID vaccines and boosters citing risks outweighing potential benefits. Professor Levi went so far as to film a video plea in which he stated:

...they should stop because of the mounting and indisputable evidence that they cause unprecedented level of harm, including the death of young people and children...I believe that the cumulative evidence is conclusive and confirms our concern that the mRNA vaccines indeed cause sudden cardiac arrest as a sequel of vaccine-induced myocarditis. And this is potentially only one mechanism by which they cause harm... (Hoft, 2023, para. 10-12).

A December 7, 2022, Rasmussen poll found 7% of vaccinated respondents suffered major adverse effects while 57% are concerned they may be next (Rasmussen Reports, 2022). Was all this risk to be expected? *British Medical Journal* Senior Editor, Dr. Peter Doshi, laid out the editorial staff's concerns in a letter penned to the CEOs of Moderna and Pfizer.

The results showed the Pfizer and Moderna both exhibited an absolute risk increase of serious adverse events of special interest (combined, 1 per 800 vaccinated), raising concerns that mRNA vaccines are associated with more harm than initially estimated at the time of emergency authorization (p. 1731).

Doshi et al., continued by pointing out, "Covid-19 vaccines are now among the most widely disseminated medicines in the history of the world. Yet, results from the pivotal clinical trials cannot be verified by independent analysts, but that the public has a right to assess risk for themselves" (1731). However, it would take something bigger than pleas from Dr. Doshi and his colleagues to force Pfizer to release the clinical trial data. On January 6, 2022, in the Northern District of Texas, Fifth Circuit, Pfizer, who had fought to keep the information from the public for 75 years, was ordered to release the data (Deese 2022).

More recently, the Florida State Surgeon General, Dr. Joseph A. Ladapo, received a response from the FDA to his December 6, 2023, letter questioning the agency's "safety assessments regarding the discovery of billions of DNA fragments per dose of the Pfizer and Moderna COVID-19 mRNA vaccines" (Communications Office, 2024, para. 1). Ladapo pointed to the essential need to assess the risks of "contaminant DNA

integration into human DNA” concluding that “The FDA has provided no evidence that these risks have been assessed to ensure safety” (para. 5). Below is a partial transcript of General Ladapo’s announcement:

The FDA’s response does not provide data or evidence that the DNA integration assessments they recommended themselves have been performed. Instead, they pointed to genotoxicity studies-which are inadequate assessments for DNA integration risk. In addition, they obfuscated the difference between SV40 promoter/enhancer and SV40 proteins, two elements that are distinct.

DNA integration poses a unique and elevated risk to human health and to the integrity of the human genome, including the risk that DNA integrated into sperm or egg gametes could be passed onto offspring of mRNA COVID-19 vaccine recipients. If the risks of DNA integration have not been assessed for mRNA COVID-19 vaccines, these vaccines are not appropriate for use in human beings.

Providers concerned about patient health risks associated with COVID-19 should prioritize patient access to non-mRNA COVID-19 vaccines and treatment. It is my hope that, in regard to COVID-19, the FDA will one day seriously consider its regulatory responsibility to protect human health, including the integrity of the human genome (para. 6-8).

Then, on February 12, 2024, the largest post-pandemic study on adverse events was published by Faksova et al. as the product of the Global COVID Vaccines Safety Project (GCoVS) sponsored by the GDVN (2024). Established in 2021, the multi-

national consortium is centered at the University of Auckland and recognized by the WHO. Interestingly, it also receives funding from the CDC. The GDVN's study used data from a "multinational global" cohort that included some 99-million vaccinated individuals across eight countries. The researchers concluded, "analysis confirmed pre-established safety signals for myocarditis, pericarditis, Guillain-Barre syndrome, and cerebral venous sinus thrombosis" (Faksova et al., 2024, para, 4). Of note, these are the same four maladies cited by the CDC.

Researchers used an observational ratio comparison examining adverse events observed vs. adverse events expected (Table 1). In a UK Daily Mail interview, researcher Dr. Harlan Krumholz, Director of the Yale New Haven Hospital Centers for Outcomes Research and Evaluation, pointed to the value in the COVID-19 vaccines while defending the research, "Both things can be true...They can save millions of lives, and there can be a small number of people who've been adversely affected" (Morrison, 2024, para. 7).

Table 1*Global COVID Vaccines Safety Project (GCoVS) Adverse Event by Brand*

Adverse Event	Brand/Dose	OE Ratio (Risk Increase)
Brain & Spinal Cord Swelling	Moderna 1 st	3.78 Times
Guillain-Barre Syndrome	AstraZeneca 1 st	2.49 Times
Blood Clots	Astra Zeneca	3.23 Times
Myocarditis	Pfizer 1 st	2.78 Times
Myocarditis	Moderna, 1 st	3.48 Times
Myocarditis	Pfizer 2 nd	2.86 Times
Myocarditis	Moderna 2 nd	6.10 Times
Myocarditis	Pfizer, 3 rd	2.09 Time
Myocarditis	Moderna, 3 rd	2.01 Times
Pericarditis	Moderna, 1 st	1.74 Times
Pericarditis	AstraZeneca, 3 rd	6.91 Times
Pericarditis	Moderna, 4 th	2.64 Times

(Note: CI 95, .05) (Source: Faksova et al., 2024).

Each day, more information is learned about potential risks and benefits of the CV-19 vaccines. Yet, there remains a huge data-void regarding the effects on the commercial pilot population. This data is particularly compelling because each safety signal represents a disqualifying condition for U.S. commercial pilots.

Natural & Herd Immunity

The Cleveland Clinic defines “herd immunity” as the state when “enough people in a group or area have achieved protection against a virus...to make it very difficult for

the infection to spread” (2022a, para. 2). They also point out that herd immunity is achieved in one of two ways: natural immunity from infection and vaccination (2022a). The Mayo Clinic website site explains the problems with achieving herd immunity. First, regarding natural immunity and natural infection, Mayo states that natural immunity from exposure provides protection from reinfection for approximately six months (2023), although reinfection is still possible considering the ever-changing, mutating variants. Second, herd immunity can be reached when enough people are vaccinated; however, due to vaccine hesitancy, and the fact that the vaccines also only seem to work for approximately six months against the strain for which they were designed, it is unlikely that herd immunity will be achieved against CV-19 (2023).

In August of 2022, well after the mass vaccination push and the mandates, the CDC finally acknowledged natural immunity as a protection against COVID-19. At the press conference announcing the release of updated pandemic guidelines, CDC epidemiologist Greta Massetti conceded what many had been saying for some time, “Both prior infection and vaccination confer some protection against severe illness...and so it really makes the most sense to not differentiate with our guidance or our recommendations based on vaccination status at this time” (Reuters, 2022, para 5). Many were left questioning the CDC’s delayed position. In fact, Dr. Paul Alexander, formerly of the COVID Task Force, and several colleagues had previously published a list of 150 peer reviewed studies documenting natural immunity being superior to COVID-19 vaccines (2021, para. 9). On the heels of the CDC’s official position change, the COVID-19 Forecasting Team published a study in *The Lancet* citing an observed 88% reduction in risk of hospitalization or death for at least 10 months after infection versus

someone who had not been previously infected citing the power of natural immunity (Stein et al., 2023).

Legal and Ethical Concerns

Aside from clinical risks associated with introducing a vaccine under an EUA, the accompanying mandates posed legal and ethical risks. Gostin et al., explained their concerns in an article published in the *Journal of American Medical Association (JAMA)*:

Mandating COVID-19 vaccines under an EUA is legally and ethically problematic. The act authorizing the FDA to issue EUAs requires the secretary of the Department of Health and Human Services (HHS) to specify whether individuals may refuse the vaccine and the consequences for refusal. Vaccine mandates are unjustified because an EUA requires less safety and efficacy data than full Biologics License Application (BLA) approval (2022, para. 30).

Another concern is that the mandates may have backfired. In the *British Medical Journal Global Health* article titled, “The unintended Consequences of COVID-19 Vaccine Policy: Why Mandates, Passports, and Restrictions May Cause More Harm Than Good,” the authors argue “...current mandatory vaccine policies are scientifically questionable and are likely to cause more societal harm than good” (Bardosh et al., 2022, para. 1). In examining public health messaging, communications researchers Rains and Richards concluded, “COVID-19 vaccine mandates had unintended consequences” (2024, para. 7). Instead, they found mandates did not increase uptake, but rebellion resulting in fewer people getting boosters and/or the seasonal flu vaccine (2024).

Reality

Throughout history, products once thought to be safe for public consumption have been removed from the market or forced to carry health warning labels including cigarettes, DDT, asbestos, and likely the worst medical disaster of modern history, thalidomide, to name but a few. Although Johns Hopkins stopped tracking case statistics in March of 2023, until then the COVID-19 pandemic produced 676 million worldwide cases, from which 99% of infected people recovered. The death rate is approximately one percent (COVID-19 Map, 2023). Unfortunately, the fear generated by the pandemic caused great financial harm to the airline industry and the world economy. Regulators believed the development of vaccines would save lives, careers, and businesses—a noble endeavor, indeed. Airlines put all their proverbial eggs in the vaccine basket. However, three years after approval of the EUA for the COVID-19 vaccines, many are questioning the vaccines' safety and efficacy. Herd immunity remains unlikely, and like the common cold, COVID-19 may be something with which society must deal for decades. Meanwhile, the moral, legal, and financial effects on U.S. commercial pilots, specifically regarding their health and safety, raise unique questions, some of which the following research attempts to answer.

CHAPTER III

METHODOLOGY

This chapter addresses research methodology including the design theory and rationale used in this research project. The population will be detailed as we discuss the possible parameters which will inform our definition of the research sample. Finally, we will explore validity and reliability; data collection methodology, and the logistics surrounding disseminating and managing this robust project.

Design Theory and Conceptual Framework

As with any study of this magnitude, it is important to ensure a solid conceptual framework informed with an underlying design theory. Throughout this research, an overarching theme appeared—the need for a *systems* approach in evaluating the data. During the pandemic, it seemed that various systems kept crashing into each other, yet no one was considering the effects each system was having on any other while few were working in harmony.

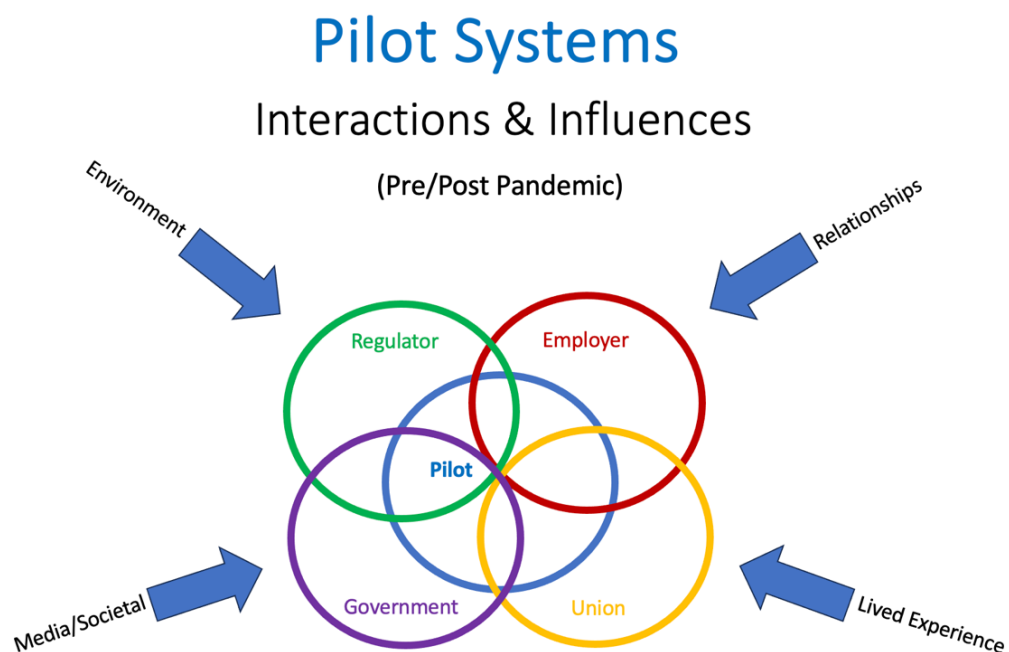
Italian researchers, Mele, Pels, and Polese (2010), explain that “systems thinking comes from the shift in attention from the parts to the whole” (p.126). They posit researchers are “not fully able to comprehend a phenomenon simply by breaking it up into elementary parts and then reforming it; we instead need to apply a global vision to understand...” (p.126). While producing a survey is easy and the participants are

key, it is the analysis of the interactions of all the moving parts of the pandemic—specifically the various systems that interact in aviation—that will provide a foundation for establishing recommendations and best practices, moving forward.

The Italian authors further posit that central to general systems theory is its “focus on interactions” (p.127). In other words, people behave differently as a result of their interactions with others and when operating in a system or in interacting systems. Pilots exist in several interacting systems—their family systems, employment, unions, the regulatory systems, even the airspace system, not to mention their communities, churches, and nation (Figure 9). The ability to navigate and thrive in these various systems is dependent on the ability to adapt which is informed by lived experiences and influenced by relationships, environments, and perceptions an individual knows to be true (Mele et al., 2010).

Figure 9

Normal Pilot Systems Interactions



In the center is the pilot and his family system—his life. All is in balance because his lived experiences guide the pilot allowing him to trust in the various systems in which he exists. Notice, each system in which the pilot is engaged are also interconnected, and in at least the case of aviation, arguably interdependent.

Yet, the pandemic introduced something never experienced by the study cohort. It disrupted these systems' integration introducing new, almost daily challenges to which pilots were forced to adapt—masking, testing, social distancing, mandates, isolation, changes to layover hotel procedures, mandatory temperature checks when reporting for duty, etc. Individually, without historical context and lived experiences to inform their decisions, adaption became challenging causing some to retreat inward to their family systems as a defensive position.

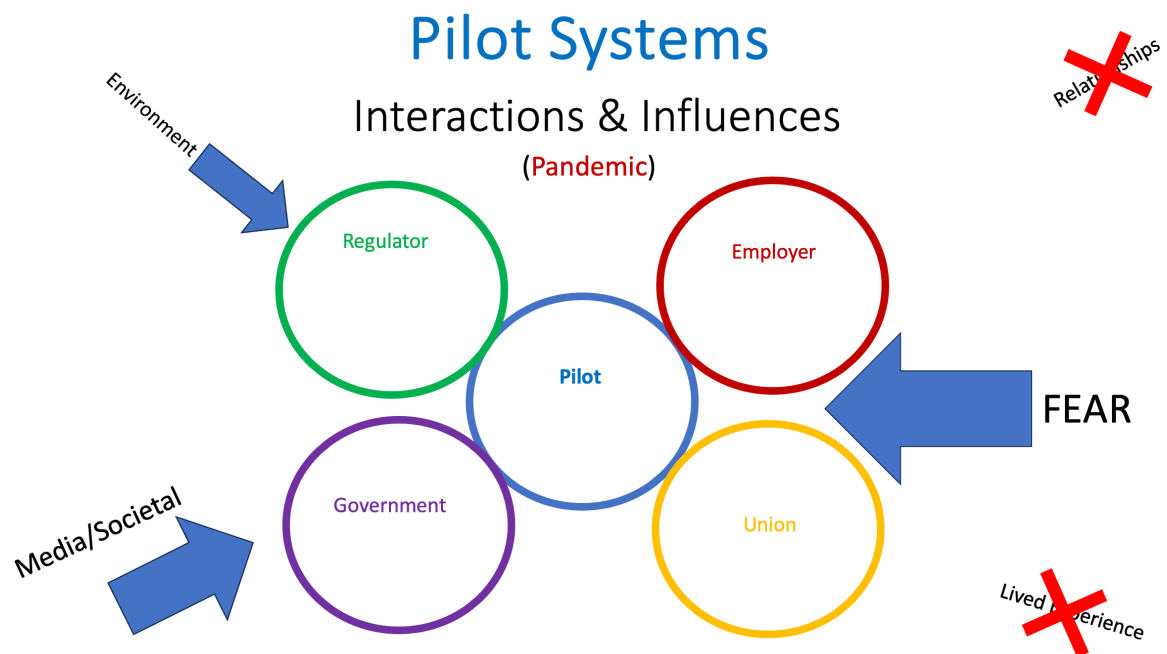
However, sometimes those relationships were in chaos, severed or forcibly isolated. Consider the stories of loved ones isolated in nursing homes or family members lost to the virus. Pilots suffered through all these experiences. Meanwhile, trusted entities were changing course as the world seemed to be in chaos. Pilots' careers were in grave jeopardy as travel waned. Flying schedules were forcibly cut resulting in reduced income. As financial concerns mounted, these systems began to disengage and isolate. Everywhere they turned, pilots, like the general public, were met with a 24/7 barrage of death statistics and infection rates from every type of media source. FAA Regulators changed long-standing rules such as the validity period for FAA medicals, something pilots never thought possible thereby adding to the belief that the situation was dire (NBAA, 2020). The government promoted the chaos with passenger mask mandates that fell on pilots to enforce creating a never-ending cycle of security and passenger issues

(Arnold, 2021). Some pilots even experienced a newly emboldened Flight Attendant cadre of “mask police” who added to the onboard chaos (2021). As the systems continued to disengage, pilots were forced to learn to re-navigate that which they thought they knew as truths, most likely longing for a return to what they considered normal.

The research data begins to paint a picture of the pilots and the systems in which they were operating during the pandemic. Most pilots, it appears, were existing and interacting in at least five normally interdependent but arguably independent, open systems, at any given time (Figure 10). Open systems, as opposed to closed or isolated systems, are influenced by the external stimuli (Mele et al., 2010). The overarching external stimuli was the pandemic itself.

Figure 10

Pandemic Pilot Systems Interactions



Likewise, the normally interdependent systems' ability to adapt was also disrupted as the focus of each shifted from thriving together to mere survival. This shift caused each entity to further retreat and isolate for self-preservation. Society, as a whole, appeared to do the same. Therefore, it is no wonder that the nation's hope rested in the development of a safe and effective vaccine.

On the surface, each of the systems professed to be working as usual, interdependently, and as most pilots likely believe they do—with their best interests in mind (safety, financial rewards, fulfilling career, etc.). Only now, after the fact, are pilots beginning to question intentions as evidenced by the results of the survey when asked about their future actions should they experience another pandemic and face vaccine mandates. In other words, they now have a lived experience that will inform their future decisions and actions so that they may navigate and interact vigorously in these systems should another pandemic occur.

At its core, this research posits that the very systems designed to protect the health and well-being of these pilots failed them gravely. In fact, when these systems ceased working interdependently in exchange for self-preservation, they failed the people who relied on those systems. Because these failures include safety-critical procedures established to protect the individual pilots in the National Airspace System, and thus, the flying public, as a Human Factors researcher, I find it imperative to ask these four study questions:

1. Is there a statistically significant cadre of the U.S. commercial pilot population suffering from the COVID-19 vaccine adverse effects?

2. If so, what are the most identifiable morbidities so that future researchers can design interventions, and to inform pilots regarding symptoms for which they should be alert?
3. Does the data suggest a larger study is warranted?
4. In the case of future drug intervention mandates, will pilots comply?

Design Rationale

The survey is a descriptive, anonymous cross-sectional (single-point) survey conducted via the Qualtrics platform under the Oklahoma State University umbrella (Appendix B). Data analysis includes utilizing descriptive statistics to calculate absolute numbers, prevalence counts, and percentages of adverse events, post-vaccination. In an effort to encourage participation, and because some participants may fear that answering certain questions will jeopardize their medical certification, the majority of the questions do not require (force) the participant answer; therefore, questions may be skipped. The data will be examined to determine whether, and to what degree, relationships exist between two or more quantifiable variables. Through selective sampling of written comments, the qualitative piece will allow the researcher to dig deeper into any identified correlations. Consideration was given to consulting the ASAP program data, but that data is not available to general researchers. Consideration was also given to consulting the FAA's Inflight Incapacitation Database (IDR) for supporting trend analysis. Unfortunately, FOIA requests have gone unanswered.

The mixed-methods research theory of the "QUAN-Qual model" utilizing explanatory mixed-methods requires the quantitative data be collected first and more heavily weighted than the qualitative data (Gay et al., 2012). The qualitative piece

affords an opportunity to explore causation and co-morbidities through the details of the participants' written answers. Secondly, it affords an opportunity to examine pandemic stressors and vaccine safety concerns in pilots and their shifting beliefs based on their lived experiences.

Exploring the information conveyed in the descriptive/narrative fields may provide insight to future behavior should the pilot population face another medical crisis. This will help formulate policies to ensure the systems in which pilots operate, work in their best interest and that of the various interacting systems. Gaining post-pandemic insight into the attitudes and behaviors of those longing for a return to what they consider normal may also expose safety deficiencies overlooked by regulators as a result of medical mandates. Finally, this study is intended as applied research to provide societal understanding of the effects of vaccine mandates and their potential adverse events with an eye to ensuring the continued safety of the National Airspace System. The inquiry framework rests in *Social Constructionism* theory examining how pilots have constructed their reality surrounding their medical condition as a result of the pandemic (Patton & Schwandt, 2015). Rich, descriptive written testimonials will provide one-point-in time data in individual settings. Once the quantitative data is analyzed, the inclusion of personal narratives will be classified by medical deficiency type.

Data Collection Design

This study recruited anonymous participants through targeted emails to various pilots and pilot groups, along with over 600 FAA AMEs, many of whom published the notice to their clients. Notices were sent to aviation newsletters, periodicals, and posted on various pilot web-boards without regard to any subset factors, only the fact that the

participants are pilots. Word-of-mouth dissemination through a QR code directed pilots to a study website linked to the Qualtrics platform (www.okstatepilotstudy.com).

Both ALPA and the Coalition of Airline Pilots (CAPA) were approached to request their aid in dissemination of the survey link to their members, but both declined to participate. Several individual union officials at various airlines were independently contacted via email and text providing the QR code for dissemination.

At the end of July 2023, I traveled to Oshkosh, Wisconsin, spending three days at the world's largest pilot event—the Experimental Aircraft Association's Air Adventure air show and convention—where I passed out business cards containing QR codes while soliciting and recruiting participants from across the nation. This event also afforded the opportunity to discuss the project with hundreds of pilots. While not necessarily scientific, those conversations helped motivate this inquiry and are worthy of a few sentences. At Oshkosh, I met pilots in every possible employment including FAA inspectors, airline pilots, military pilots, educators, manufacturing test pilots, etc. What struck me most is that I did not meet a single person, over my three-day visit, who agreed with mandating the COVID-19 vaccine. All thought it should be a personal choice. Some were pro-vaccine, some were not. Most had a story of a friend who lost their medical certification from what they believed were vaccine adverse events. Even many of the FAA inspectors, the front-line safety professionals, were angry about their agency's position with regard to approving the vaccine under EUA. I must say that although I was met with disdain from the unions earlier in the year, the wonderful people I met at Air Adventure provided the motivation to complete this project.

Additionally, the survey was marketed through a press release sent to various media outlets, U.S. Congressional contacts, and grassroots organizations including the Southwest Freedom Flyers, the Children’s Health Defense Network, the Vaccine Safety Research Council, and others. Unfortunately, like the unions, some in the “anti-vax” crowd attempted to halt the survey by contacting the Oklahoma State University Institutional Research Board (IRB) (Appendix D) in an attempt to discredit the researcher, likely due to past personal conflicts with some in that movement. It definitely seemed that while everyone wanted the truth, many only wanted *their* truth. However, through the steadfast commitment of the IRB to best practices in human studies, the naysayers were deterred and the study proceeded without further interference. The quest for truth must transcend politics, unions, personal differences, and personal opinions. It is often said in aviation that if one is receiving flak, they must be over the target! The flak was intense.

Defining the Study Population

There are several ways to define the study population, each with its own flaws. Publicly available data is mostly uncited and/or conflicting. Consideration was given to using the FAA’s Annual Airman Statistics; the FAA’s Aeromedical Branch data; publicly available union information; corporate annual reports; and union disability data. While none proved absolute, this section details the rationale for what was initially chosen.

U.S. Civilian Pilots

Pilot total certificates (Figure 11) are reported annually. The most recent was in 2022 (FAA, 2023a).

Figure 11

FAA Table 4: Estimated Active Pilot Certificates

TABLE 4 ESTIMATED ACTIVE PILOT CERTIFICATES HELD BY CLASS OF CERTIFICATE as of DECEMBER 31										
CLASS OF CERTIFICATE	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total--All Pilots	756,928	720,605	691,691	664,565	633,317	609,306	584,362	590,039	593,499	599,086
Student -- Total 1/	280,582	250,197	222,629	197,665	167,804	149,121	128,501	122,729	120,546	120,285
Recreational Airplane (only)	79	85	105	127	144	153	175	190	220	238
Sport (only)	6,957	6,801	6,643	6,467	6,246	6,097	5,889	5,482	5,157	4,824
Airplane 2/										
Private --Total	164,090	161,459	160,860	161,105	163,695	162,455	162,313	170,718	174,883	180,214
Private Airplane (only)	158,142	155,502	154,809	154,972	157,396	156,173	156,058	162,969	167,018	172,195
Private Airplane, Private Glider	1,953	1,973	2,044	2,154	2,254	2,267	2,245	2,328	2,403	2,486
Private Airplane, Private Gyroplane	44	39	37	40	37	36	33	32	32	32
Private Airplane, Private Helicopter	1,924	1,942	1,982	1,998	2,111	2,100	2,128	2,216	2,207	2,237
Private Airplane, Private Glider, Private Helicopter	58	59	65	69	76	74	70	72	75	76
Private Airplane-other	1,969	1,944	1,923	1,872	1,821	1,805	1,779	3,101	3,148	3,188
Commercial--Total	104,498	104,610	103,879	100,863	99,880	98,161	96,081	101,164	104,322	108,206
Commercial Airplane (only)	85,476	85,479	84,386	80,975	79,538	77,993	76,446	79,957	82,703	85,771
Commercial Airplane, Private Glider	946	959	959	970	1,012	1,020	1,016	1,092	1,139	1,175
Commercial Airplane, Commercial Glider	1,659	1,709	1,744	1,810	1,859	1,872	1,785	1,907	1,964	2,134
Commercial Airplane, Commercial Gyroplane, Commercial Glider	6	5	5	4	6	7	5	8	7	7
Commercial Airplane, Private Helicopter	864	847	840	834	817	794	804	789	809	837
Commercial Airplane, Commercial Glider, Private Helicopter	51	47	54	45	43	46	46	53	52	64
Commercial Airplane, Commercial Helicopter	7,114	7,245	7,508	7,802	8,007	7,856	7,586	7,800	7,794	8,112
Commercial Airplane, Private Glider, Commercial Helicopter	92	99	102	102	102	111	100	106	108	108
Commercial Airplane, Commercial Glider, Commercial Helicopter	227	227	243	241	251	257	250	259	279	281
Commercial Airplane, Commercial Helicopter, Commercial Gyroplane	26	23	26	25	26	32	22	23	30	30
Commercial Airplane, Commercial Gyroplane	19	17	15	15	14	14	14	14	13	11
Commercial Airplane, Commercial Gyroplane, Commercial Helicopter, Commercial Glider	18	15	16	16	18	18	17	16	16	13
Commercial Helicopter, Private Airplane, Commercial Glider	14	17	16	14	19	18	16	17	16	17
Commercial Glider, Private Airplane	355	355	375	388	413	404	381	395	391	394
Commercial Helicopter, Private Airplane	3,556	3,526	3,593	3,689	3,850	3,842	3,765	3,816	3,909	3,999
Commercial-other	4,075	4,040	3,997	3,933	3,905	3,877	3,828	4,912	5,092	5,253
Airline Transport --Total	166,738	163,934	164,193	164,947	162,145	159,825	157,894	154,730	152,933	149,824
Airline Transport Airplane (only)	162,105	159,253	159,426	160,117	157,270	154,942	153,024	149,957	148,156	145,128
Airline Transport Airplane, Airline Transport Helicopter	2,222	2,269	2,339	2,383	2,360	2,339	2,324	2,322	2,379	2,367
Airline Transport Airplane-other	2,411	2,412	2,428	2,447	2,515	2,544	2,546	2,451	2,398	2,329
Rotorcraft (only) 3/--Total	13,180	13,191	13,629	14,248	15,033	15,355	15,518	15,566	15,511	15,114
Private Gyroplane	19	18	14	18	17	15	11	11	7	9
Private Helicopter	2,649	2,697	2,807	2,912	3,307	3,420	3,719	3,856	3,997	3,952
Commercial Helicopter	8,763	8,730	9,025	9,510	9,900	10,066	9,935	9,870	9,780	9,588
Commercial Helicopter, Private Glider	4	2	2	1	2	2	3	3	5	6
Commercial Helicopter, Commercial Glider	3	2	2	2	1	1	1	2	3	2
Commercial Gyroplane	4	5	3	3	2	3	3	2	2	3
Gyroplane	10	9	8	10	10	10	7	7	6	6
Airline Transport Helicopter	1,718	1,713	1,753	1,775	1,777	1,823	1,824	1,806	1,704	1,541
Recreational Gyroplane	0	0	0	1	1	2	2	1	1	1
Recreational Helicopter	1	1	2	2	2	2	1	0	0	0
Rotorcraft-other	9	14	13	14	14	11	12	8	6	6
Glider (only) 4,5/--Total	20,804	20,328	19,753	19,143	18,370	18,139	17,991	19,460	19,927	20,381
Private Glider	11,378	11,217	11,007	10,759	10,401	10,266	10,141	13,714	14,023	14,309
Commercial Glider	4,734	4,672	4,572	4,457	4,319	4,293	4,348	3,723	3,877	4,013
Air Transport (other)	4,692	4,439	4,174	3,927	3,650	3,580	3,502	2,023	2,027	2,059
Flight Instructor Certificates 6/	125,075	121,270	117,558	113,445	108,564	106,692	104,382	102,628	100,993	98,842
Instrument Ratings 6,7/	321,217	317,169	316,651	314,168	311,017	306,652	302,572	304,329	306,066	307,120
Remote Pilot Certificates 8/	304,256	254,587	206,322	160,302	106,321	69,166	20,362	N/Ap	N/Ap	N/Ap

1/ In July 2010, the FAA issued a rule that increased the duration of validity for student pilot certificates for pilots under the age of 40 from 36 to 60 months. This resulted in the increase in active student pilots to 119,119 from 72,280 at the end of 2009.

Starting with April 2016, there is no expiration date on the new student pilot certificates, which generates a cumulative increase in the numbers.

2/ Includes pilots with an airplane only certificate. Also includes those with an airplane and a helicopter and/or glider certificate. Prior to 1995, these pilots were categorized as private, commercial, or airline transport, based on their airplane certificate. In 1995 and after, they are categorized based on their highest certificate. For example, if a pilot holds a private certificate and a commercial helicopter certificate, prior 1995, the pilot would be categorized as private; 1995 and after as commercial.

3/ See table 7 for the total number of pilots with a helicopter certificate.

4/ See table 8 for the total number of pilots with a glider certificate.

5/ Glider pilots are not required to have a medical examination. Beginning with 2002, glider pilots with another rating but no current medical are counted as "Glider (only)".

6/ Not included in total.

7/ Special ratings shown on pilot certificates, do not indicate additional certificates.

8/ Remote pilot certification started in August 2016. These numbers are not included in the pilot totals.

N/Ap Not applicable.

For the purposes of this study, basing the entire population on FAA data, without adjustments (Table 2) may be misleading. First, one must find the total Airline Transport Pilot population by adding airplane and other aircraft. Then, after doing the same for Commercial pilots, the two must be added for a total. Therefore, the following calculations were made.

Table 2

Adjusted Total U.S. Commercial Pilots

Total Airline Transport Pilot:	166738
Airline Transport helicopter	+1718
Airline Transport (other)	+4692
<i>Total ATP:</i>	173148
Total Airplane Commercial:	104498
Rotorcraft Only: Commercial Helicopter	+8763
Glider	+4
Commercial Helicopter, Commercial Glider	+3
Commercial Gyroplane	+4
Commercial Glider:	+4734
<i>Total Commercial:</i>	118006 **
	119832
Total ATP +Total Commercial :	292980

*** (Based on the next chart (FAA Table 12) below, the numbers from the FAA's Table 4 (previous page) conflicts. Therefore, the larger number was used.)*

Because the career position of Flight Engineer is gradually being phased out, and because it is highly likely that today's Flight Engineers have commercial pilot licenses, that demographic is not counted so as to avoid possible double-counting. Next, the following chart (Figure 12) must also be considered.

Figure 12

FAA Table 12-Estimated Active Pilot Certificates Held by Category and Age

**TABLE 12
ESTIMATED ACTIVE PILOT CERTIFICATES HELD
BY CATEGORY AND AGE GROUP OF HOLDER
as of December 31, 2022**

Age Group	Type of Pilot Certificates							Flight Instructor 2/	Remote Pilot 2/
	Total	Student	Sport	Recreational	Private 1/	Commercial 1/	Airline Transport 1/	CFI 3/	
Total	756,927	280,582	6,957	80	176,328	119,832	173,148	125,075	304,256
14-15	640	640	0	0	0	0	0	0	0
16-19	27,407	20,927	12	2	6,020	446	0	157	4,032
20-24	79,668	43,183	69	0	20,231	14,689	1,496	8,130	18,505
25-29	94,030	52,235	139	6	14,858	18,810	7,982	13,231	37,325
30-34	83,679	45,265	232	8	13,434	12,894	11,846	12,694	43,551
35-39	74,898	33,162	334	2	13,614	10,557	17,229	14,044	42,874
40-44	65,822	24,407	346	0	12,632	8,595	19,842	13,252	36,821
45-49	54,101	16,390	365	5	10,819	6,632	19,890	11,224	30,200
50-54	57,240	13,520	515	4	12,897	7,355	22,949	11,669	27,702
55-59	59,090	11,030	765	8	14,771	7,561	24,955	10,586	22,326
60-64	56,155	8,417	999	6	17,101	7,887	21,745	9,371	17,777
65-69	43,434	5,678	1,151	18	16,942	7,915	11,730	8,049	12,526
70-74	29,410	3,300	899	9	12,089	6,688	6,425	5,899	6,659
75-79	19,316	1,660	664	9	7,085	5,597	4,301	4,339	2,969
80 and over	12,037	768	467	3	3,835	4,206	2,758	2,430	989

1/ Includes pilots with an airplane and/or a helicopter and/or a glider and/or a gyroplane certificate. Pilots with multiple ratings will be reported under highest rating. For example a pilot with a private helicopter and commercial airplane certificates will be reported in the commercial category.
2/ Not included in total active pilots.
3/ Certified Flight Instructor

By law, Airline Transport Pilots (ATPs) who fly for major U.S. carriers governed under FAR 121 are required to stop flying at 65 (Federal Register, 2009). However, they can continue to work in charter (governed by FAR 135) and corporate pilot positions (governed by FAR 91). Because pilot licenses are granted for life, one fatal flaw exists in using the FAA's data to determine the Commercial/ATP pilot population—there is no way to know how many pilots have stopped flying. Suffice it to say, it is unlikely that pilots over the age of 75 are employed in commercial service. Therefore, statistically, the

pilot population could be reduced by 9803 Commercial pilots and 7059 ATPs. What's more, it is highly unlikely that the 446 pilots between the ages of 16 and 19 are employed in airline positions. Finally, there is no way to know how many full-time military pilots hold civilian certificates but are not employed in civilian positions. All this is to say, the FAA's mere count of certificates is likely an extremely over-inflated number of employed pilots. However, it makes almost no difference (Table 3) as to the required sample size if one reduces the population based on the numbers contained in the FAA charts as detailed above because the population is so large.

Table 3

Comparison of Sample Size Requirements For Total Pilot Population

	Required Sample Size*		
	Percent Confidence Level	Margin Of Error	Required Sample Size
Total Pilots:			
292980	95%	+/-5%	384
	98%	+/-4%	844
	98%	+/-3%	1303
275672**	95%	+/-5%	384
	98%	+/-4%	844
	98%	+/-3%	1302

*Assumes response distribution 50%

**292,980 less adjustments for age (-9803; -7059; -446)

Source: (NBRI, 2024)

Another option is to consider the number of valid FAA pilot medical certificates as reported annually by the FAA's Aeromedical Branch. This also proves to be unwise as pilots routinely, and without penalty, allow their medical certificates to lapse if they suffer an injury, an illness, or out of convenience when taking a leave to pursue other interests such as an advanced degree. In other words, pilots enter and exit the work force without FAA Aeromedical notification. This is reflected in the fluctuation in total medical certificates, year-over-year, and differs from pilot licensure. Conversely, once pilots earn a Commercial or ATP certificate (license), unless they have their privileges revoked, they hold them for life. Therefore, neither the number of licenses, nor the number of medical certificates accurately reflect the active number of employed pilots. Suffice it to say, at the time the study opened, the definition of the study population was approached with a "broad brush" intending to include any civilian Commercial or ATP who chose to participate. Further examination and clarification of the population data, based on the results, will be discussed in Chapter IV.

U.S. Military Pilots

While not a major focus of study, knowing that many civilian pilots have military obligations and that many military pilots have civilian licenses, it is worthy to consider the size of the military pilot population, in the event pilots from this cohort find and complete the study questions. While total service data is available through demographical information, similar to the above classification errors, finding the size of only the pilot force was much more elusive. Several government and private internet sights concur that near the end of 2020 the Air Force had approximately 19,075 pilots and navigators (Losey, 2021). The Navy had approximately 4,000 pilots and 3,000 Naval

Flight Officers (Antonio, 2022). The same article states the Army had approximately 4,800 pilots, and the U.S. Marine Corp had nearly 3,400 pilots. In other words, the total combined forces total approximately 30,800 aviators, but official numbers were not available. This also assumes Air National Guard pilots are counted with their respective services, although they may be primarily employed in civilian positions.

While this study is designed to examine the civilian pilot population, an option was crafted for active-duty military pilots to participate along with civilian pilots who are serving military obligations. Data is key to finding trends, and including those questions required little extra effort during study design. The pilot world is finite, and many civilian pilots and military pilots are in close contact as was evidenced at the Oshkosh fly-in, so care needed to be taken to not to discourage participation by limiting the study cohort, especially in light of the need for future studies. Beyond that, many military pilots' ultimate goal is civilian employment, so they seek civilian licenses throughout their careers. Those civilian licenses are counted in the aforementioned FAA statistics, even though the pilot is not employed in the civilian world. No military pilot is, however, required to have a civilian license to conduct their duties. Since the time of the military COVID-19 vaccine mandates, many pilots have chosen to leave active-duty service but remain flying in the Air National Guard or Reserves while employed commercially. There is no way, other than through self-disclosure in the study questions, for a pilot to indicate that he is serving in the armed forces and also holds a commercial or ATP license. It is conceivable some military survey-takers may be double-counted in the total pilot population; however, that number is likely statistically insignificant. While this study welcomed military pilot participation, future study may be required for in-

depth examination of similar traits in active-duty military pilots. Thus, the focus of this research remains civilian commercial aviators.

Participants

Study participants include Airline Transport Pilots (ATPs) and Commercial pilots licensed by the FAA. Because the intent is to address pilot safety, there was no age cutoff if a pilot declared he or she is employed. As earlier explained, while ATPs reach mandatory retirement age at 65 years, corporate and other commercial operators such as flight instructors, agricultural, a pipeline patrol pilots, etc., are not limited by age. Likewise, as explained above, the study did not exclude military pilots whether or not they have FAA pilot certificates.

Survey Description

This study included a variety of demographic questions; employment information; FAA Medical Certificate status; reasons for or for not taking the vaccine; and specific type and dosage information. Additional, descriptive questions about participant FAA medical certification and health condition followed. Because of the sensitive nature of the data and potential effects on pilots' careers, all data is anonymous. Pilots who suffered adverse effects were allowed to include a narrative providing the basis for the qualitative part of the report. While the stories of pilots who became deceased in the last three years are compelling, that data is only available second hand. Hence, no consideration was given to include those pilots via family or spouse submission.

Validity

Because the website hosting the survey was public during the data collection process, it was necessary to validate participants are, in fact, pilots, which required pilot-specific survey questions be included in the demographics section. Presuming all non-pilots were culled, design validity of the study rests in the truthfulness of the participants. The researcher reserved the right to consult with medical clinicians and specialists to validate terminology and details provided in the narratives. Due to the potential political nature surrounding the vaccine debate, it is possible some submissions contained obviously erroneous data. Every effort was made to eliminate submissions made that contain false data or were made with the intent to skew the results.

Schedule

Data collection occurred in Q2, Q3, and Q4 of 2023 allowing for survey analysis and qualitative exploration in Q1 2024.

Budget & Marketing

The Oklahoma State University Qualtrics account affords a fee-free platform for research data collection. No software expenses for data processing were incurred. The remaining expenses were nominal. A website and hosting expenses were less than \$35. The trip to Oshkosh was coupled with a family vacation. Additional survey marketing expenses include business cards with QR codes (less than \$20) and shirts to wear at Oshkosh advertising the study (\$40). No financial incentives were provided to survey participants.

Ethical Assurances

It is critical that the study participants and their data remain anonymous to prevent potential detrimental effects to their current employment and/or future employability and their FAA certification. The Internal Review Board process at Oklahoma State University plays a key role in governing human studies and assuring compliance. The IRB granted this study full “Exempt” status on 1/27/2023 under Application Number IRB-23-40 (see Appendix D).

Reflexivity

I acknowledge that while I am a currently an employed Airline Transport Pilot with a major U.S. carrier, I am not a member of the study class because I did not take the survey. Additionally, I am not a member of the vaccinated cohort based on my vaccine status. However, I am a co-founder and member of the Board of Directors of Airline Employees 4 Health Freedom (AE4HF) whose Medical Officer has been collecting individual stories of pilots claiming post-vaccination adverse effects. While those findings have led me to seek a formal research study, they are not included in, and did not inform this study. Each of those pilots’ reports are deidentified before any information is reported to the AE4HF Board of Directors. I did not contact or solicit those pilots to participate in this study. If they decided to participate, that is unbeknownst to me due to the anonymity of the survey. Finally, it is no secret that I stand against any mandates as evidenced by my participation with AE4HF. However, I am a firm believer in one’s individual right to determine their own medical destiny, be that vaccinated or unvaccinated as evidenced by my support of my mother’s choice to be vaccinated.

Biases

As with any sampling, the goal for research design is to minimize the margin of error. Harvard Business School Professor, Dr. Jenny Gutbezahl, explains this can be accomplished by increasing the sample size (something out of this researcher's control); considering missing variables (a possible issue); removing bad data (addressed in Chapter IV); eliminating misleading or false data (addressed in Chapter IV); and eliminating bias (2017a). With regard to biases, Dr. Gutbezahl states they are defined as "anything that leads to a systematic difference between the true parameters of a population and the statistics used to estimate those parameters" (2017b, para. 4). In examining possible biases influencing this study I will address the five most critical "types of statistical biases to avoid," per Dr. Gutbezahl's (para. 4).

Sampling Bias occurs when a non-random sample is used (Gutbezahl, 2017b). While attempts were made by this researcher to avoid sampling bias, it is possible that those who attended Oshkosh are disproportionately wealthier pilots with more disposable income. One could, perhaps, surmise that since they have the ability to afford to travel to Wisconsin, they could have afforded to be terminated when the mandates were introduced. Or, some may say that the pilots at Oshkosh are possibly more senior pilots because they have summer vacations; therefore, a connection could be made to wealth or seniority with regards to the vaccine mandates. However, great effort was taken to avoid sampling bias by disseminating the survey to every pilot-related social media platform one could find including, for example, the Alaska Bush Pilots Facebook Page, an African-American Pilots Facebook Page, a military pilot wives' page, etc. Additionally, I purposefully did not solicit those who had previously reached out to AE4HF claiming

vaccine harm, nor did I post the survey link on the organization's website. Likewise, I tried to disengage with the organization when working on this project by using only my Oklahoma State University email address and my credentials as a student under my initials, "S.L. Walker" hoping the anonymity help eliminate biases. It is possible that pilots who claim vaccine injury are actively looking for venues by which they can tell their stories, but I believe that would be true no matter who was the author of the survey, including the FAA and/or the unions. In the end, I was not sure I would ever exceed the minimum number of required participants to complete the work; therefore, I solicited every pilot I could find, without regard to any other characteristics.

Assignment Bias occurs, per Dr. Gutbezahl, when "two or more groups are treated differently and then compared" (2017b, para. 10). In this case, pilots self-assigned to the vaccinated or unvaccinated categories, then further self-assigned as to their adverse effects. Comparisons were made between the study sample and the published CDC occurrence rates; however, no two groups were compared within the study.

Omitted Variables Bias occurs when researchers do not examine all possible causations, even if variables correlate (Gutbezahl, 2017). It is possible, when examining the final results, that this could be an issue. As with any attempt at medical classifications, unreported variables can be an issue. This study did not physically or clinically examine the participants. Rather, they were allowed to self-report their beliefs regarding causation. Therefore, the results are written as such to address the fact that no implication of medical examination should be considered.

Self-Serving Bias occurs when study participants "downplay the qualities they perceive to be less desirable and overemphasize qualities they perceive to be desirable"

(Gutbezahl, 2017, para. 17). When we get to the final analysis, keep in mind, it is possible self-serving bias may be present among participants who desire to blame someone for their medical condition, their suffering, or their Special Issuance or Deferred FAA Medical Certificate. However, in the case of the final five pilots, only one has a Deferred FAA Medical Certificate. The remaining four are working without attachments to their certificates. One assumes they do not want the FAA to learn of their condition, and are taking on risk by participating and reporting their conditions. This, coupled with the fact that no survey participant was rewarded in any way for their time or answers, likely eliminates self-serving bias as a factor.

Experimenter Expectations Bias occurs when researchers “accidentally have an impact on the data” and most often occurs through “unconscious verbal or non-verbal cues” (Gutbezahl, 2017, para. 19). Because this researcher had no interaction with study participants after presenting the survey QR code while recruiting participants, a good portion of which was done in writing via email and social media announcements, there was no way to influence the specific answers of any participant.

A final and type of bias not covered by Dr. Gutbezahl, but that is often associated with survey type instruments is *Response Bias*. In designing the survey questions, the Qualtrics Platform explains this bias as the inability for participants to say what they really mean, and that it is often associated with Likert scale questions (2022). In this study, only the questions related to health improvement or degradation were judged on a Likert Scale so as to have comparison (before and after) data. The majority of the questions were direct input and able to be skipped. Every attempt was made to minimize response bias.

CHAPTER IV

STUDY FINDINGS

The survey opened on May 17, 2023, and although it remains open, data collection for this report concluded on February 4, 2024. Results netted 1,622 responses, of which 370 were removed from the dataset for the following reasons: completed less than 70% of the survey; indicated they did not want to participate; were under 18 years old; or, retired prior to 2021. The 70% completion point allows for those who got at least as far as stating their vaccine and booster status. Three responses were permanently deleted for obviously malicious intent based on their answers such as describing their vaccine harm as “super-human powers” and “MAGA x-ray vision.” Four additional responses were removed based on examination of their employment and/or conflicting answers. They include a Southwest Airlines dispatcher; a pilot who retired in 2021 who states he has vaccine injury, but indicated he never took the vaccine; a non-pilot flight surgeon; and a female pilot with an ATP certificate who has never been employed as a pilot and indicated she merely flies for leisure. After all were eliminated, the survey cohort contains 1,248 participants.

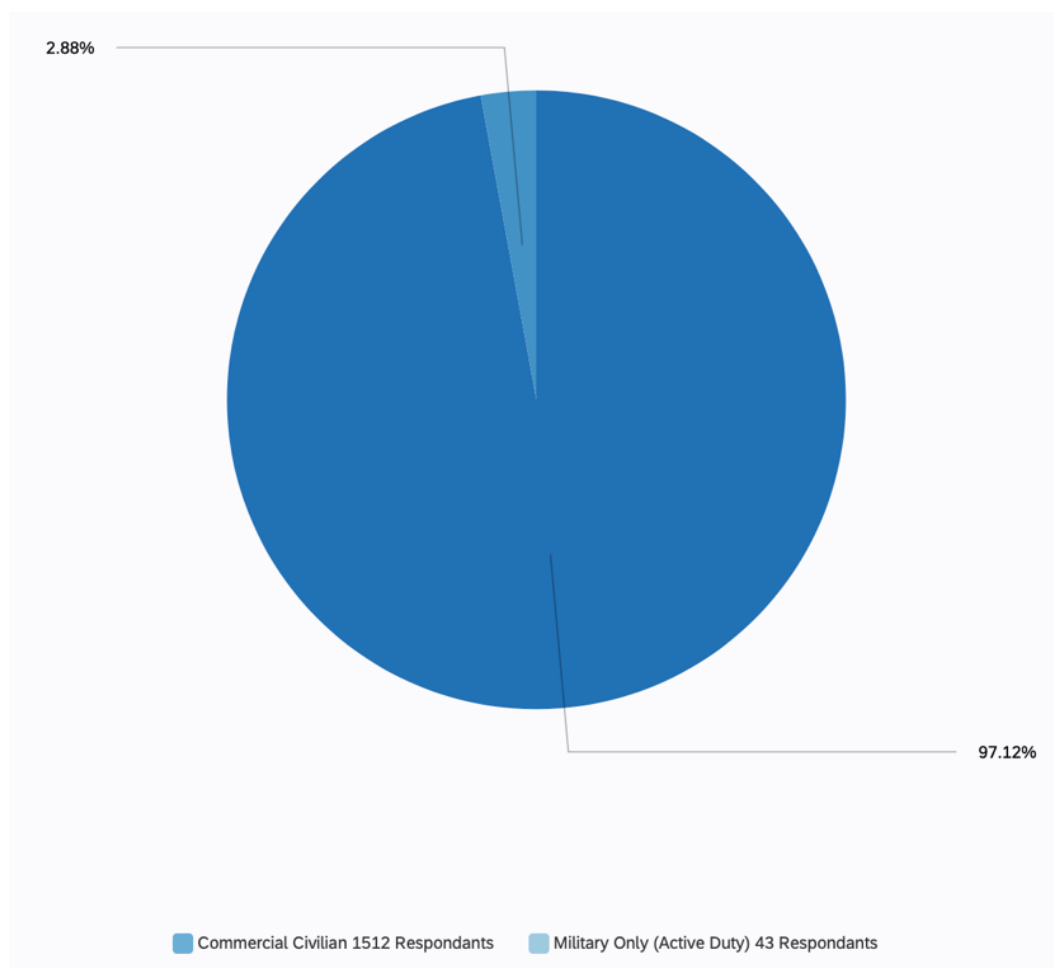
Demographics

Of the 1,248 remaining participants, 1,212 classified themselves as civilian pilots. For survey purposes, civilian pilots with Guard or Reserve commitments were directed to

classify themselves based on their primary job as civilian pilots (Figure 13). Only full time, active-duty military were directed to classify themselves as military pilots. Thirty-six participants selected military as their primary profession.

Figure 13

Percentage Breakdown Civilian vs. Military Participants

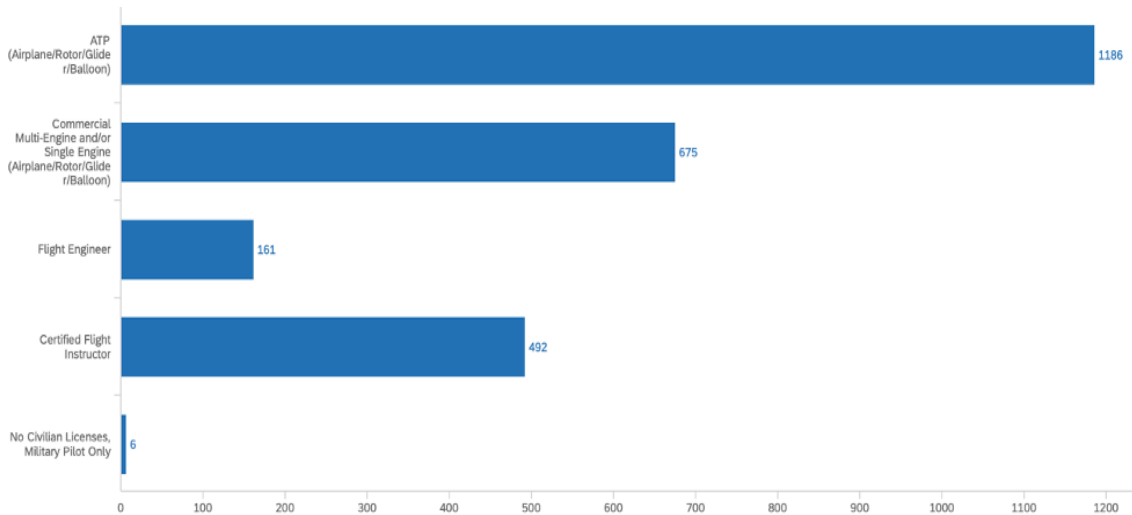


Next, participants were asked to list all of their FAA certificates and ratings. Ninety-five percent indicate they hold ATP Certificates (Figure 14). At the opposite end

of the spectrum, only 6 participants classify themselves as having no civilian licenses listing “Military Pilot Only” which represent only 0.24% of the dataset.

Figure 14

FAA Pilot Certificates



Respondents were asked to list their various type-ratings (Figures 15-21), by aircraft. A type rating is required in each of the following conditions:

§ 61.31 Type rating requirements, additional training, and authorization requirements.

(a) *Type ratings required.* A person who acts as a pilot in command of any of the following aircraft must hold a type rating for that aircraft:

- (1) Large aircraft** (except lighter-than-air). (*Large aircraft means aircraft of more than 12,500 pounds, maximum certificated takeoff weight.)
- (2) Turbojet-powered airplanes.**
- (3) Other aircraft** specified by the Administrator through aircraft type certificate procedures. *Source:* Federal Register. 14 CFR Part 71

This question was included for validating purposes and netted four participants who were later eliminated for their answers such as a pilot of a PA-28-140, a Piper-brand single-engine, general aviation aircraft that does not require a type rating. This question

also identified the aforementioned dispatcher, flight surgeon and pilot/private owner who are not commercially employed as pilots.

Figure 15

Reported Civilian Type Ratings by Category

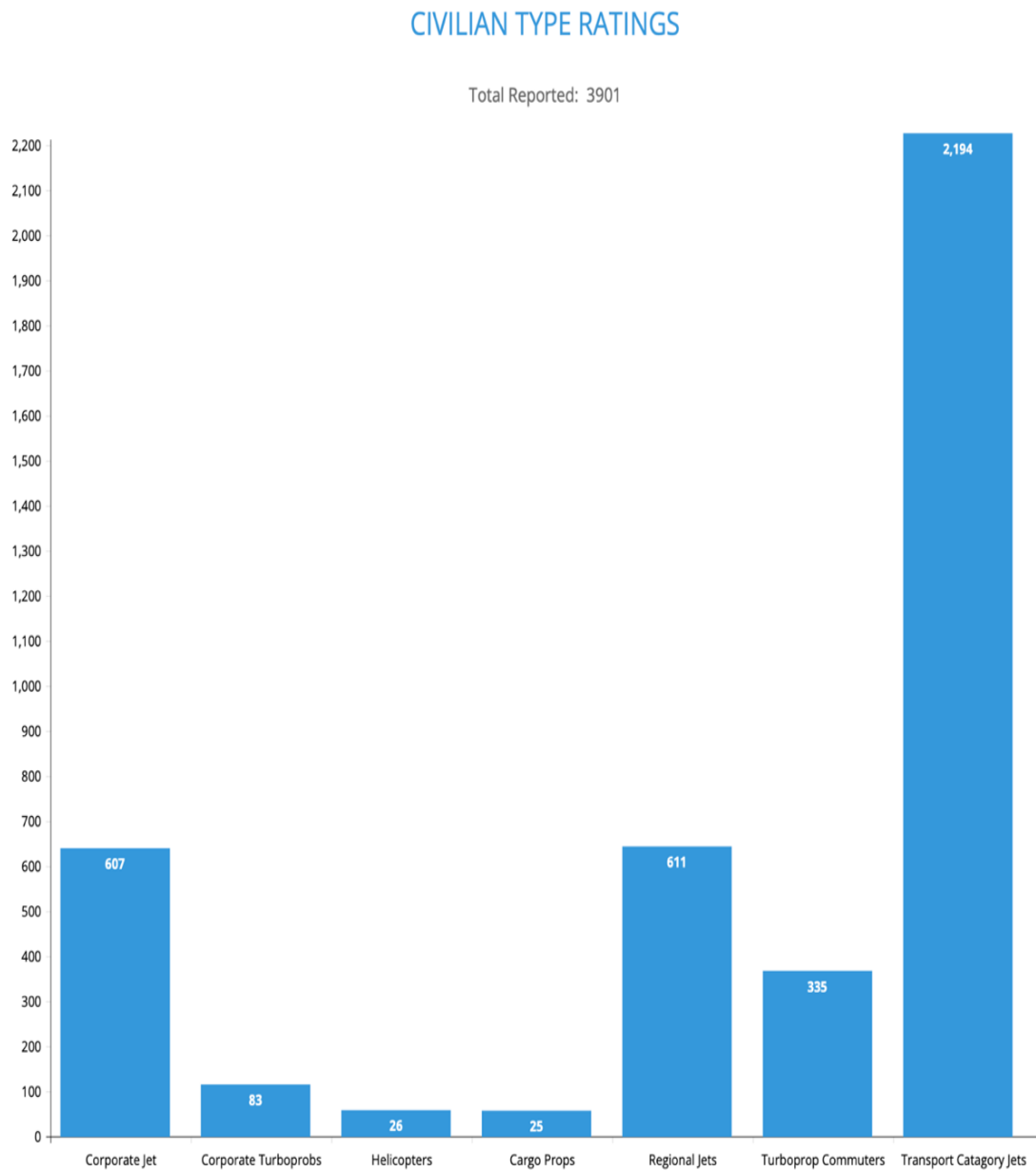


Figure 16

Reported Corporate Jet Type Ratings

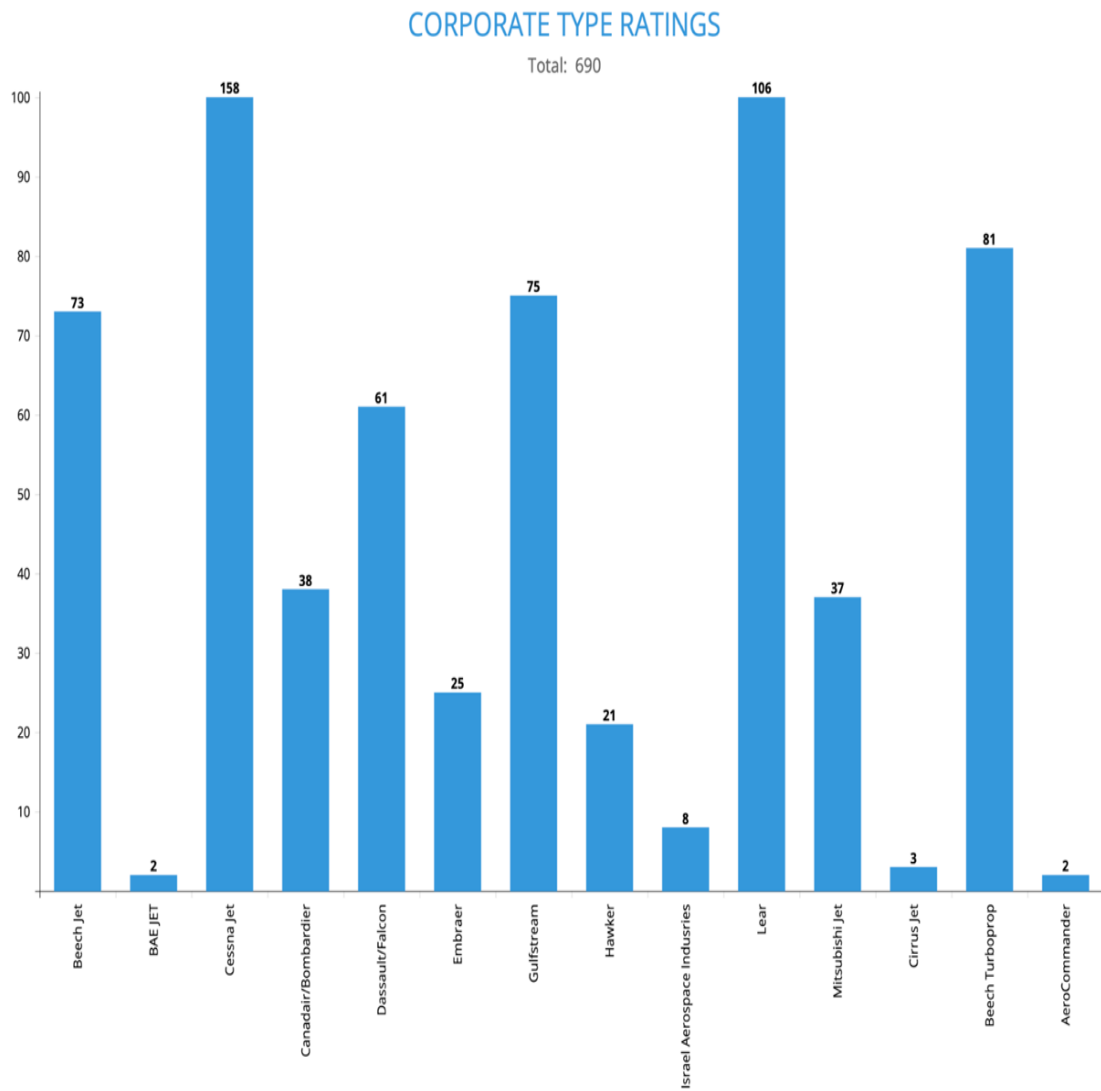


Figure 17

Reported Commuter Type Ratings

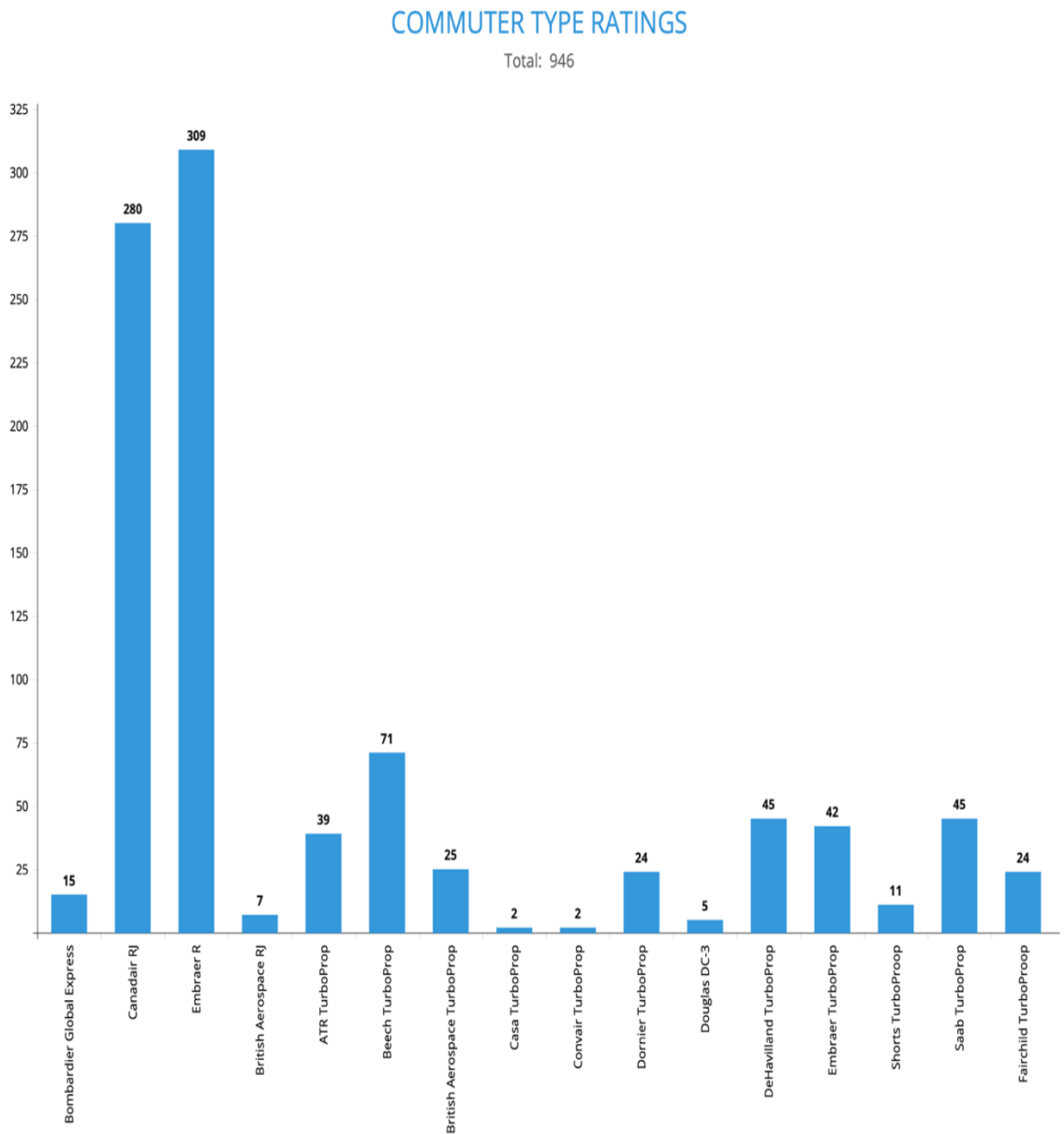
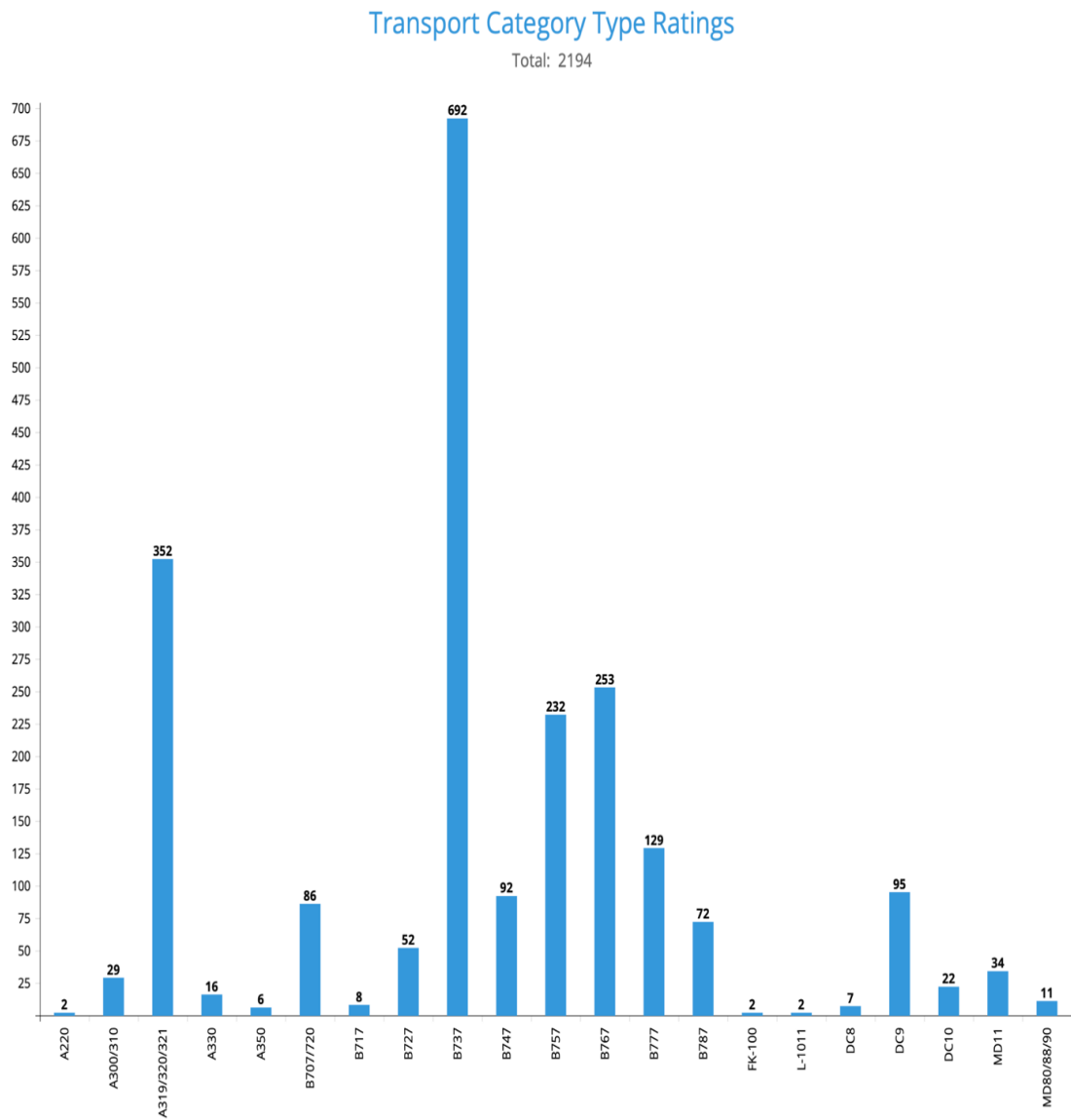


Figure 18

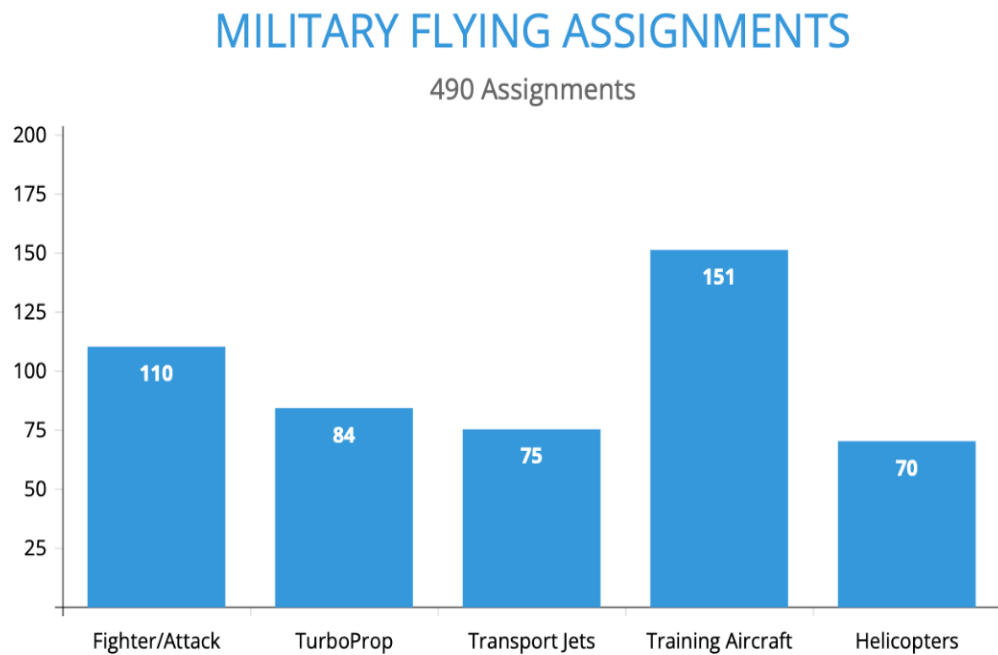
Reported Transport Category Jet Type Ratings



The military pilots and civilian pilots with military experience (Figure 19) were each was asked to detail their experience.

Figure 19

Reported Military Flying Assignments



Next, participants were asked to divulge their employer (Figures 20 & 21). In the case of pilots employed in corporate aviation where flight departments are generally smaller than airlines, or where pilots do not have collective bargaining agreement protections, to ensure confidentiality, those pilots were merely asked to indicate their employer type. The study directed these pilots *not* to state their employer's name to prevent employers from identifying the participant.

Figure 20

Non-airline Civilian Pilot Employment

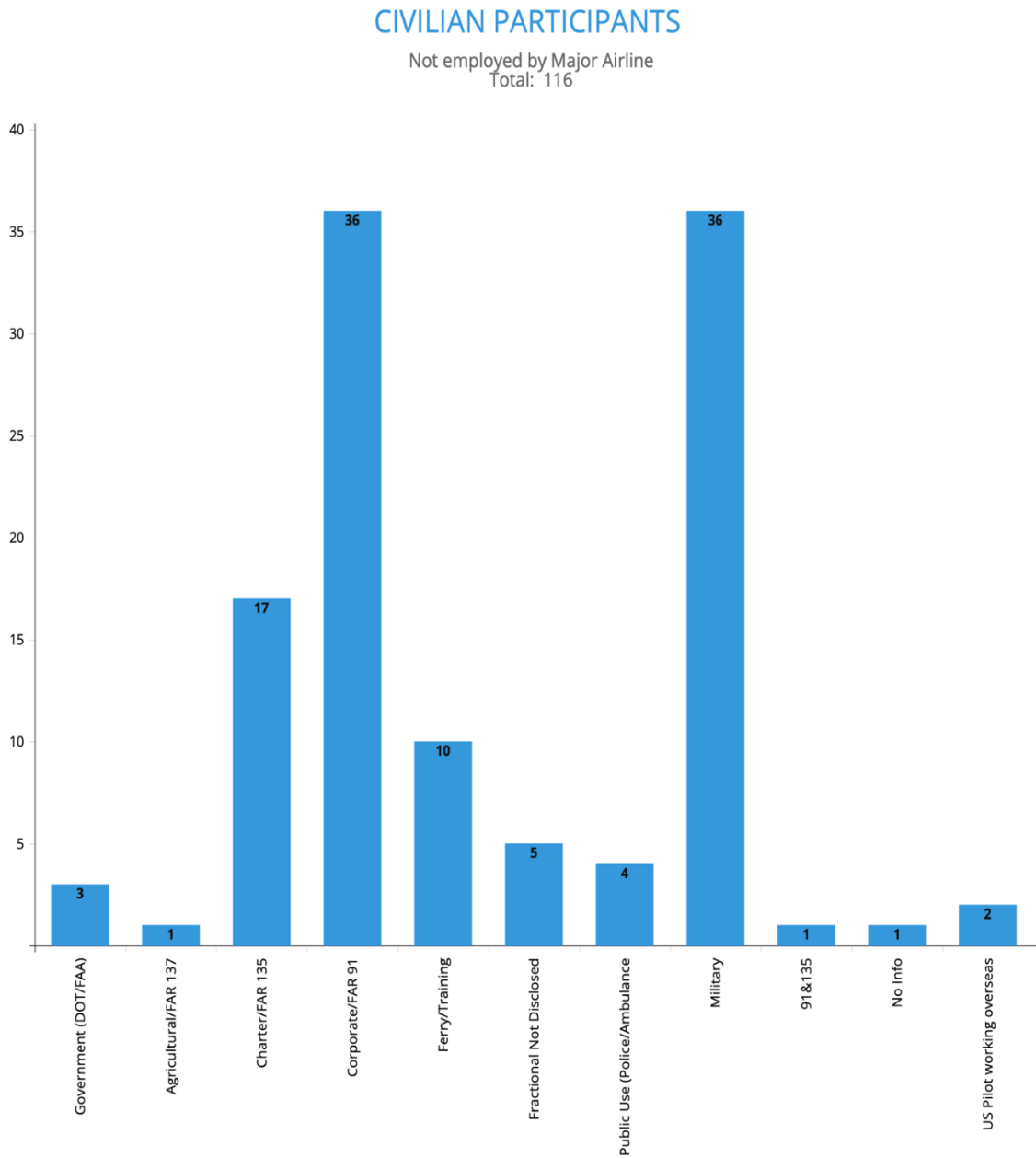
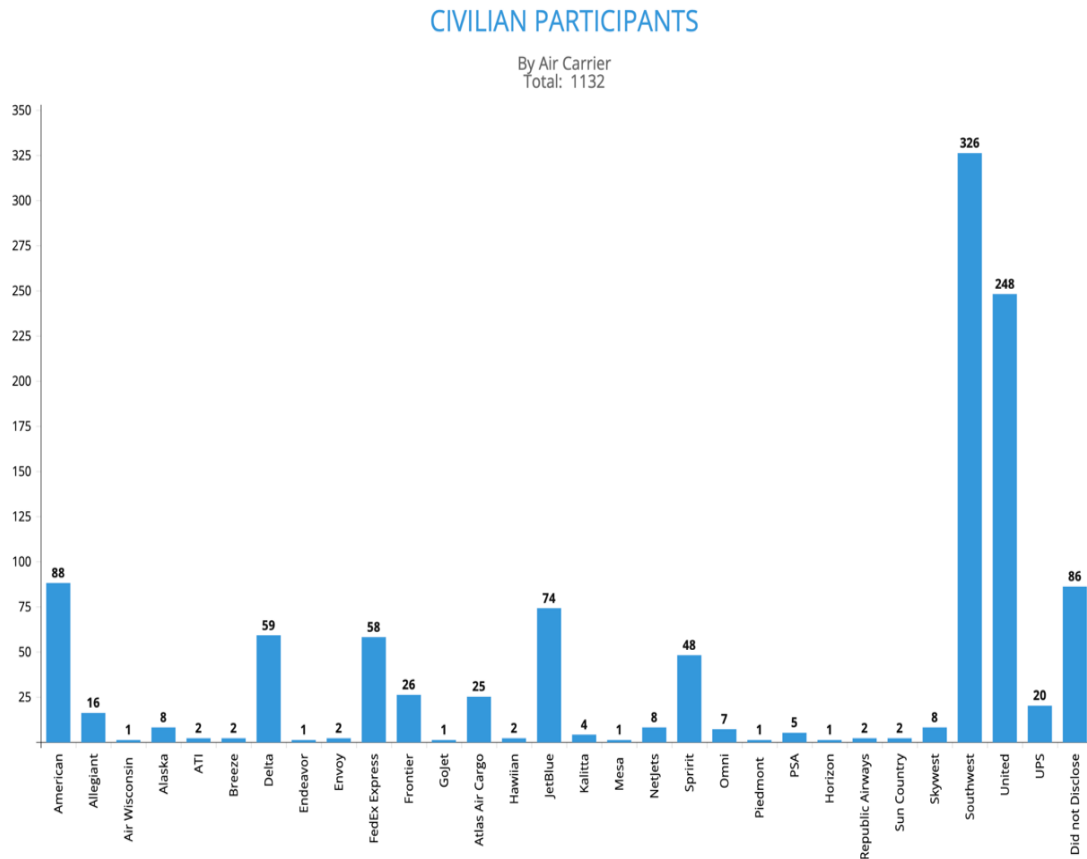


Figure 21

U.S. Civilian Airline Pilot Employment



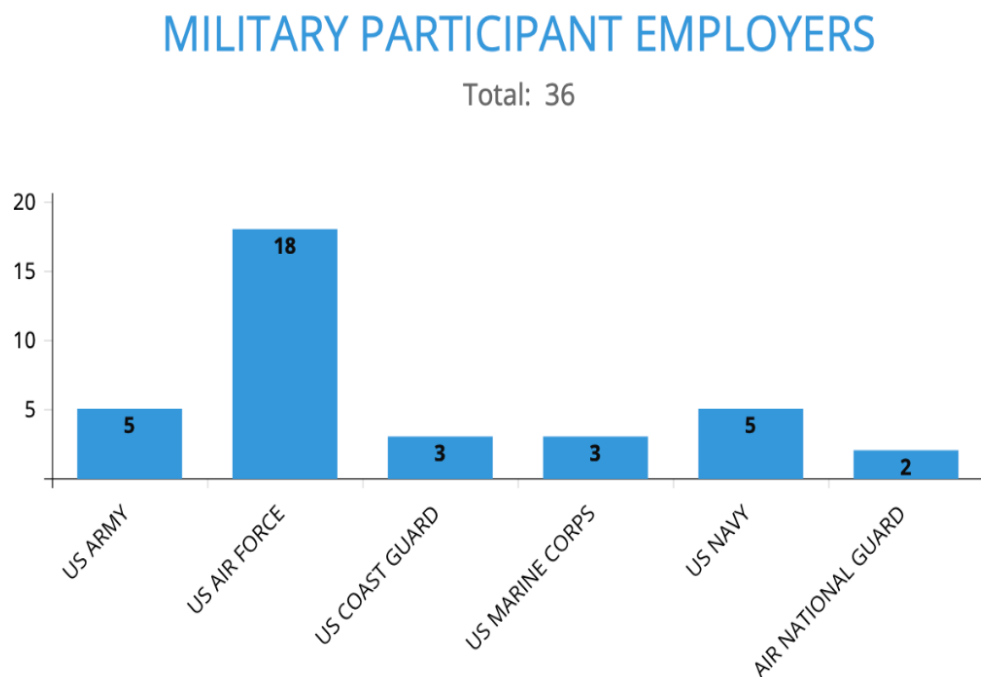
When asked to indicate their employment status, of the 1,248 participants, 1,179 said they are actively working. Ten pilots report being on short-term disability and 27 on long-term disability (LTD). Those who stated they are unemployed were further examined to ensure they were employed during the pandemic so as to remain in the study pool. A Southwest Airlines pilot stated he was unemployed and later that he was on the “sick list.” Because “sick list” pilots remain employed it is likely the participant misunderstood the question. He was, therefore, included, assuming to be on disability. Of the 32 pilots who indicate they were unemployed or retired, only seven state became

so prior to 2021. Analysis indicates all but the participants deleted, as indicated above, were working in 2020 during the pandemic.

Of those who said they are military pilots (Figure 22), one pilot is in “non-flight” status due to medical reasons. Two are in “non-flight” status due to non-medical reasons.

Figure 22

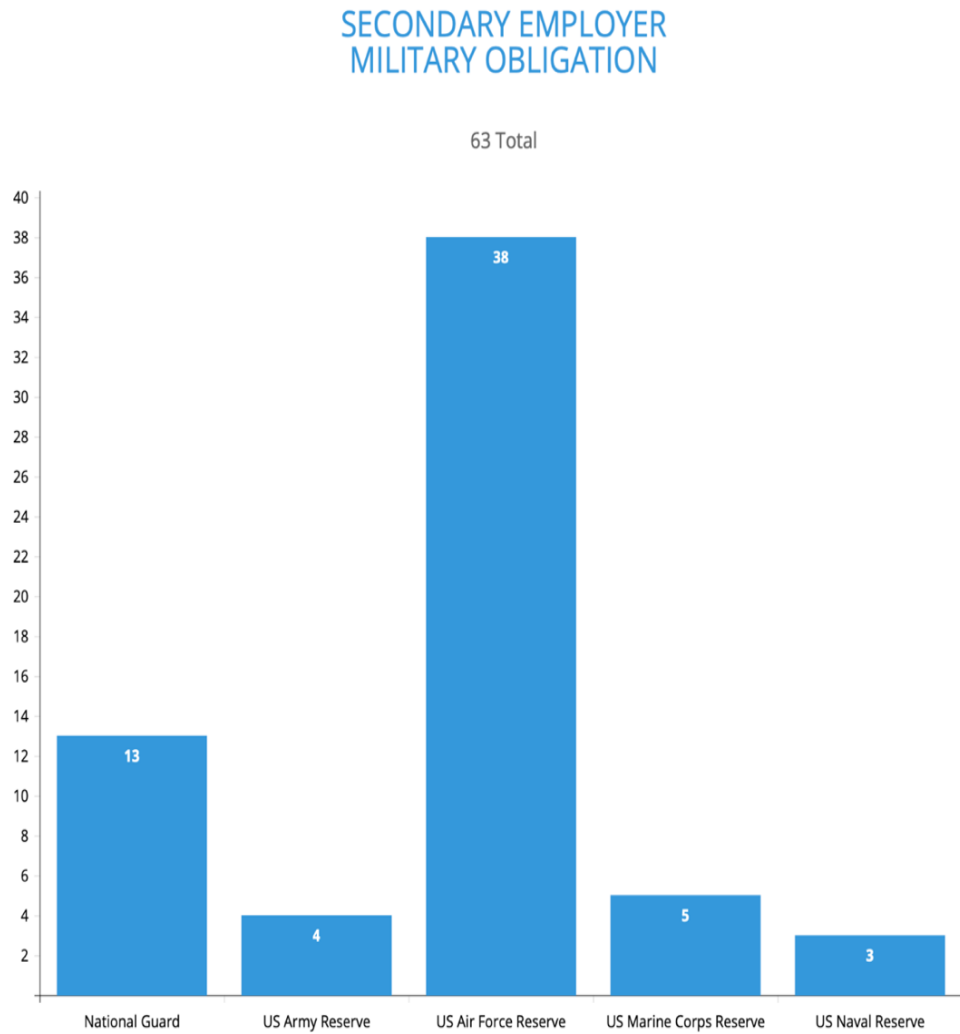
U.S. Military Employers



The survey also asked the 63 civilian, non-full time military participants who indicated they have secondary employment (Guard or Reserve) obligations (Figure 23) to detail their branch of service.

Figure 23

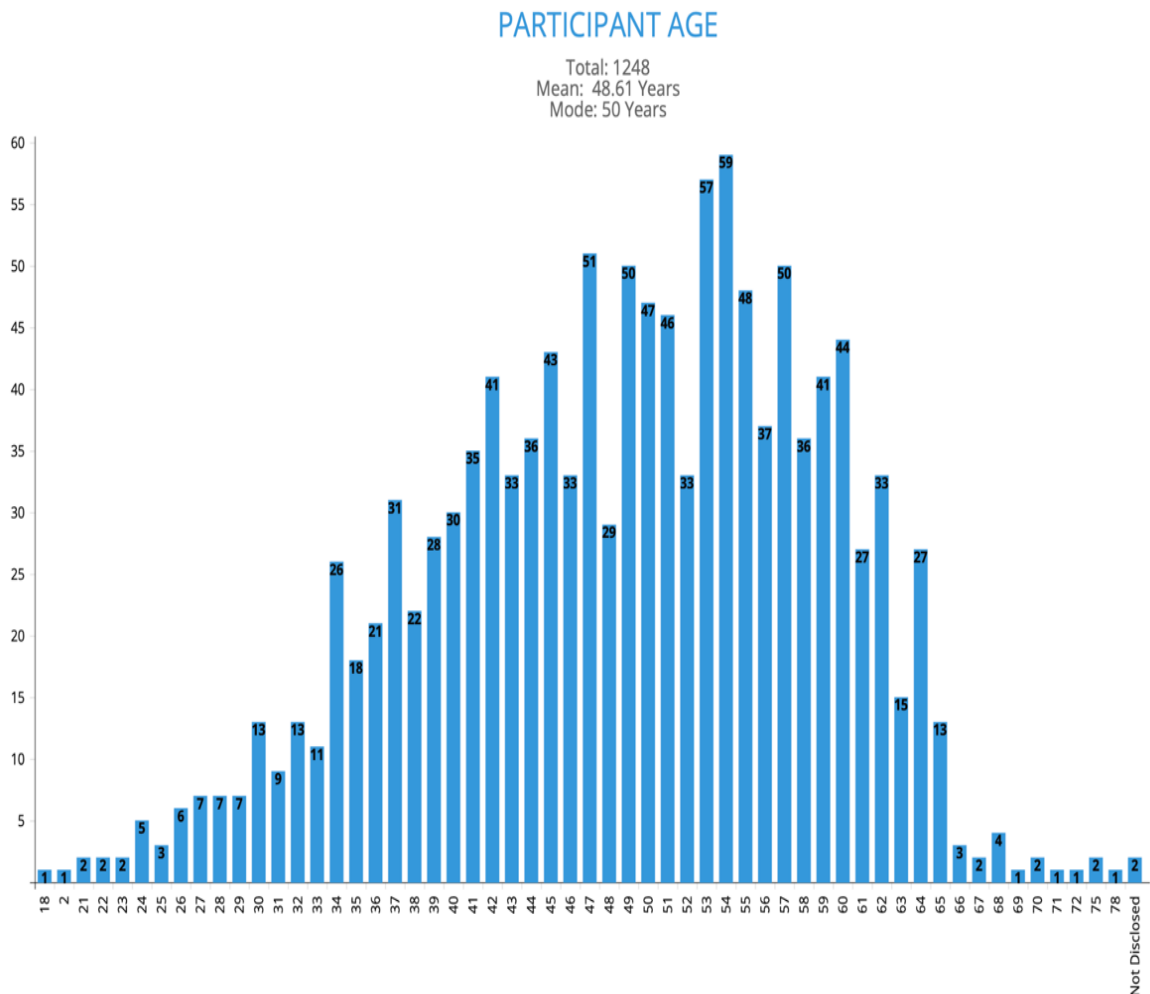
U.S. Civilian Airline Pilot Secondary Military Service Obligations by Branch



The age of the study cohort varies from 18-80 years old (Figure 24) with a mean of 48.6 years old and a mode (middle pilot) of 50.

Figure 24

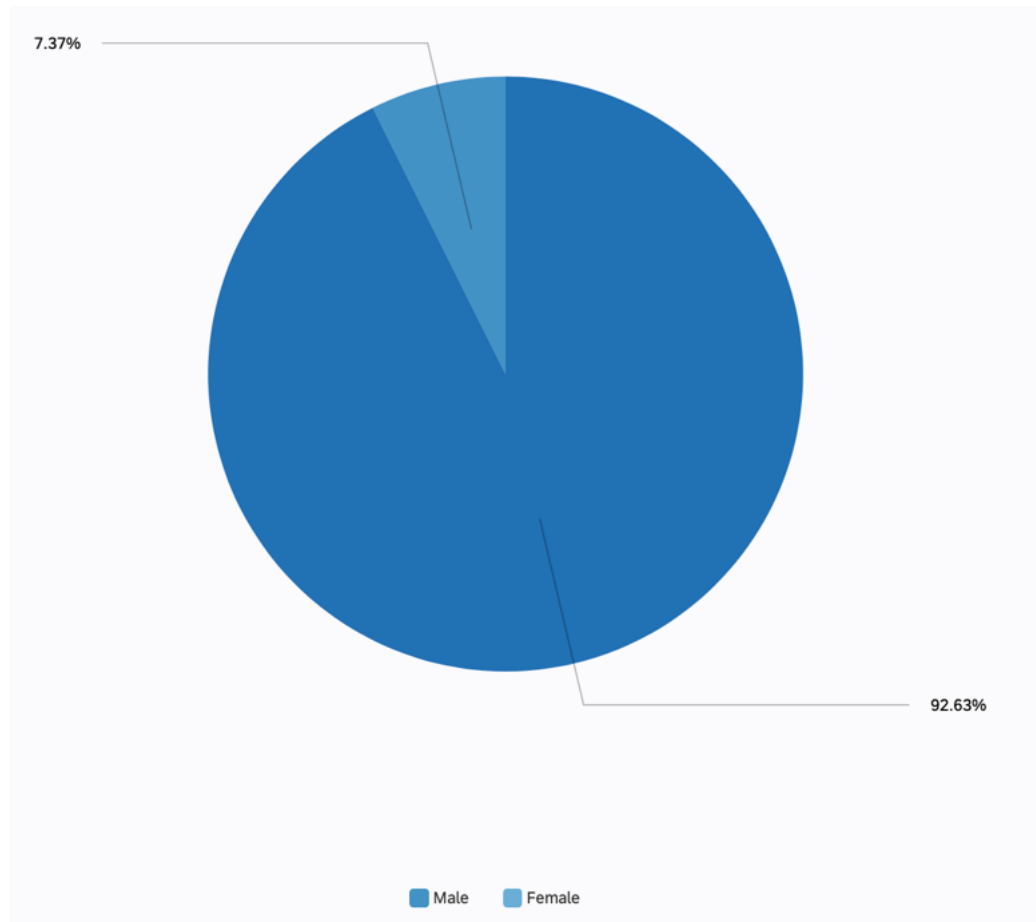
Participant Age



Finally, gender demographics were reported based on the participants' selection on their FAA Medical Application (FAA-FORM 8500-8) and include 1,156 males and 92 females (Figure 25). In 2022, the last year the FAA published their "Estimated Active Women Airman Certificates Held as of 12/21/2022," they report 8,925 female Commercial pilots and 8,206 female APT's. These ladies comprise only 6.32% of the U.S. pilot population. In the study subset, females are slightly over-represented totaling 7.37%.

Figure 25

Gender (Based on FAA-FORM 8500-8)

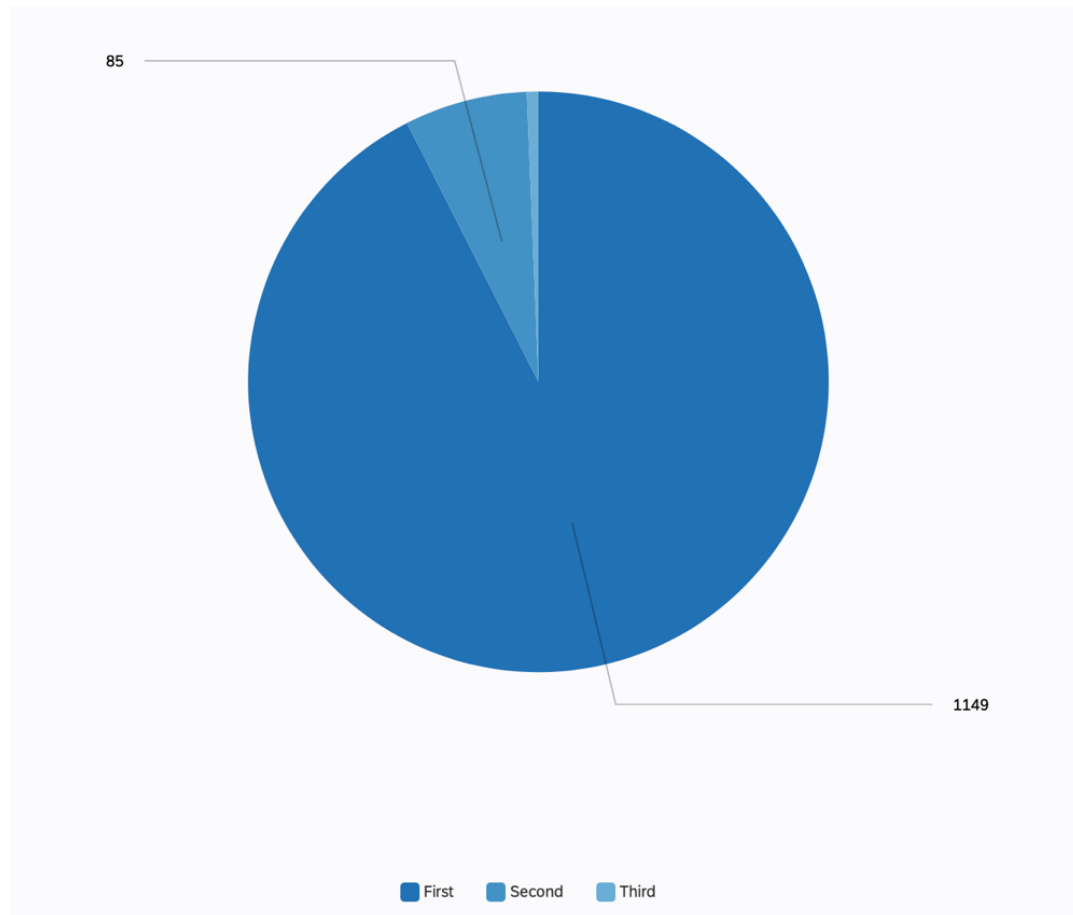


Medical Qualifications

The participants were asked to detail their current FAA Medical Certificate class (Figure 26). Six (6) military pilots do not hold any civilian certificates, and they indicate they do not have valid FAA Medical Certificates. However, all six say they are on active military flight status.

Figure 26

FAA Medical Class

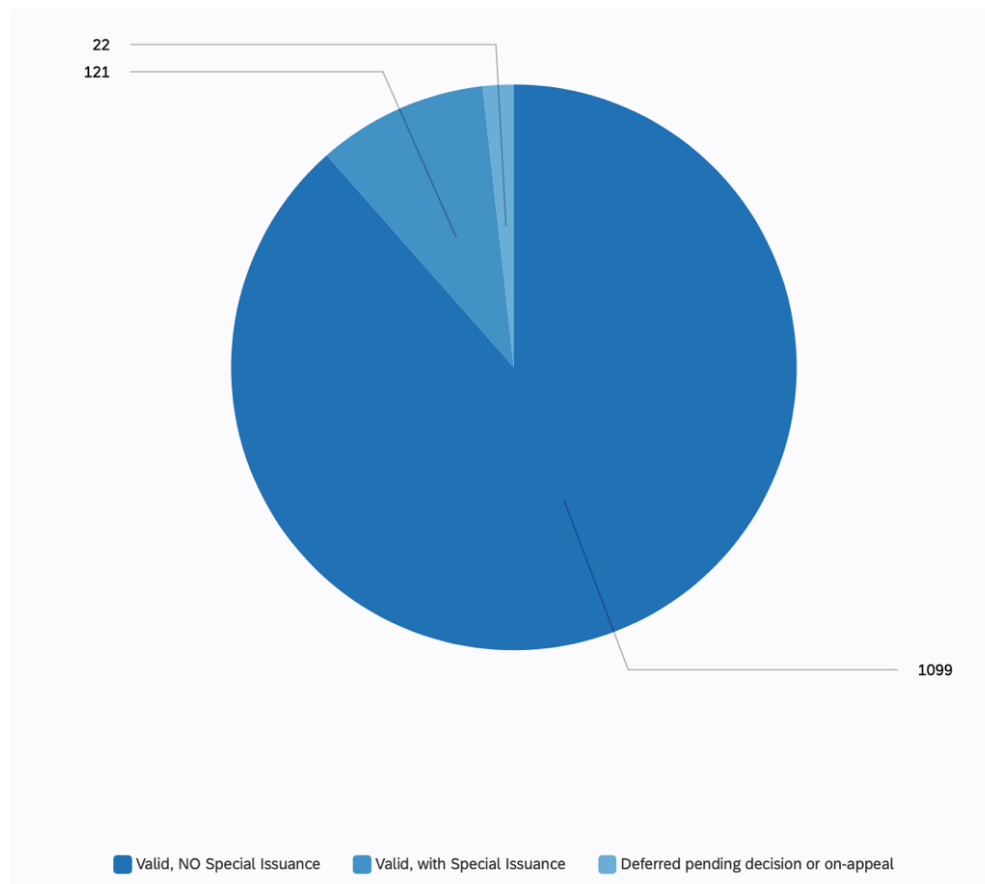


In the case of civilian pilots, 14 say they hold Third Class Medical Certificates, but because a First Class or Second Class is valid for up to two years with Third Class privileges (a rule-set explained in Chapter II) these 14 pilots would have had to have held a First or Second at the time of their employment to legally operate. Likewise, 85 participants indicate that they hold Second Class Medicals or possibly only have Second Class privileges due to the additional six months granted the holder of a First Class Certificate during which the pilot may only exercise Second Class privileges. The remaining 1,149 participants hold First Class Medical Certificates.

Twenty-two pilots in the study cohort (Figure 27) indicate their FAA medical certification applications are deferred pending review. Another 121 pilots indicate they have Special Issuance (SI) Medical Certificates.

Figure 27

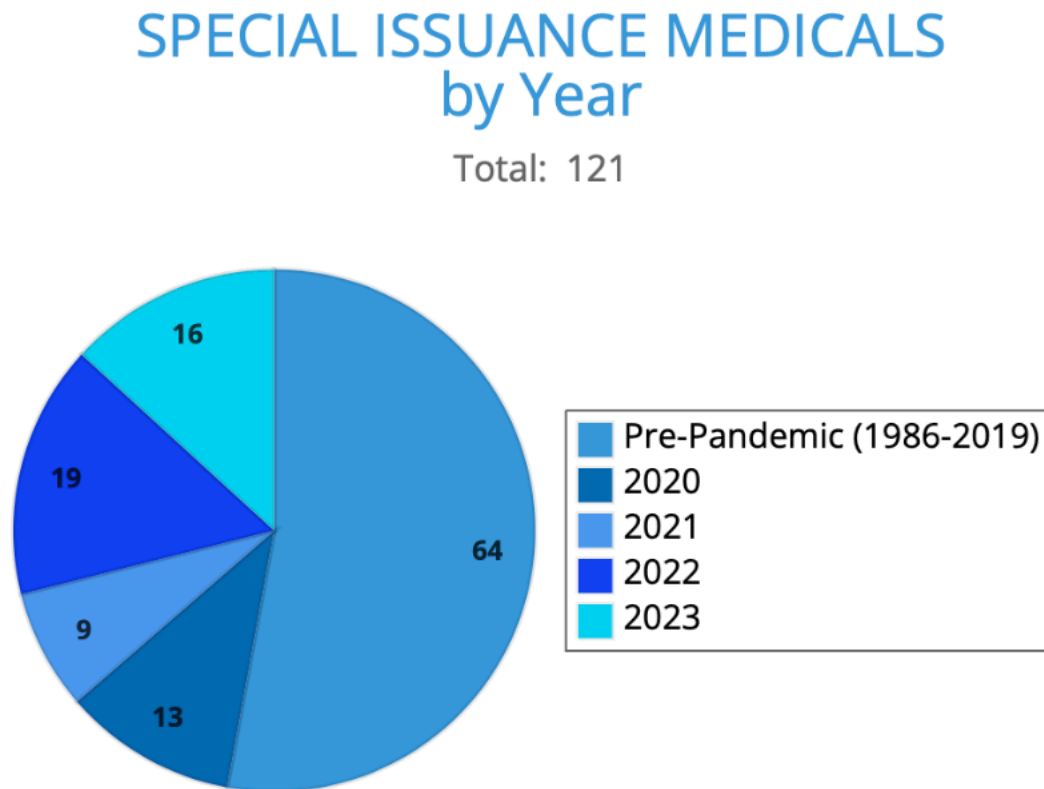
Status of FAA Medical Certificate



With regard to the 121 pilots who say they have SI's (Figure 28), it is important to know when they were initially issued to properly classify them as appropriate in this study.

Figure 28

Special Issuance Medical



Upon further review, when asked if their SI is related to their COVID-19 injections, seven (5.79%) indicate “yes.” This subset was then asked if they had any additional medical concerns that they believe are related to their COVID-19 vaccination. Only 114 of the 121 answered of which 12 said “yes” and 102 said “no.”

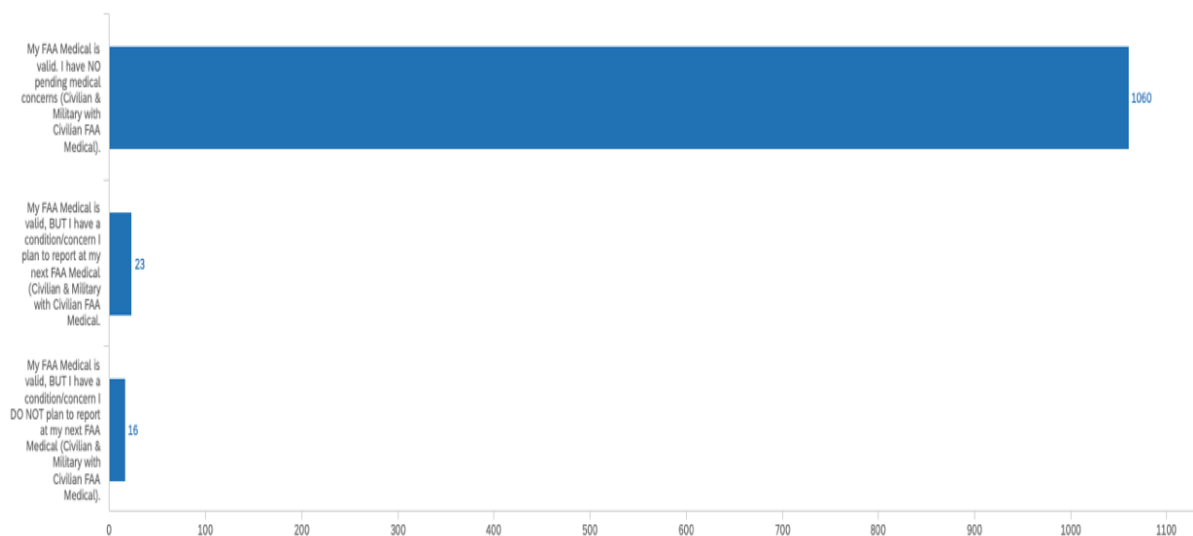
The same questions were asked of those who indicate their medical certificates are deferred. Of the 22 person subset, when asked if their deferrals are related to their COVID-19 vaccinations, nine indicate “yes,” and 13 indicate “no.” Of the 13 who said “no,” one later indicates having concerns relating to their deferral and the vaccine.

Of the 36 military pilots who were asked to detail their medical status, only 33 chose to answer of which 30 have no pending medical concerns. One pilot indicates they have a concern they plan to discuss with their flight surgeon at their next flight physical. Two indicate that they have conditions or concerns, but do not plan to bring them to the attention of their flight surgeon. One of the 36 military pilots says her removal from flight status is due to the vaccine and states she has documented proof. None answered whether or not they have other vaccine related concerns.

Regarding reporting medical concerns to the FAA, 23 pilots indicate that they have valid FAA medicals (Figure 29), but they have a condition they plan to report at their next FAA medical application. Sixteen, on the other hand, indicate while they have a valid medical and they have a condition or concern, they do not plan to report their condition to the FAA at their next flight physical. Keep in mind, however, only 1,099 of the 1,248 chose to answer this question.

Figure 29

Participants Medical Concerns

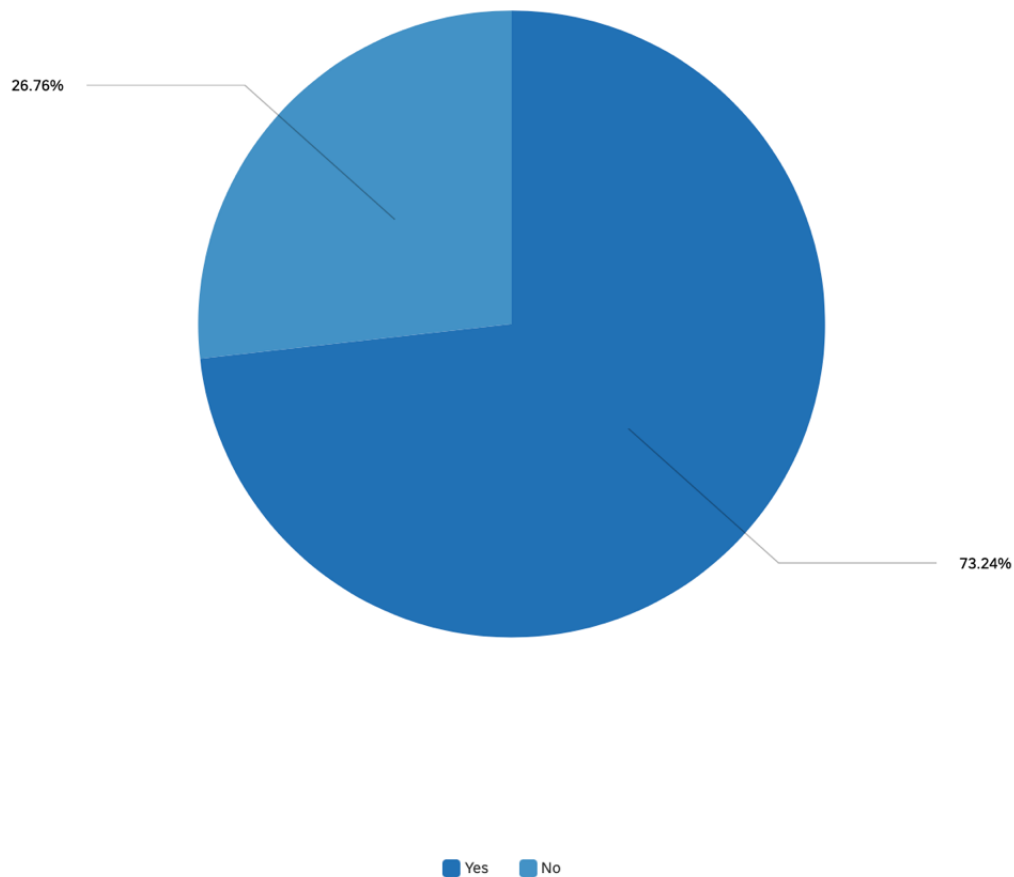


Participant Vaccination Intentions

The next questions probe the reasons pilots chose to take or not take the vaccine. When asked if their primary employer mandated (Figure 30) the vaccine, 914 indicated “yes,” 334 indicated “no.”

Figure 30

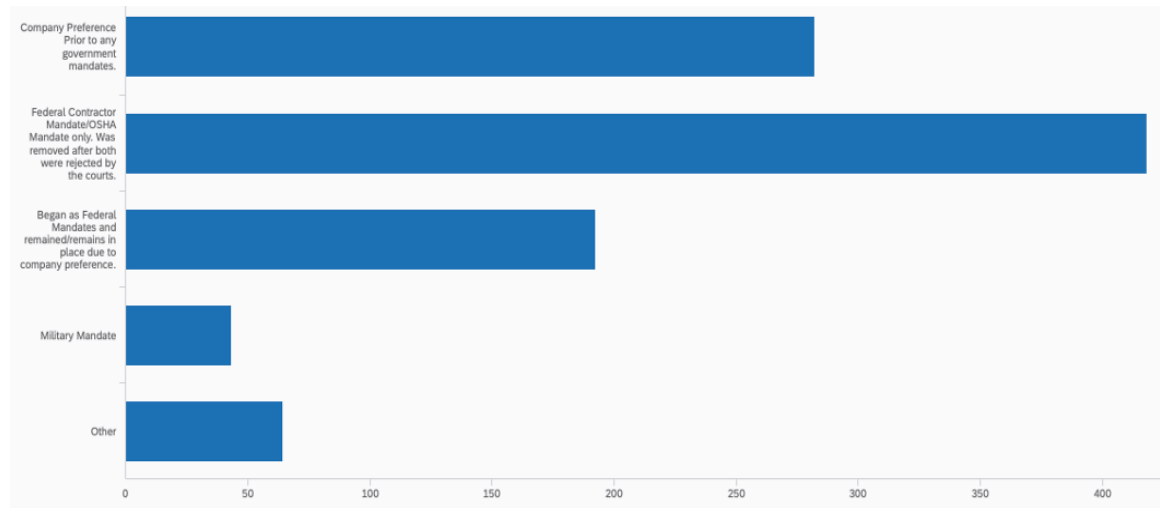
Percentage of Study Participants Under a Vaccine Mandate



When asked the reason for their employers’ mandate (Figure 31), participants indicate as detailed.

Figure 31

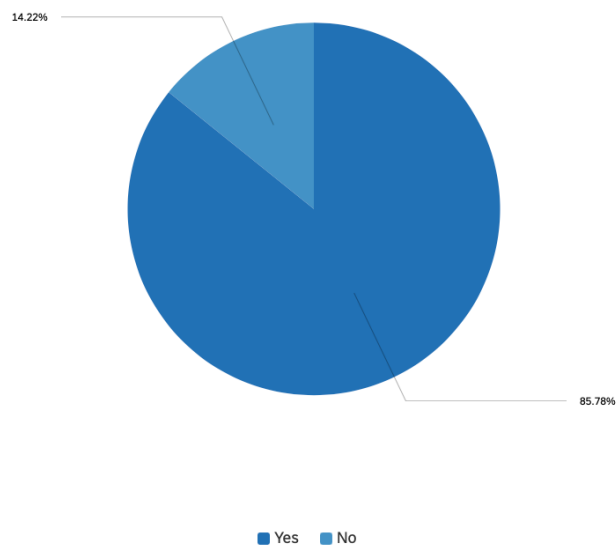
Reasons for Employer Mandate



When asked if their employers allowed exemptions/Reasonable Accommodations (Figure 32), of the 914 mandated pilots, 784 answer “yes,” and 130 say “no.”

Figure 32

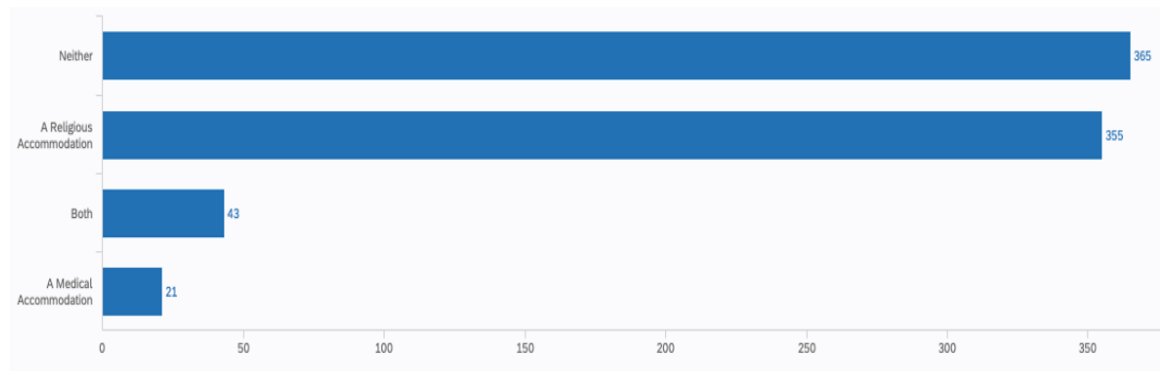
Percentage of Mandated Pilots Who Were Allowed to Seek



Of the 784 pilots whose employers allowed them to request exemptions, Figure 33 details their choices. Note, just under half (46.56%) of those allowed to seek exemptions did not choose to do so.

Figure 33

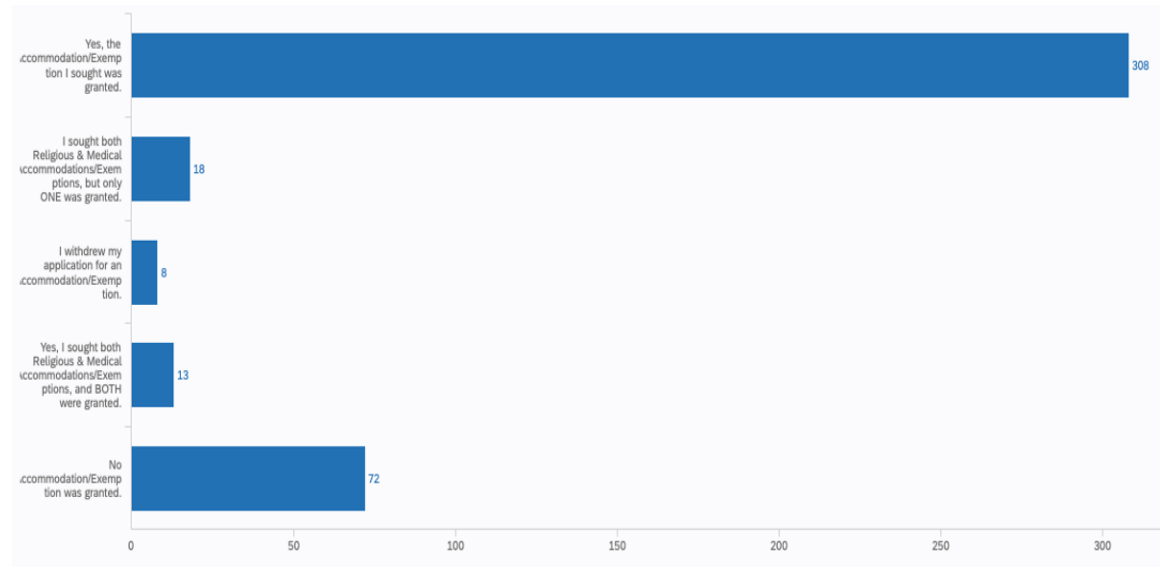
Exemption Choices



Of the 419 who answered they sought an exemption (indicated above), 74% (Figure 34) indicated they received an exemption.

Figure 34

Exemption Results



Of the 308 who state they received an accommodation, Table 4 details the pilots who chose to disclose the terms of their exemption.

Table 4

Participant Accommodations

Number of Participants	Accommodation
82	Unpaid leave/Termination
3	Leave to a point then terminated
12	Masking
4	Masking & Testing
95	Nothing/Show only
1	Increased health Premiums
2	Testing

Pilots who withdrew their request for an exemption gave the following reasons.

Note, participants were allowed to provide multiple answers.

- Fear of Losing my job
- Accommodation unreasonable/untenable
- Company mandate cancelled when federal mandate overruled
- They were going to terminate me if I didn't get the vaccine
- The mandate was overturned
- The accommodation was Unpaid Leave/Termination
- Accommodation unreasonable/untenable
- Company mandate cancelled when federal mandate overruled

- They were going to furlough me if I didn't get the vaccine
- Because the mandate was overturned

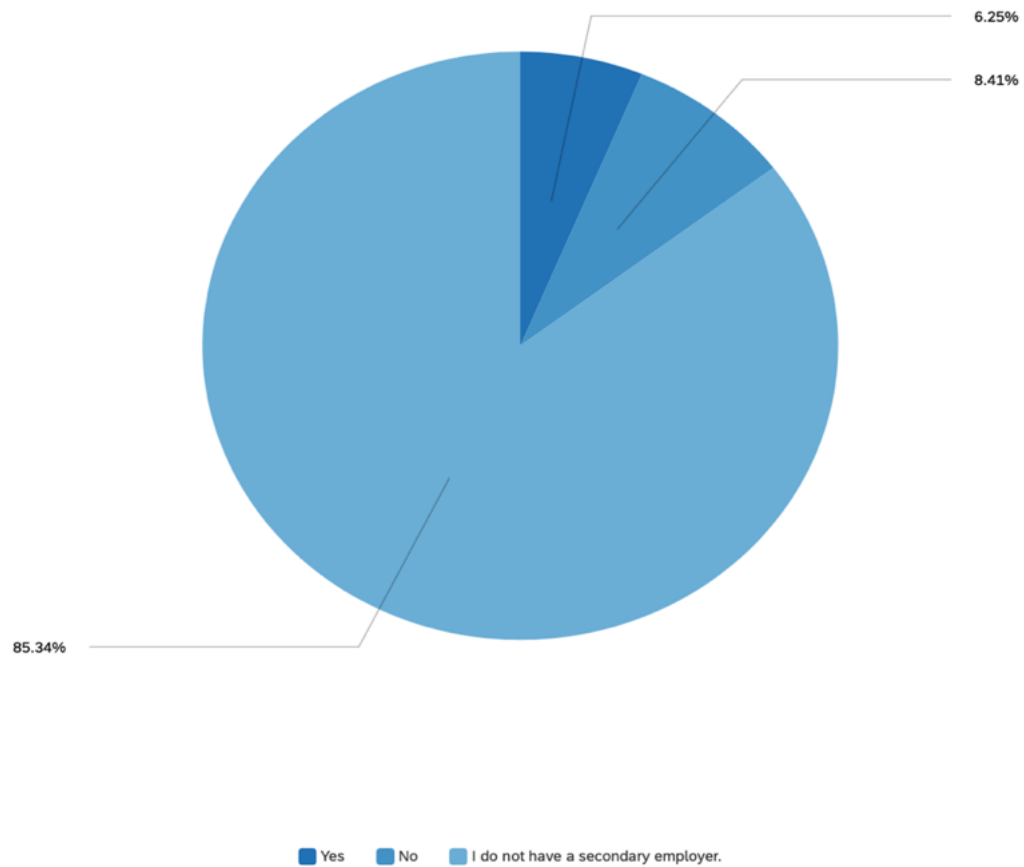
The 72 pilots who stated no accommodation was granted also detailed their situation.

- 8 Government/Military mandate Force readiness; compelling govt interest outweighs religious beliefs; needs of military
- 35 never acted on
- 1 denied for operational necessity
- 4 mandates removed
- 2 Unknown or not given a reason
- 2 told they were a risk to the vaccinated
- 1 Undue hardship
- 1 noncompliance with additional info request
- 1 late filing
- 5 misread the question

A similar set of questions was asked of the civilian pilots who indicate they have a "Secondary Employer." Of the 183 pilots with secondary employers, Figure 35 details the 78 who report their "secondary employer" also instituted a mandate. While the majority did not disclose their employers, many simply marked military. They are assumably guardsmen and reservists. Keep in mind, some Air National Guard units fall under state control while Reserve units fall under federal control which may account for some of the differences. In addition, secondary employers may be corporate, FAR Part 91 operators. Survey takers were given specific instructions to not disclose the name of the corporation so as to preclude the pilot from being identified.

Figure 35

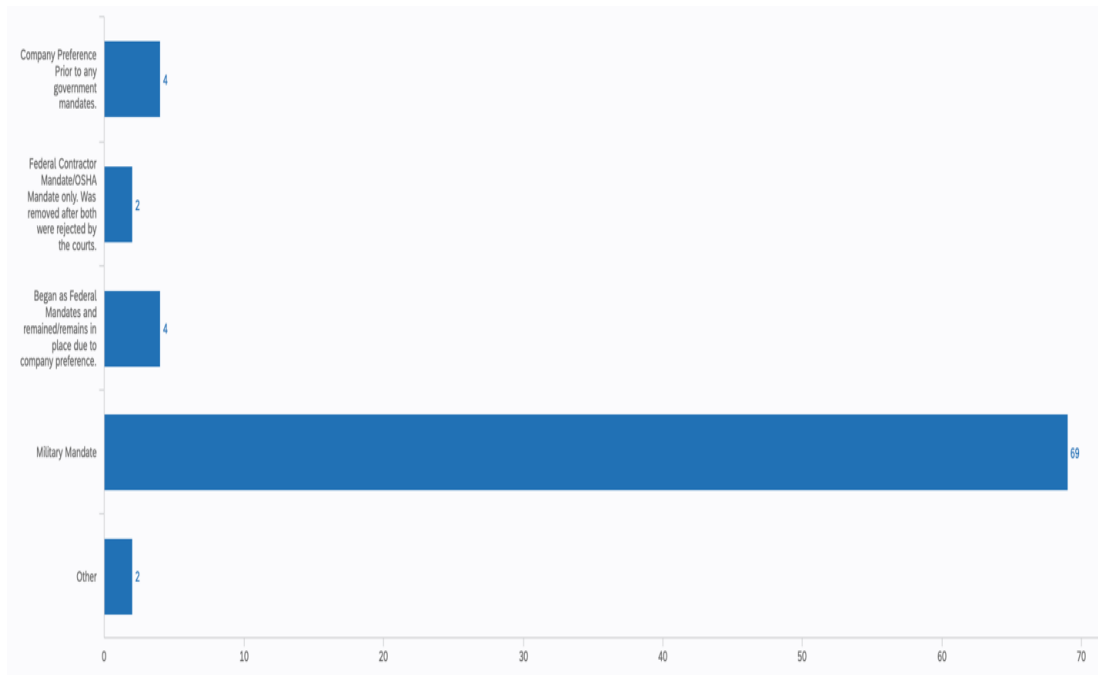
Secondary Employer Mandate Percentage



Participants were allowed to select as many reasons (Figure 36) for their secondary employer mandate as applied.

Figure 36

Secondary Employer Mandate Reasons

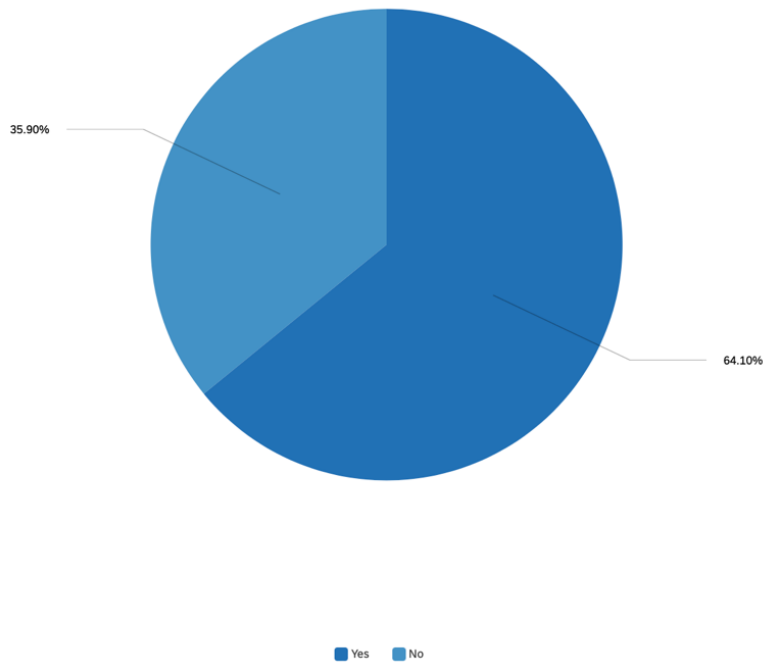


Two pilots submitted comments stating: “Because it was the right thing to do” and wanted to follow recommendation[s].”

Asked if they were allowed to seek exemptions from their secondary employer (Figure 37), 50 answer “yes” and 28 answer “no.”

Figure 37

Percentage Allowed to Seek Exemptions From Their Secondary Employers



Of the 50 pilots who were able to seek exemptions from their secondary employer, 25 did not choose to do so and 25 did, of which only two were granted. Both pilots who were granted exemptions shared their employers' reasons.

- Request medical exemption due to COVID caused AV block, diagnosed by Army Doctor and I was grounded for 6 months for further study. Another Army Doctor recommended exemption to the mandate due to studies showing the vaccine could worsen existing AV blocks [sic]. However, the medical exemption was denied and then denied again on appeal with only the statement of “not contradicted by the CDC.” The mandate was removed prior to the final decision on my religious exemption request.

- I received a temporary (1 year) medical exemption due to an allergic reaction to ingredients found in the Johnson & Johnson COVID vaccine.

When asked for the reason for their Secondary Employer's denial of their exemption requests, all 23 indicate they are military guardsmen or reservists. Eighteen responded to the question as to why they were denied stating the following reasons:

10 Force Readiness

2 Not processed

3 Mandate lifted before processed

3 other include political comments

Table 5 below details the entire participant cohort mandate status.

Table 5

Summary of Participant Mandate Data

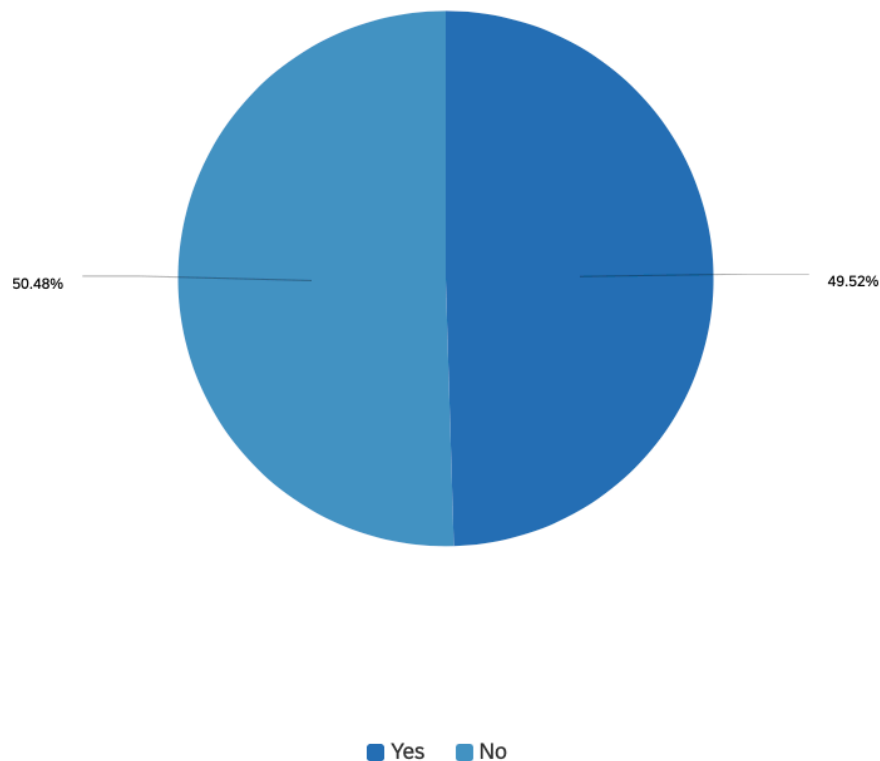
	Primary Employer	Secondary Employer
Under Mandate	73%	43%
Allowed to Seek Exemption	85%	63%
Did Seek Exemption	53%	50%
Withdrew or Denied	19%	92%

Participant Vaccination Status

This section examines the study participants' vaccination status. Of the 1,248 participants, 618 indicate they are vaccinated (Figure 38); 630 indicate they are not.

Figure 38

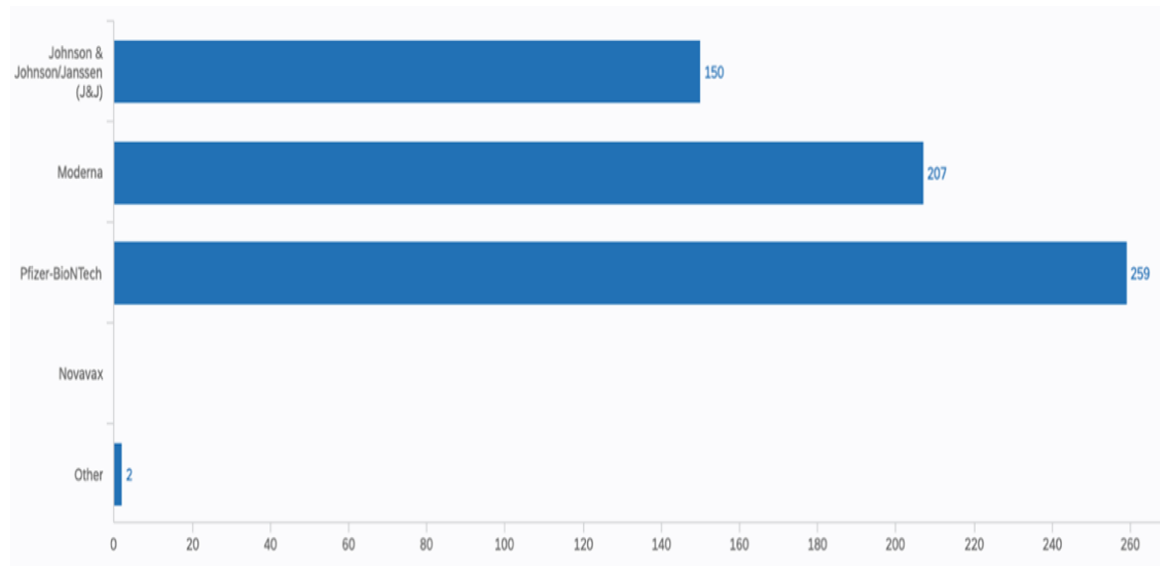
Participant Vaccination Status



Four types of vaccines (Figure 39) were available under EUA in the U.S. at some point during the pandemic. They include Johnson & Johnson (Janssen), Moderna, and Pfizer BioNTech, and Novavax. Those listing “other” did not explain.

Figure 39

Participant Vaccine Brand Choice



The Pfizer and Moderna vaccines require a two-dose course. Three Moderna users did not take a second dose and provided no information as to why they did not complete the course. Three Pfizer users also did not complete the second course; however, one cites a reaction to the first dose prevented the second dose. Two state they chose not to get the second dose.

Of the 618 vaccinated pilots, 320 (51.78%) pilots did not take a booster while 298 (48.22%) took one or more. Table 6 details the reasons pilots listed for taking a boosters.

Table 6

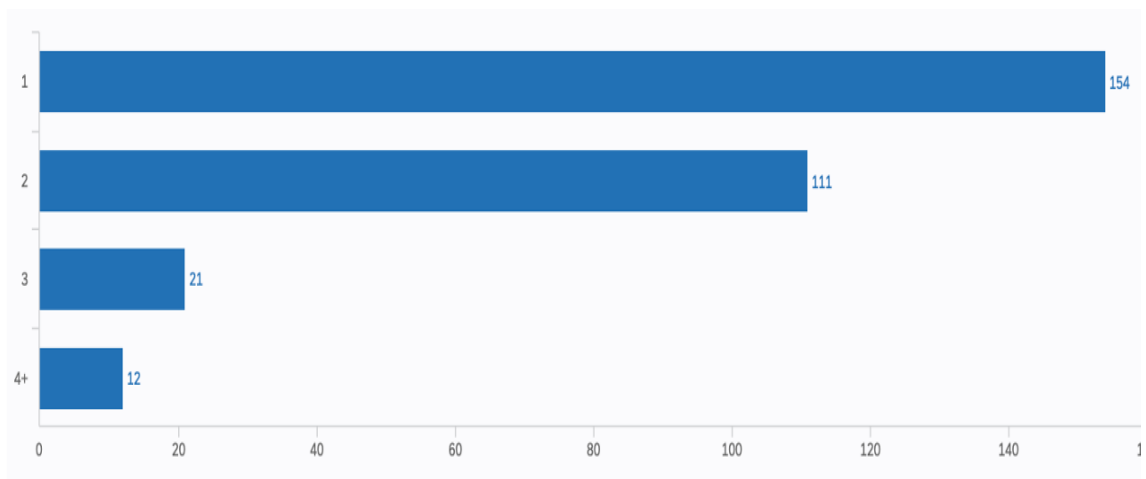
Reasons For Taking a CV-19 Booster

Number of Pilots	Reason
2	Other
1	Fear of Reprisal
3	Health Issues or Medical Professional Recommendation
9	Travel
1	Because after taking only 1 dose of J&J most places would not let you if your card did not contain two entries
2	Medical Facility Requirement (Birth or to see Parents)
3	Appease Family Members or to Join Gatherings
1	3 Hours Add Pay

Probing further (Figure 40), we learn that of the boosted pilots, 51.68% took only one booster; 37.25% took two; 7.05% took 3; and, 4.03% took four or more.

Figure 40

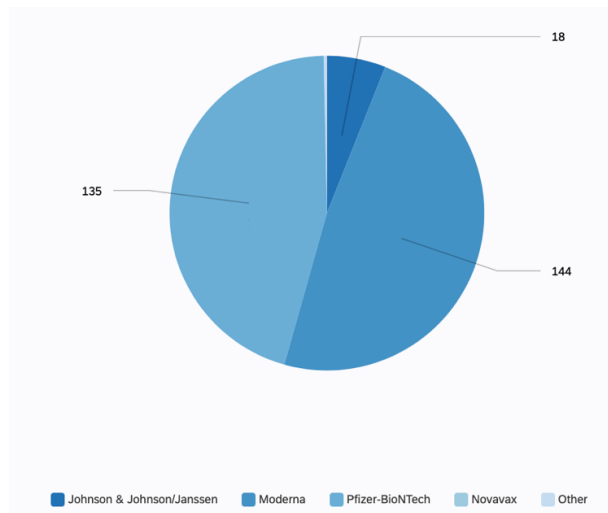
Number of CV-19 Boosters Per Participant



Booster 1 uptake, by brand (Figure 41), included 6.04% J&J, 48.32% Moderna, 45.30% Pfizer, and one pilot who selected “other” but does not indicate the brand.

Figure 41

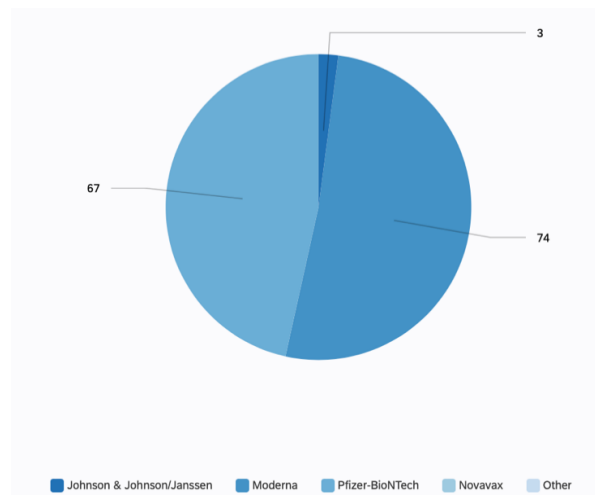
Boosters 1 Selected by Brand



Booster 2 uptake, by brand (Figure 42), included 144 dispensed doses of which 3 (2.08%) were J&J; 74 doses (51.39%) Moderna; and, 67 doses (48.53%) Pfizer.

Figure 42

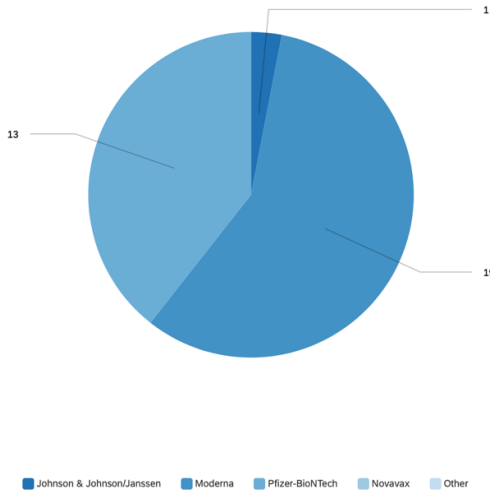
Boosters 2 Selected by Brand



Booster 3 uptake drops off drastically (Figure 43), and includes just 1 dose of J&J (3.03%); 19 (57.58%) doses of Moderna; and, 13 (39.39%) doses of Pfizer.

Figure 43

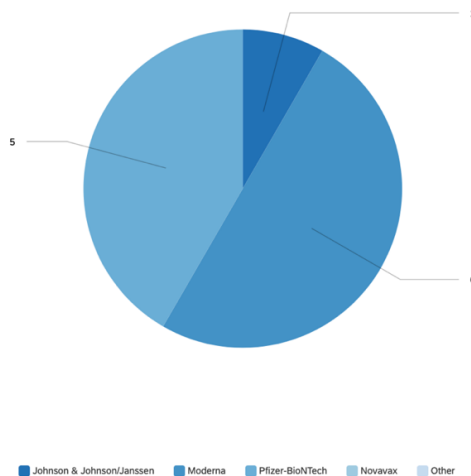
Boosters 3 Selected by Brand



Of the twelve pilots who indicate they took four or more boosters (Figure 44), the brands include 1 (8.33%) J&J; 6 (50.0%) Moderna; and, 5 (41.67%) Pfizer doses.

Figure 44

Boosters 4 Selected by Brand

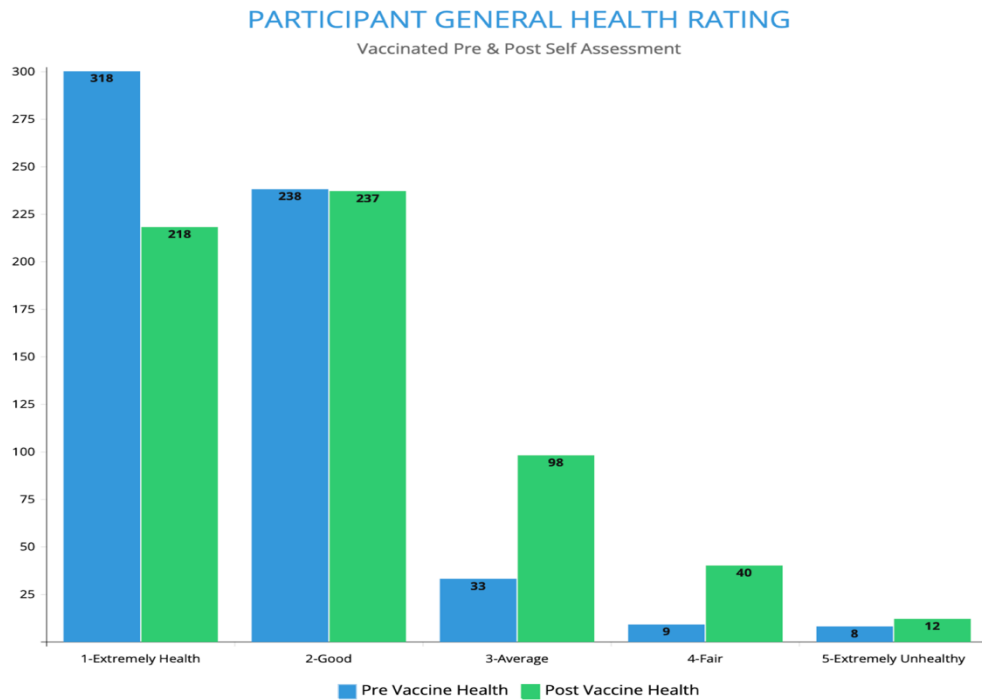


General Study Cohort Health Assessment

In an effort to determine the individual pilots' opinions of their overall health, pre- and post-vaccine (or booster), they were asked to rate their assessment of their health status on a scale of 1-5 scale with 1 being "extremely healthy;" 2 being of "good health;" 3 of "average health;" 4 indicates "poor health;" and 5 being "extremely unhealthy" (Figure 45). Of the 618 vaccinated pilots, 605 answered the pre-vaccine and only 604 answered the post-vaccine questions. The reason for the missing data is undeterminable. In general, pilots judged themselves to be in good health prior to vaccination as would be expected of a cohort subject to at least annual FAA medical certification. However, the numbers skew down and right as the 163 participants drop their personal health assessment scores in the post-vaccine question between 1 and 4 steps (average decrease - 1.638 steps). Those who say they have experienced no overall change in their health totals 402. Twenty-nine (29) pilots say their overall health improved post-vaccine (average increase 1.207 steps). Note, the chart does not represent mated pair answers.

Figure 45

Pre & Post Vaccine Individual Health Assessment

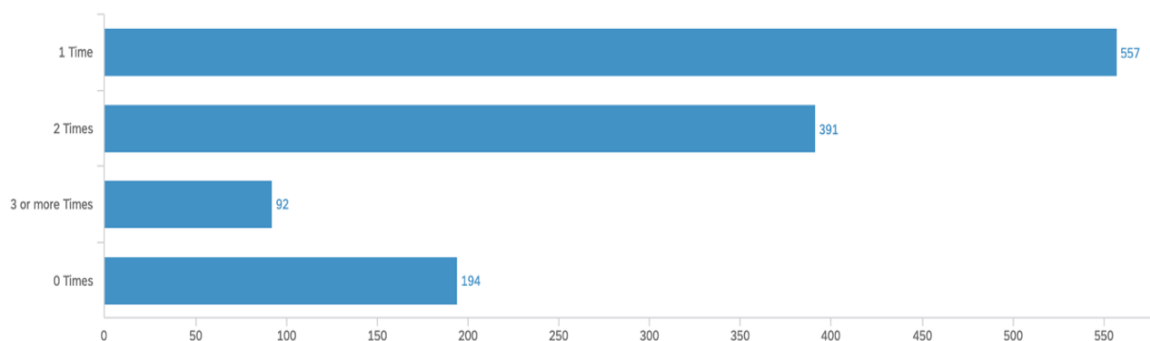


COVID-19 Occurrence

Examining the overall health of the study cohort, the participants were asked how many times they were diagnosed with the COVID-19 virus (Figure 46). Of the 1,248 Participants, 1,234 answered.

Figure 46

COVID-19 Infection Occurrences



In an attempt to examine the general COVID-19 vaccine effectiveness (Table 7), pilots were asked to indicate when they experienced the virus, if they did.

Table 7

CV-10 Infection Occurrence In Vaccinated Participants

Number of Participants	Occurrence
104	No Infection
92	Infected PRIOR to vaccination (represents 137 cases)
83	Infected PRIOR to vaccination, and again AFTER vaccination, but BEFORE any boosters (190 cases)
105	Infected AFTER vaccination & booster (146 cases)
175	Infected AFTER vaccination but BEFORE booster (238 cases)
29	Infected PRIOR to vaccination & again AFTER being vaccinated and boosted (64 cases)
11	Infected AFTER vaccination & again BEFORE and AFTER booster (22 cases)
5	Infected PRIOR to vaccination then BEFORE and AFTER booster (15 cases)

Total Pilots: 608

Total Cases: 816

*14 Did not answer

**The answer option “3+ times” was tabulated as only 3 times since there is no to determine how many infections were experienced in excess of 3.

Nearly identical case numbers were collected (Table 8) from the 630 unvaccinated pilots.

Table 8:

CV-19 Infection Occurrence In Unvaccinated Participants

Number of Participants	Infection Occurrence
90	0
302	1
203	2
35	3+

Total Pilots: 630

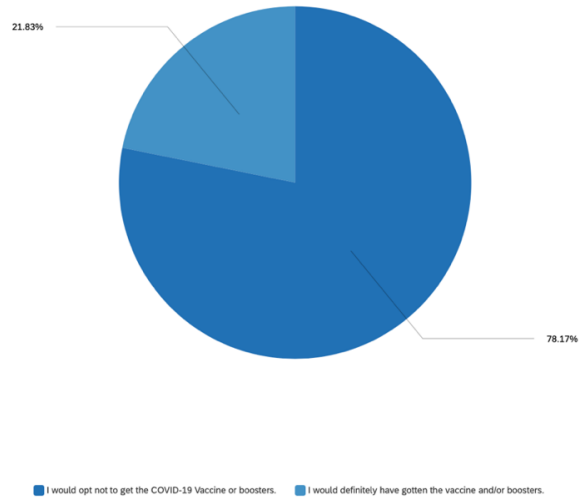
Total Cases: 813

Vaccine Attitudes

Next, the study explores the attitudes of the pilots measured post-pandemic by asking, “Given what you know now, would you still have opted to get the vaccine or boosters?” Of the 1,248 participants, 1,232 answered—936 say they would not have gotten the vaccine or boosters (Figure 47). Only 269 say they would.

Figure 47

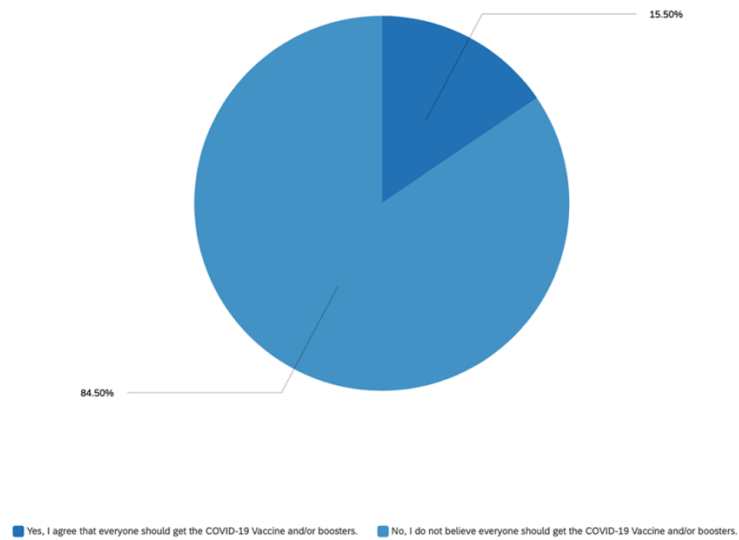
Retrospective Vaccine Personal Uptake Opinion



An even greater margin (Figure 48) does not believe that everyone should get the vaccine or booster.

Figure 48

Retrospective Participant Opinion of Vaccination for Others



When asked if participants would advise others to take boosters, the numbers fell in the middle with just shy of 20% saying “yes.” When asked their planned action should their employer mandate boosters (Figure 49 & Table 9), 1,231 participants answer detailing their willingness and their planned courses of action.

Figure 49

Mandatory Booster Acceptance Among Study Participants

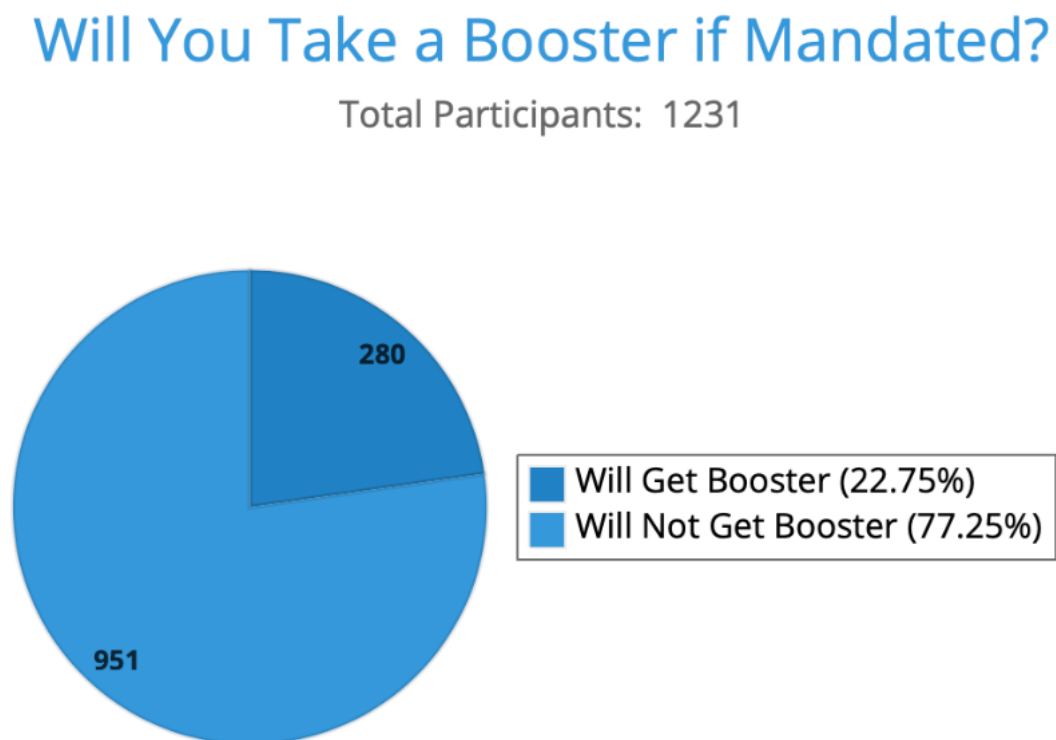


Table 9*Comparison of Actions if Boosters are Mandated Among Study Participants*

Pilots	Choice
279	I will get the booster
1	I will Seek an Exemption/Reasonable Accommodation, but would eventually get one.
280	Total YES
405	I will seek an exemption/Reasonable Accommodation
527	I will not get the booster even if it means I must quit, retire, or be terminated
19	I will seek an exemption/Reasonable Accommodation, but I will not get a booster even if it means I must quit, retire, or be terminated
951	Total NO

Q36'ers

This retrospective, observational study was designed to explore the incidence of adverse vaccine effects on the health of a multi-airline pilot cohort. Once the entire data set was analyzed for demographics, infection rates, and attitudes, the study pool was further dissected by sorting for those who answered “yes” to Question 36, “Do you believe you have a medical condition caused by receiving a COVID-19 vaccination or booster?” At the heart of this study is the data presented by those who answer “yes” to Question 36, affectionately dubbed, “the Q36'ers.” Of the 618 vaccinated pilots detailed above, 145 (23.7%) answered “yes.”

This sort resulted in 150 submissions. Five submissions were subsequently removed. Three participants selected “yes,” but after further analysis their answers are likely mistakes based on the remainder of their answers. Two participants were removed for their ages (75 and 80, respectively). They both claim to be airline pilots, but state that they retired. Due to mandatory retirement at age 65, and because they do not indicate additional employment post-airline, is likely they were forced to retire prior to the pandemic.

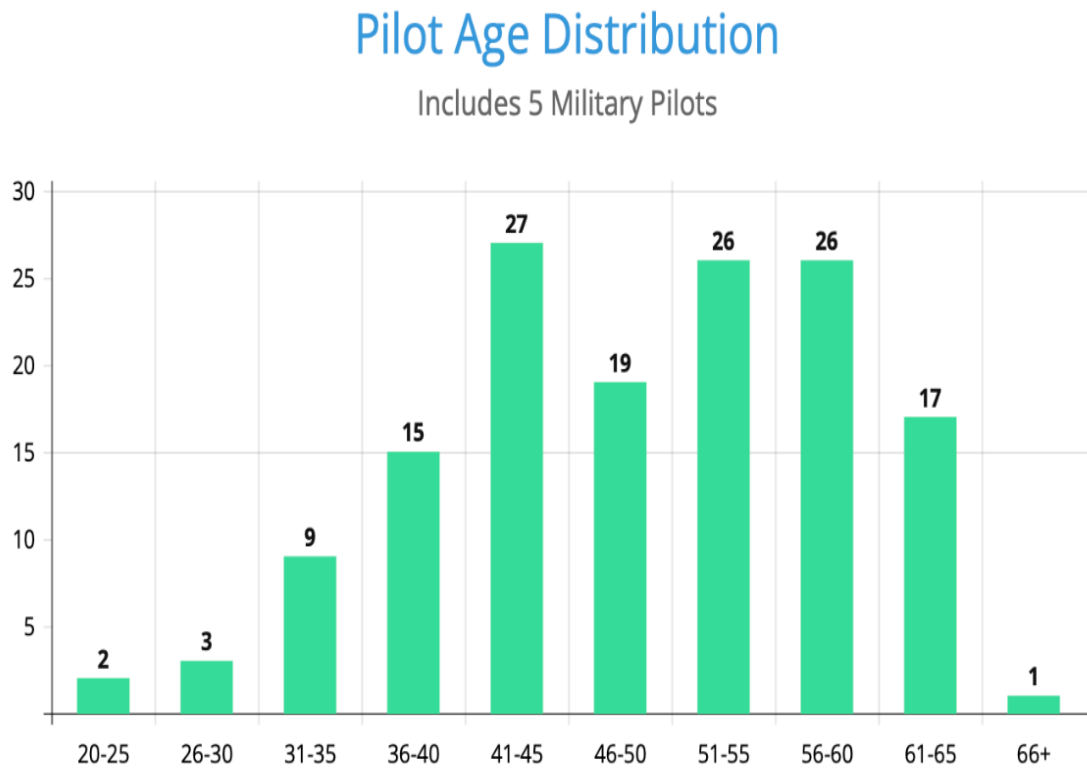
Therefore, the Q36 data subset includes 145 pilots—140 are civilian commercial pilots and five are active-duty, military-only pilots. This cohort includes 139 ATPs, and two civilian and three military FAA certified Commercial pilots. One reports only having a Certified Flight Instructor Rating; however, this male pilot also reports that he is employed by American Airlines and type-rated on the Airbus, A320. Therefore, he is counted as an ATP because that license is required to be a type-rated Airbus pilot.

Q36 Demographics

Pilot ages (Figure 50) range from 24-years-old to a 66-year-old American Airlines Pilot who was on active status at the time he received the vaccine and subsequently retired due to turning 65, but who believes he suffers vaccine adverse effects.

Figure 50

Q36 Pilot Age Distribution



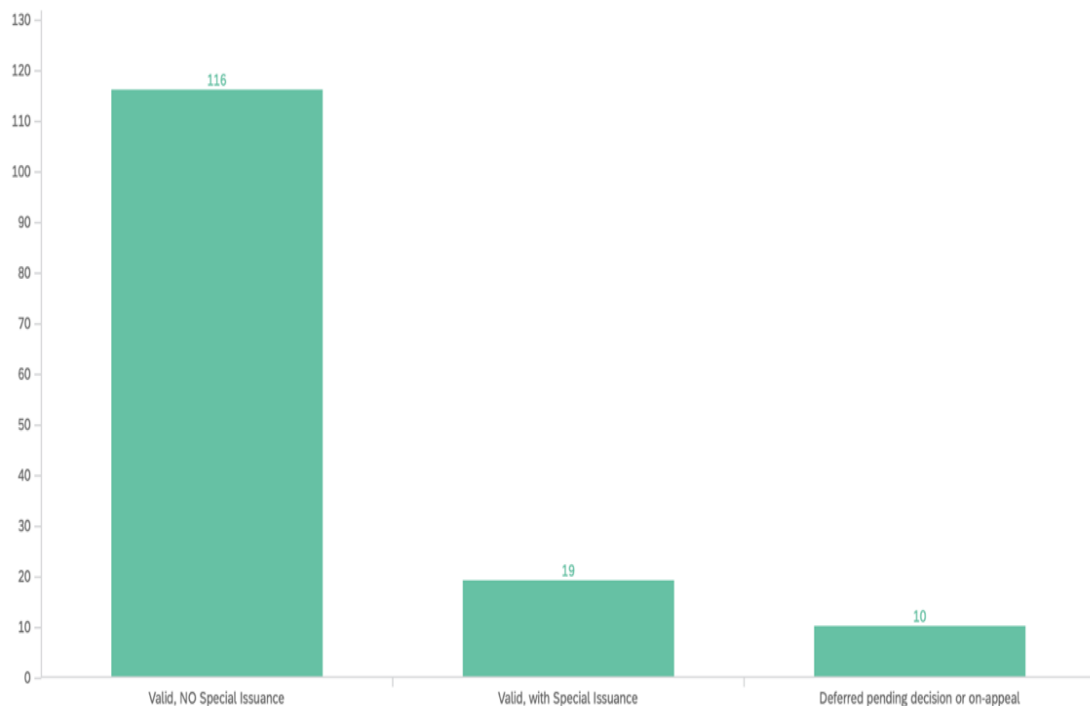
Based on the gender a pilot selects on their FAA Medical Application (form FAA-8500-08), the subset includes 138 males and seven females. In 2022, the last year the FAA published statistics, females were reported to comprise 6.32% of the U.S. pilot population. In the study subset, females are slightly under-represented totaling 4.8%. One female pilot lists her primary employer as the military while the remaining females are civilian pilots.

In the Q36 cohort, 140 pilots have FAA First Class Medicals, four have Second Class. One indicates she has a Third Class Medical Certificate. Research cannot

determine if this pilot truly holds only a Third Class Medical Certificate or if her previous First or Second Class is limited to only Third Class privileges, which is possible as she reports she is on LTD from her airline job and claims she is working as a civilian instructor. Figure 51 details the status of the pilots' medical certificates.

Figure 51

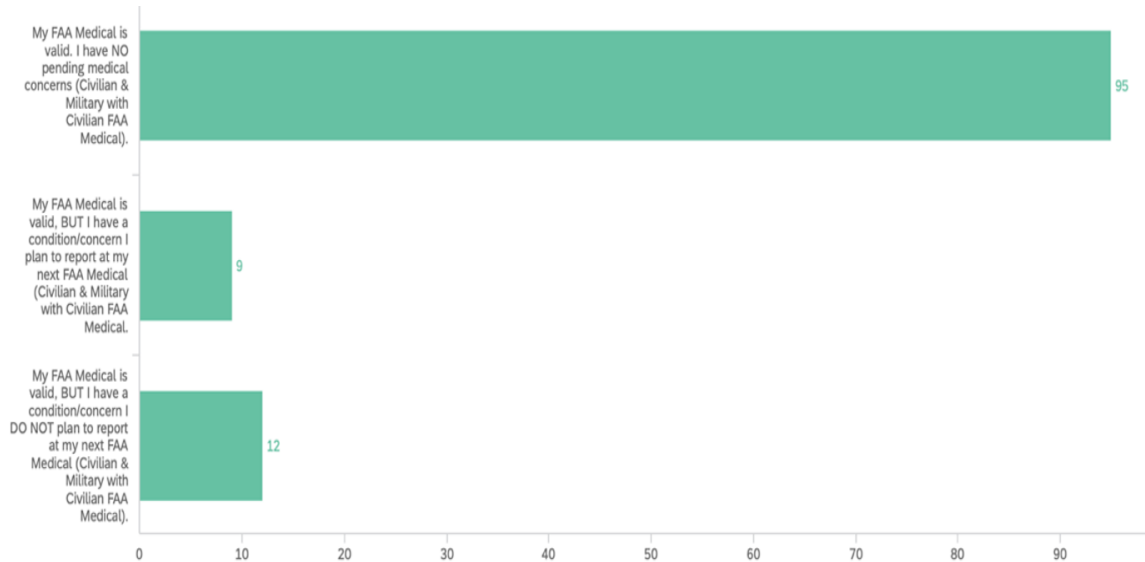
Q36 Pilot FAA Medical Certificate Status



Probing deeper, Q36ers were asked to detail their current medical condition in reference to their FAA Medical Certificate (Figure 52). Keep in mind, licensure is different from actual health. The following question only apply to the status of certification.

Figure 52

Q36 Pilot Medical Certificate Status Concerns



In regards to the military pilots, one is medically disqualified. Of the four remaining on active flight status, two say they have no pending medical concerns. One reports a condition they plan to discuss with their flight surgeon, and one reports a condition they do not plan to discuss.

The medical status of those with Special Issuance (SI) FAA Medical Certificates was examined in an effort to determine if their SIs were issued prior to receiving the vaccine. There are 19 pilots (Figure 51) who indicated they hold SIs. Seven report their SIs are the result of the injection; 12 say it is not. Of the 12, 11 report they have additional medical concerns they believe are related to the vaccine. However, the one pilot who selected “no” directly attributes his medical issues to the vaccine, stating in his

narrative that “left ear started ringing after 2nd booster and has not ceased.” Perhaps, his “no” answer is a mis-selection?

Ten pilots (Figure 51) report FAA Medical deferrals, 9 of whom directly attribute their deferral to the CV-19 injection. The tenth pilot reports having additional concerns related to the vaccine. He is deferred for having heart bypass surgery post-vaccination. Based on the details provided, research is unable to determine if the deferral is, in fact, vaccine related and therefore mistakenly entered or if the deferral is a separate issue. However, the pilot reports “CAD 6+ months post vaccination,” explaining he was extremely healthy prior to the vaccine and now reports his health as “fair.” His second condition, Cardio AFIB may be his additional concern. Without further details, no determination can be made.

A female military pilot says she is not on flight status directly attributing her removal to the CV-19 vaccine. She states she was forced to retire from the U.S. Army in May 2023, after two doses of the Pfizer-BioNTech she took due to the military mandate in the fall of 2021. She indicates medical onset 1-3 months after the second dose and that her case was submitted to the VAERs database. Prior to vaccination she considered herself extremely healthy and now rates her health as “fair.”

Medical Condition Disclosure

Research also probed to determine validity of medical claims with 49 of the subset answering the following questions. First, participants were asked if they have a medical determination from a healthcare provider. Four say they do; 34 say they do not; and 11 selected “I do not know.” Each of the 10 pilots (Figure 51) with “deferred” FAA Medical Certificates answered this question. However, only two say that they have a

determination from a healthcare provider. Because of the sensitive nature of the study, many pilots may be very concerned about confidentiality as their livelihoods depend on medical certification, or in the case of the “deferred” pilots, their re-certification.

Fear may also affect participants’ desires to discuss their concerns with their personal physicians. Of the 29 who answered this series of question, 27 indicate they have done so, while 22 indicate they have not discussed their health concerns, even with their personal physicians. It is not without merit to suggest that the overarching attitude presented by the medical community early in the pandemic (as detailed in Chapter II) discouraged both patients and doctors from believing or reporting adverse events. Nine of the 10 “deferred” pilots have spoken to their personal physicians, as would be likely required to regain certification. The single “no” answer is the same pilot who was previously discussed as having had bypass surgery and now has Atrial Fibrillation (AFib). It is possible he merely hurried through the questions or did not understand the inquiry. It is obvious, due to his deferred status, that his personal doctor and AME are aware of his condition, whether or not they tied it to the vaccine. This question strived to determine if pilots shared their concerns tying the vaccine to their conditions with their personal physicians. There is no indication this pilot did. However, his participation, and answer to Q36 detailed above, indicates he believes this to be true.

Next, the survey examines the willingness of those who suspect they have suffered adverse effects to share their concerns with their AMEs or their Military Flight Surgeons. Of the subset of 49 pilots willing to answer this question, we find a significant decline in pilots’ unwillingness to disclose their conditions to their aviation doctors. It

stands to reason, some may be concerned about their licensure, but another interesting fact presents itself in the way pilots gain their medical certification.

FAA medical certification is not an inexpensive process. Few AMEs accept medical insurance. An ATP who chooses to exercise his privileges must be medically recertified every six months; however, no regular visit is mandated. Pilots routinely let their certification lapse if they have leaves (vacation or time off) or are ill. One reason is that they can get more time for their money by simply applying after the calendar month changes. Some who have medical issues may let their First Class Medical Certificates expire (it then reverts to Second Class privileges for an additional six months) and only report their disqualifying condition upon reapplication when they are required to report visits to other medical professionals. Thus, it is plausible that many pilots simply have not yet been required to disclose. In fact, five of the ten deferred pilots say they have not disclosed their condition to the FAA leading the researcher to believe many may not know the official definition of “deferral.” One deferred pilot explained:

I got the vaccine in March 2021 and immediately had side effects that prevent me from exercising the privileges of an airman medical cert.

These symptoms have persisted continuously since that point so I did not/have not applied for a subsequent certificate as I will obviously be denied until the symptoms have been resolved.

In either case—misunderstanding the official deferral process or intentional lapse—the research found a drastic decline in those who have reported their conditions to their AMEs indicating the FAA may not be aware of the number of pilots who suspect

adverse effects. An FAA CAMI review of First Class Medical attrition (applicants not applying for renewal) by ATPs under the age of 65 may show a compelling trend.

Of the 17 pilots who disclosed their medical conditions to their AMEs, only eight said that their AMEs reported that information to the FAA. AMEs, often pilots themselves, sometimes develop personal relationships with their clients and provide unofficial guidance. Only if an *FAA Form 8500-8 Application for Airman Medical Certification & Student Pilot Certification* is generated via MedXpress is an AME required to “officially” transmit a deferral within 14 days (Federal Register 14 CFR Part 67, n.d.). It is plausible that some AMEs provide “off the record” guidance allowing a pilot to seek treatment prior to application in which case, nothing is reported to the FAA.

Next, the survey attempts to examine the validity of the claims by some in the industry that pilots lack transparency regarding health reporting. The threat of losing one’s income while undergoing a lengthy recertification process may be driving pilots away from reporting medical conditions, causing them to gamble in hopes of not being detected. In a 2018 letter from the then Acting FAA Administrator, Daniel K. Elwell, to Congressman Bill Shuster, Chairman of the Committee on Transportation and Infrastructure, Elwell admitted to the often-lengthy delays pilots face when they have medical issues. He stated, “The process of granting special issuances involves an individualized review of each aviator’s case, and may encompass evaluation of multiple diagnoses in a single aviator. It is often a complex and time-consuming task” (Elwell, 2018, para. 3).

Only 32 of the 145 medically identified pilots chose to answer this series of questions. The results of the study show only eight pilots plan to disclose their condition

to their AME at their next flight physical; five have not decided; and, 19 said they will not disclose. For further validation, the 24 who did not definitively answer that they would disclose were asked whether or not they agreed with the following two statements (Figure 53). Keep in mind, the questions were presented in the order below. Only after each answered the first question did the respondents see the second question.

Figure 53

Q36 Pilot Questions Regarding Intent to Disclose Their Medical Conditions

Q135 - Do you agree with the following statement? I do NOT plan to mention my medical condition/concern that I believe is related to the COVID-19 vaccine to anyone PRIOR TO MY NEXT FAA OR MILITARY FLIGHT PHYSICAL IN| HOPES THAT I WILL IMPROVE BEFORE I MUST REPORT.

#	Field	Choice Count
5	I agree.	58.33% 14
6	I disagree.	4.17% 1
7	I have not decided.	37.50% 9
		24

Q134 - Do you agree with the following statement? I do NOT plan to mention my condition/concern that I believe is related to the COVID-19 vaccine to anyone, WHETHER OR NOT I IMPROVE, IN HOPES THAT MY CONDITION/CONCERN WILL NOT BE DETECTED AT MY NEXT FAA OR MILITARY FLIGHT PHYSICAL.

#	Field	Choice Count
5	I agree.	62.50% 15
6	I disagree.	12.50% 3
7	I have not decided.	25.00% 6
		24

At first, the group seems to say they “hope” they will get better; however, when presented the option to “hope” their condition goes undetected, they appear less in the undecided category.

Q36 Employment Status

As to their work status, (Figures 54-56), 122 of the 145 in the Q36 cohort are actively employed. Two say they are on “short term disability or sick list,” while 15 indicate they are on LTD. Only one anomaly appears in this data. A pilot from Southwest Airlines (SWA) states he is unemployed, but lists his employer as SWA. As previously explained, it is likely he is on LTD, and was, therefore, returned to the Southwest pilot pool. Regarding the five pilots who say they are retired, one, as it was earlier explained, is a military female not on flight status who says she was medically retired due to the vaccine’s side effects. One is a military male who retired from the service, but who has a valid FAA medical certificate. Three indicate they retired from air

carrier positions. Two reached the mandatory retirement age (65) between the time of their vaccine/side effects and the date they participated in the survey. One took early retirement at age 60 but is still seeking his deferred medical.

Figure 54

Q36 Participant Employment Status

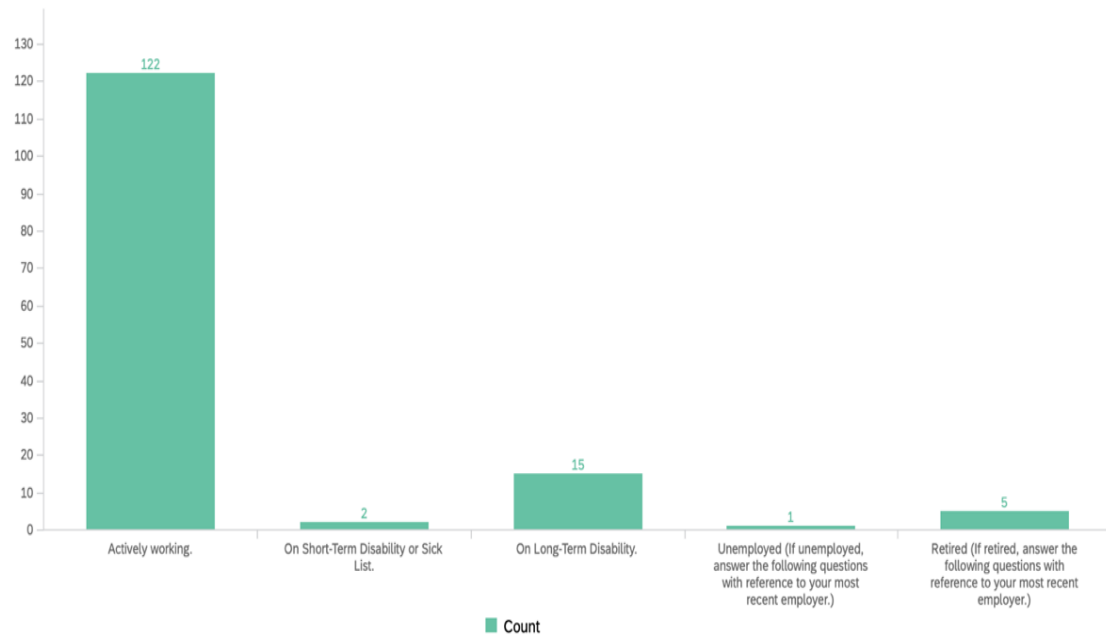


Figure 55

Q36 Employer Type

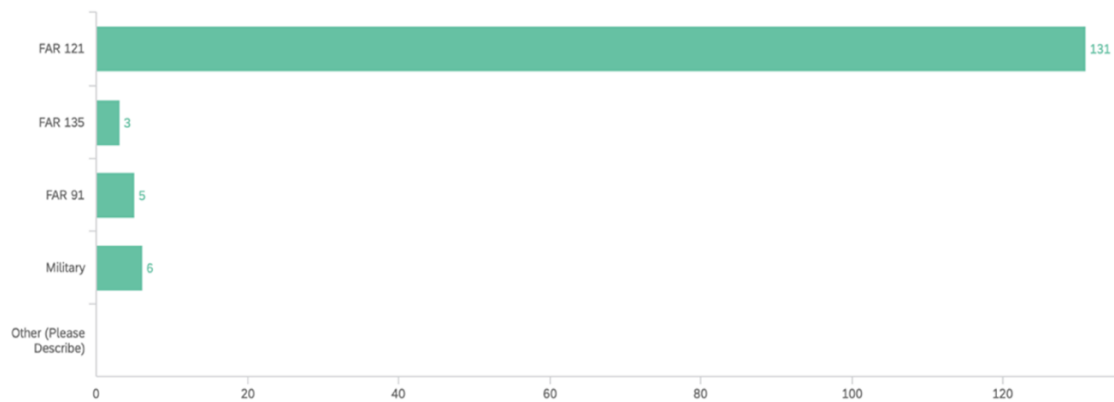
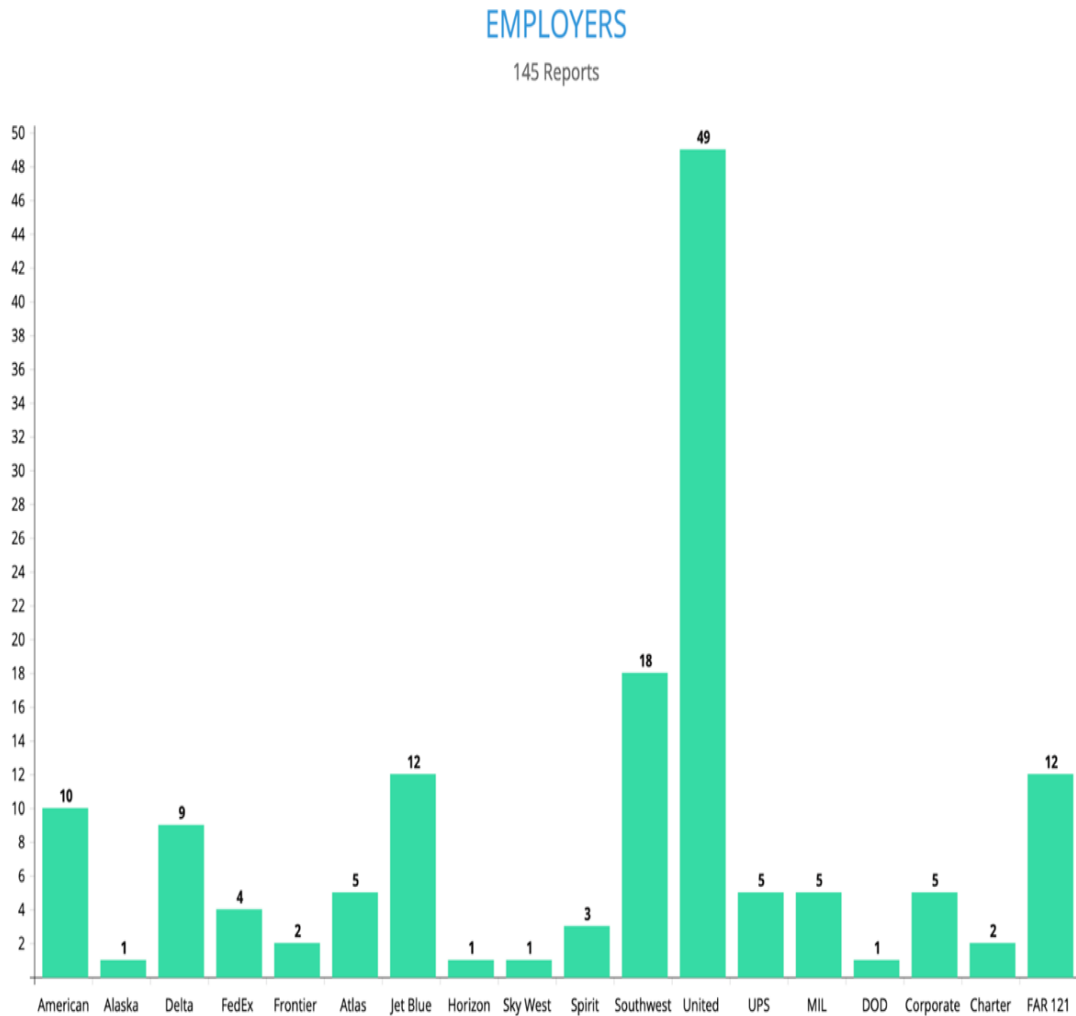


Figure 56

Q36 Employers



In addition to the employment details above, eight pilots who report non-military primary jobs say they have secondary jobs. These secondary jobs include one FAR Part 91 corporate training pilot and seven military pilots including four Air Force Reserve pilots, one Naval Reserve pilot, one pilot from the Air National Guard, and one Army National Guard pilot.

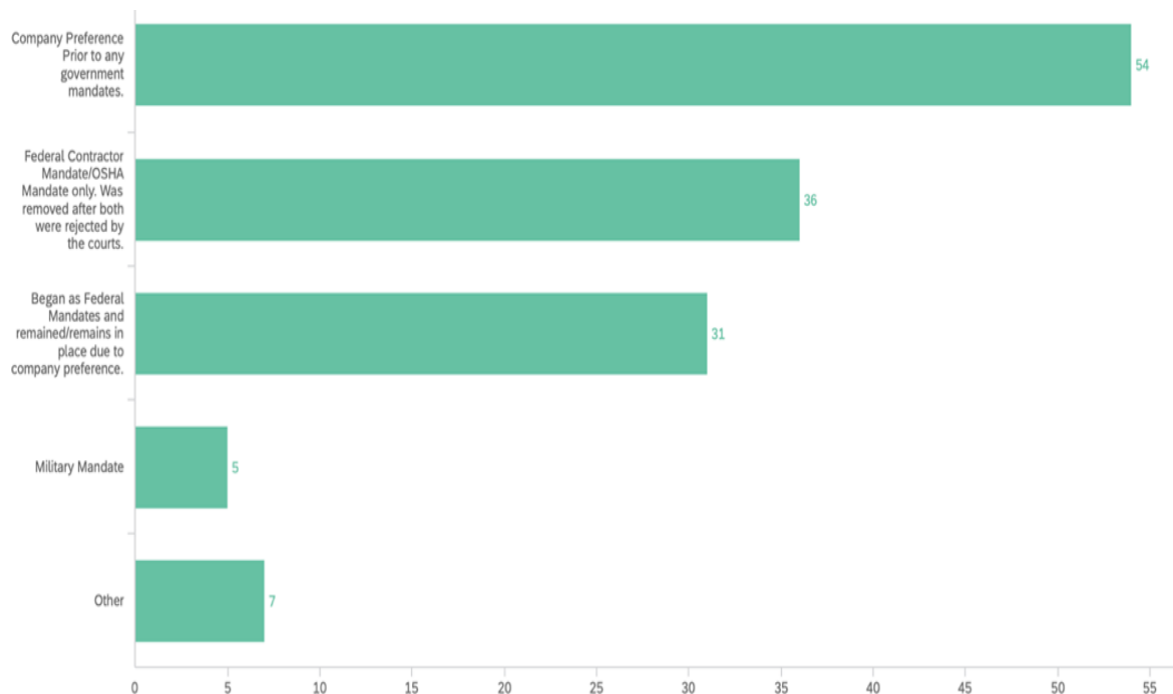
Mandates

Every pilot in the Q36 subset answered the question concerning vaccine mandates with 85% indicating their employer gave them no choice regarding the vaccine.

When asked, in their opinion, why (Figure 57) their employers instituted a mandate, the 123 pilots who answered they were mandated were allowed to select multiple answers.

Figure 57

Q36 Reasons for Employer Mandate



At the time they participated in the study, of the 123 Q36 pilots who indicated they worked under a mandate, 57 pilots report their employers removed the mandate; 46 were unsure; and 20 say their employers' mandate remains in place. Of those who fell under mandates (military and civilian) and now say they suffer effects, 81 work for employers who allowed exemptions in lieu of taking the vaccine; however, 65 did not

seek exemptions. In other words, the majority of those who had the opportunity to not get vaccinated, did so of personal choice. Of the 16 pilots who sought exemptions, four were granted, but they eventually decided to get vaccinated. Two withdrew their exemption requests citing, “fear of losing my job,” and “accommodation unreasonable/untenable.” Ten say that “no accommodation/exemption was granted.”

Written comments include the following statements:

- I did not want to vaccinated.
- He determined the needs of the military were greater. Punk
- They simply said they were not going to require proof of vaccination any longer, but they still wanted us to get vaccinated
- I was ignored
- Email was sent by company asking for a third-party letter. I didn’t respond in time so they withdrew for me.
- They didn’t deny nor did they grant.

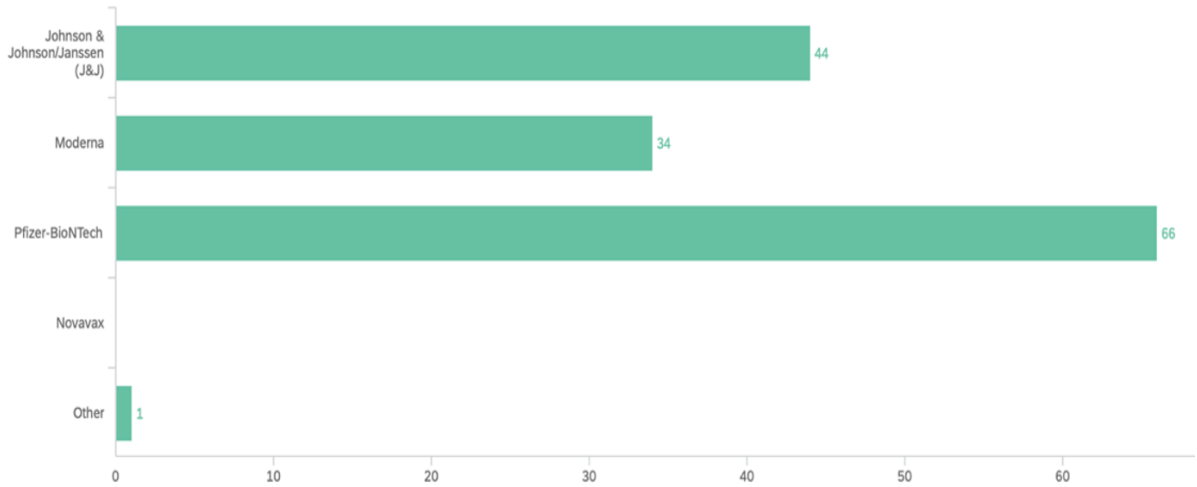
Vaccines

Next, we examine the Q36 cohort’s vaccination details (Figure 58). Of the brand requiring a two-dose series, all who selected Moderna completed both series. Two of the 66 pilots who chose Pfizer indicate they did not complete the series. These two pilots cited the following reasons to discontinue the Pfizer course:

- My reaction to the first dose prevented me from taking the second doses
- I chose not to take the second dose

Figure 58

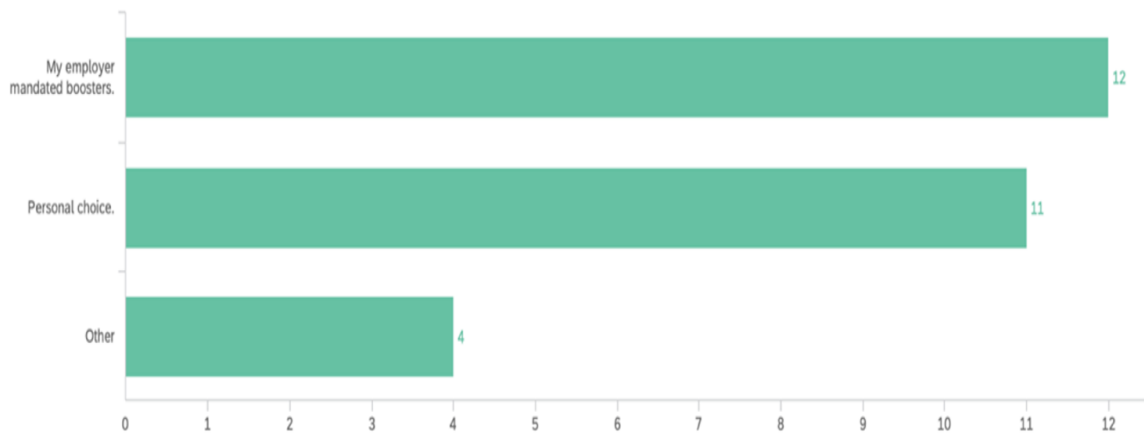
Q36 Vaccine Uptake by Brand



With regard to boosters (Figure 59), 118 chose not to take a booster, while 27 (or 18.62%) chose to do so, split almost evenly between choice and mandate.

Figure 59

Q36 Reasons for Choosing to Take a CV-19 Booster



When offered the opportunity to comment, the following reasons were cited:

- Fear of reprisals and repercussions
- Family trip to Tanzania required a booster
- Required to travel for work to high-risk areas
- International travel concern not being allowed back into USA
- Medical professionals forced due to us expecting our first child. I wouldn't have been allowed to be there for the birth of my child without the booster.

Booster uptake includes 23 pilots who report having had one booster; three pilots took two boosters; and one pilot reports four or more. The brand most chosen for booster one is Pfizer. Three pilots who had second boosters each stayed with their original vaccine brand—one Moderna and two Pfizer. The pilot who took four or more boosters originally took the Pfizer vaccine then took two Pfizer boosters. For her third booster she chose Moderna, then subsequently returned to Pfizer for her fourth.

Morbidities

Next, each pilot's reported conditions were sorted based on groupings (Figure 60), then assigned a code (1-20) and unique color.

Figure 60

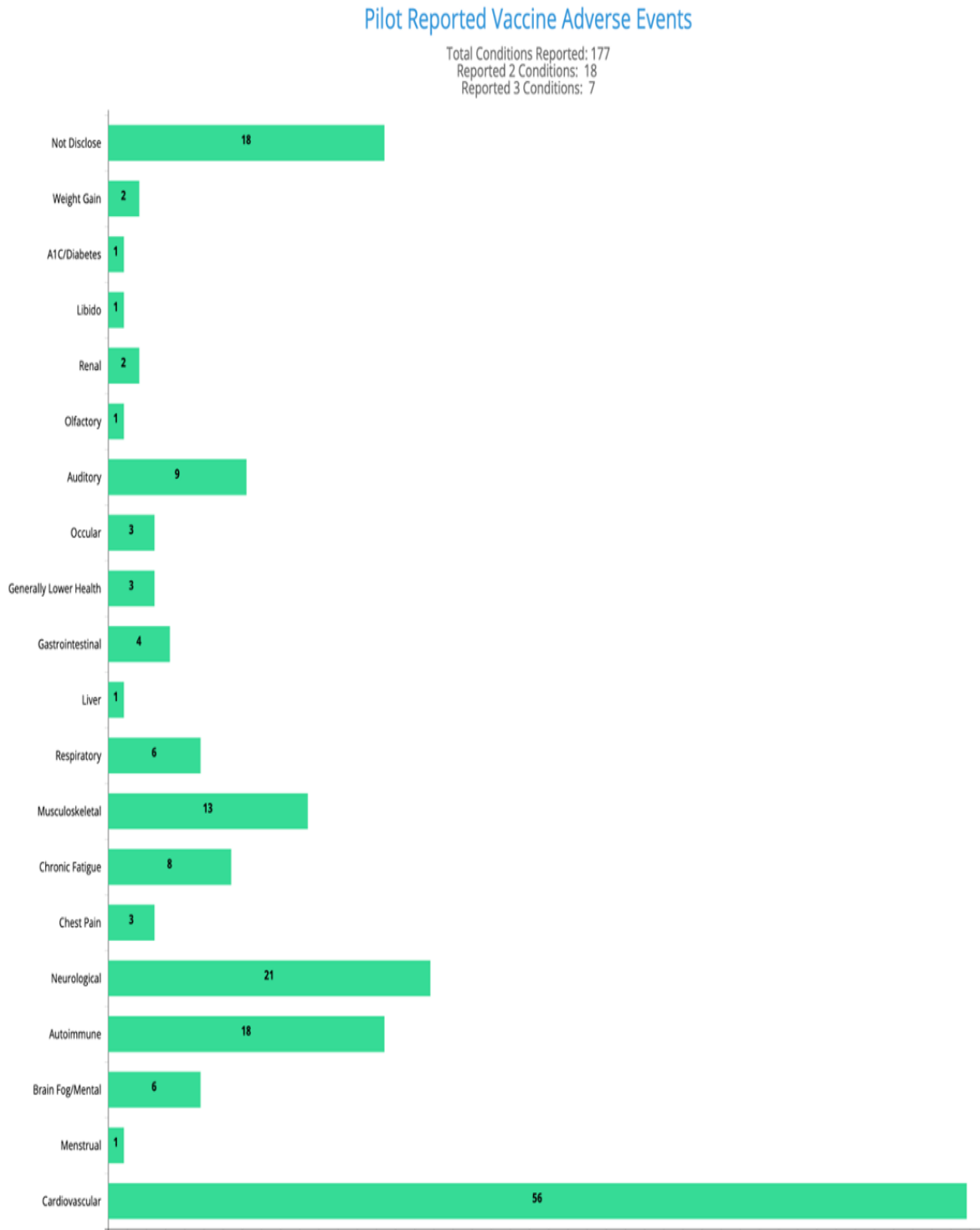
Q36 Organ System Classifications/Coding

Code	System
1	Cardiovascular
2	Menstrual
3	Brain Fog/Mental/Memory
4	Autoimmune/Allergies/Flu-Like Symptoms/Long Covid/Anaphylaxis
5	Neurological
6	Chest Pain (no way to determine if cardiovascular or musculoskeletal)
7	Chronic Fatigue
8	Musculoskeletal
9	Respiratory
10	Liver
11	Gastrointestinal
12	Generally Lower Health
13	Ocular
14	Auditory
15	Olfactory
16	Renal
17	Libido
18	A1C/Diabetes
19	Weight Gain
20	Not Reported

Each Q36 participant report received at least one code (Figure 61). Eighteen received two codes and seven received three codes. Each coded biological system was then analyzed in detail and is presented for review.

Figure 61

Q36 Pilots Reporting Adverse Vaccine Effects



Cardiovascular Events (56 Pilot Reports)

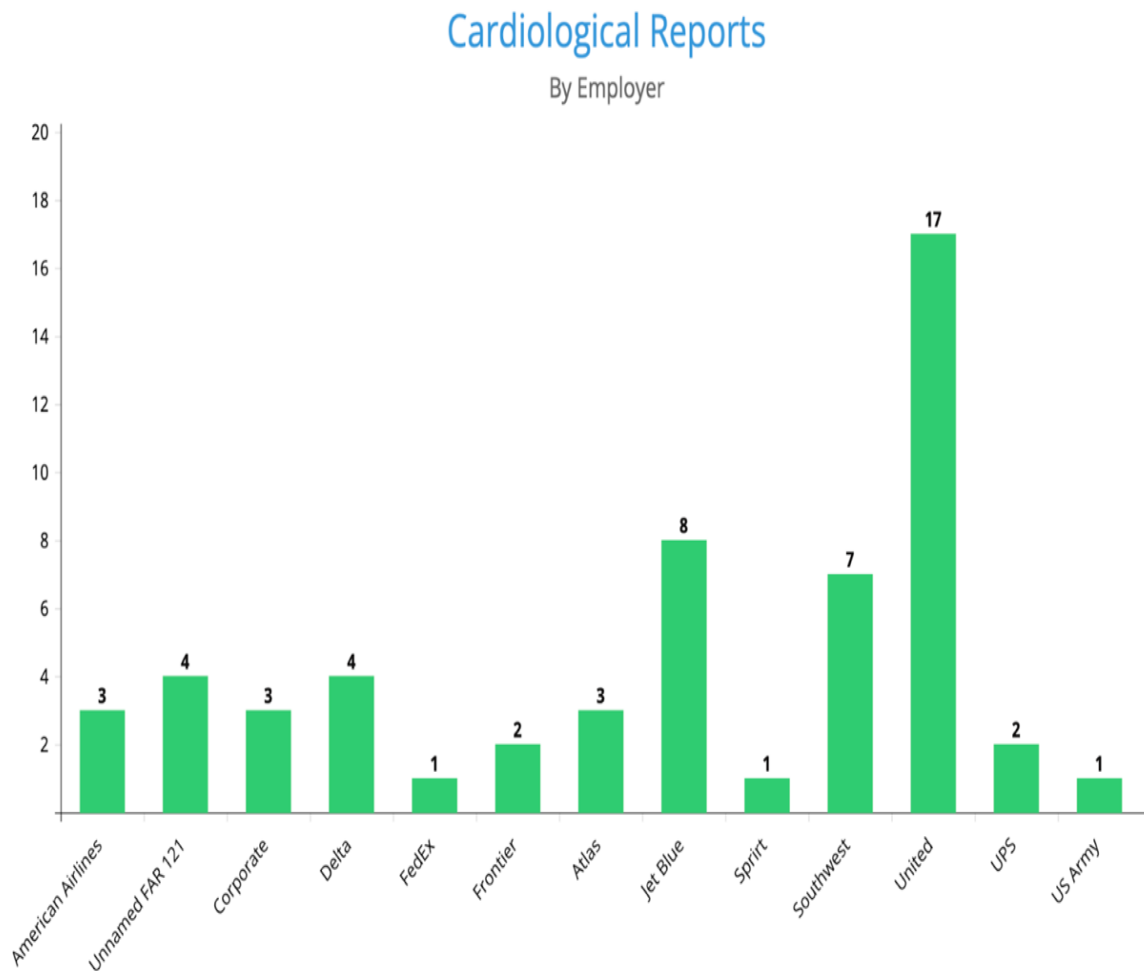
Likely, the most discussed and studied possible adverse effects of the CV-19 vaccine are cardiovascular in nature. Scientific study is ongoing with new information released almost weekly. Fifty-Six Q36 pilots report cardiovascular issues—the largest group in the study—of which only one is female. They range between 29-65 years old. Keep in mind, because the questions were asked in 2023, all were under mandatory retirement age at the time they took the vaccine. Four pilots were medically deferred by the FAA and suffered comorbidities that include heart attacks, stroke, coronary artery disease, and a “severe jump in HGA1C and severe muscular and joint pain similar to Guillain Barre.” Also, all are or were employed by major carriers. Three are on LTD, and one has since retired.

An additional 10 pilots state they received Special Issuance Medical Certificates, nine as a result of cardiovascular issues and one due to diabetes. The pilot who claimed diabetes also claims additional cardiovascular complications, and he has not yet decided if he will report his concerns at his next AME visit. Of these additional 10 pilots, all work for major airlines (Figure 62) of which eight are actively flying. One is on LTD. And, although one says he is “unemployed,” he is more likely on LTD at Southwest Airlines, as previously discussed. Of the remaining 42 pilots, one is on “short term disability;” two are on LTD; and, one has since retired. The remaining 38 are flying. Only six of these 42 chose to answer the questions about disclosure. One says that he is still deciding whether to tell the FAA or hoping his condition goes unnoticed. The remaining 41 are hoping they are not detected. All 56 cases are detailed, in their own

words, below. Because these cases are compelling, their employers and additional relevant information are presented.

Figure 62

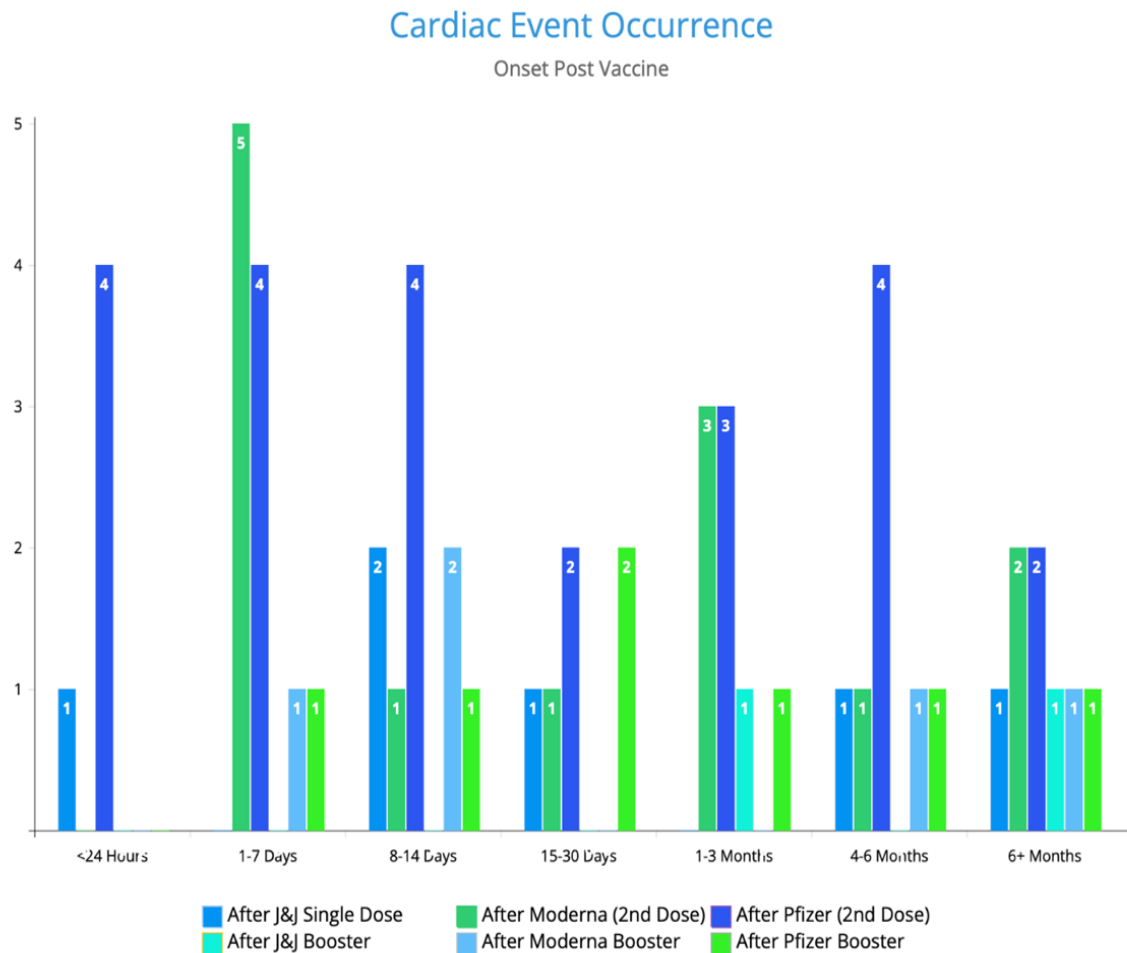
Q36 Cardiological Reports by Employer



Onset of adverse effects (Figure 63) varied across the entire subset by both duration and in relation to which dose of which brand. The graph shows the number in each category.

Figure 63

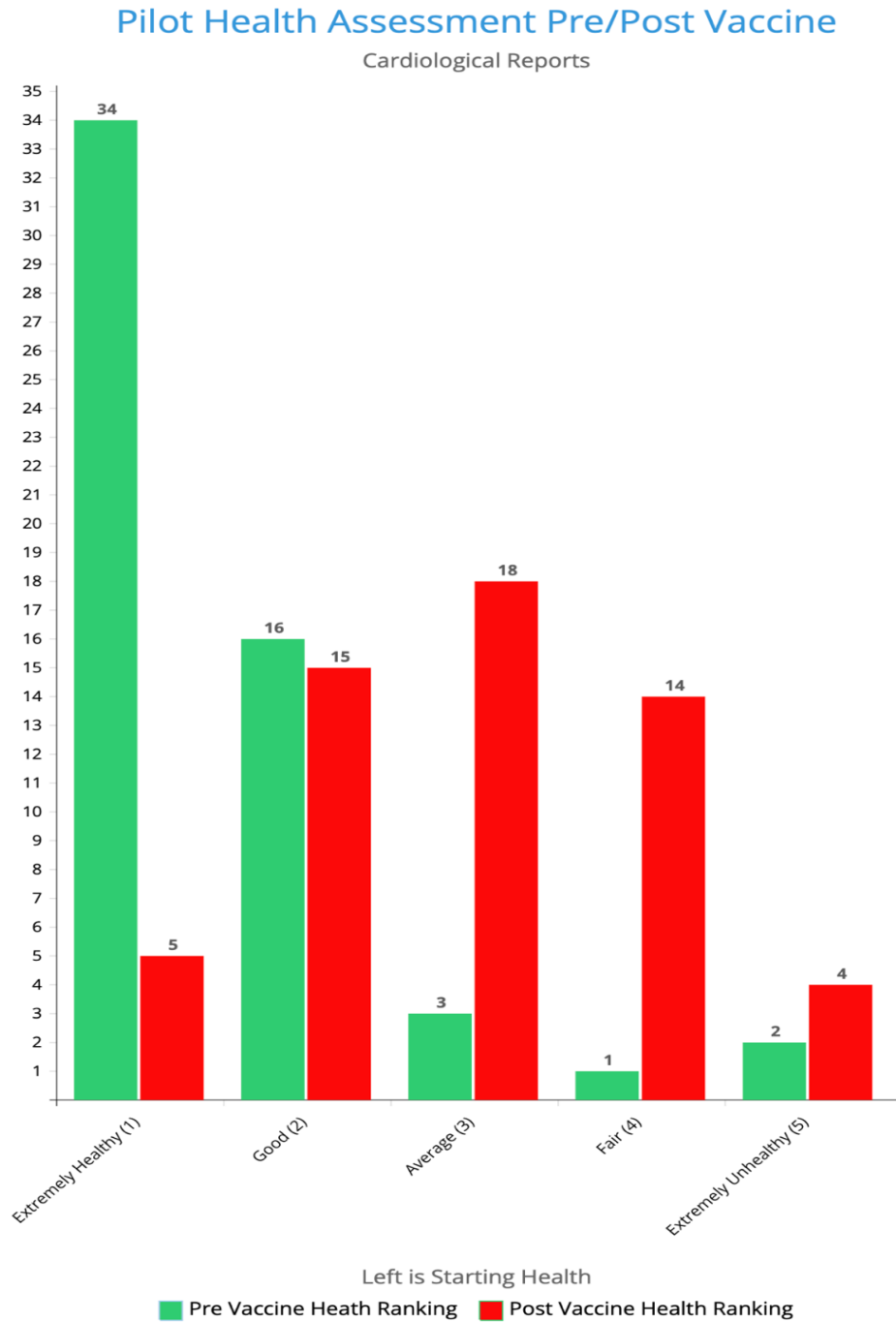
Q36 Cardiac Event Onset



When questioned about their general health (Figure 64) only nine pilots indicate their health remained relatively the same pre- vs. post-vaccine. Three indicate it improved, and the remaining 44 indicated at least a one-step drop in their overall health. The cardiac cohort showed an overall trend toward reduced health, although mated pairs were not graphed.

Figure 64

Q36 Health Assessment Pre/Post Vaccine



**Note: This chart does not include matched pairs, only a cumulative count in each category*

Thirteen pilots' say their cases were reported to VAERS which include three of the four deferred pilots, but only two of the SI's. In other words, eight pilots with regular FAA First Class Medicals had their cardiac issues reported to VAERS, but that report did not flag the FAA. One of the VAERS pilots is also engaged with VSafe. These facts also indicate that the doctors of seven of the pilots who required SI's for their cardiac issues did not report these cases to VAERS calling into question the entire system. A detailed record of each participant (Figure 65) is provided. Note, only one pilot in the cardiological cohort says he suffers from long-haul COVID symptoms, as defined by the CDC.

Figure 65

Q36 Pilots Reporting Adverse Cardiological Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence	Do NOT Plan to tell PRIOR TO NEXT FAA. HOPE WILL IMPROVE BEFORE I MUST REPORT.	Do NOT plan to mention WHETHER OR NOT I IMPROVE, HOPE NOT DETECTED
1	M	34	Valid, NO SI	UAL	Working	Increased heart rate, rapid heart rate, heart murmur, heart palpitations		4-6 Months	2	4	Pfizer (2)	Pfizer (1)	Y	No	1-Prior	No		I have not decided.	I agree.
2	M	53	Valid, NO SI	DAL	Working	Tinnitus increase, non-specific T wave abnormality on EKG, decreased immune system function 5 hours after 2nd dose, strong fever & immune response, noticed tinnitus increase after that passed. (18 hrs). At next FAA EKG t wave abnormality appeared and has remained since. I get sick more often and more severely than in the past. After taking NAC, zinc, quercetin and vit D regiment weekly my immune system has recovered some what.	4 & 14	1-7 Days	2	3	Moderna (2)		N	No	2-Post	No			
4	M	61	SI 10/20/2022	UAL	Working	Hypertension, eyes bother me	13	8-14 Days	3	4	J&J		N	No	1-Prior/2-Post	No		I have not decided.	I have not decided.
5	M	39	Valid, NO SI	GTI	Working	Heart related. Chest Pains		8-14 Days	1	5	Pfizer (2)		N	No	1-Prior	No	EKG	I agree.	I agree.
6	M	57	SI 3/16/20-Diabetes	SWA	Working	Heart issue and claustrophobic	3	<24 Hours	2	2	Pfizer (2)		N	No	1-Prior/2-Post	No		I have not decided.	I have not decided.

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence	Do NOT Plan to tell PRIOR TO NEXT FAA HOPE WILL IMPROVE BEFORE I MUST REPORT.	Do NOT plan to mention WHETHER OR NOT I IMPROVE, HOPE NOT DETECTED
7	M	64	Valid, NO SI	UAL	Working	Aged me 5 years in appearance in a matter of months. BP 190/115 for several months. Strange painful bruising. Allergy to all tree nuts, alcohol, coffee. Gave me hives. All symptoms resolved after 6 months. I've always had normal BP so the spike of 190/115 a few weeks after the shot is highly likely to have been caused the shot. Also never had hives before the shot. I dont bruise easily, and that is an understatement. I literally never bruise. The bruise I had was on the inside of my forearm. It was a strange gray color and was very painful. The ER doc did a D-Dimer test & it was negative. He logged it as tendonitis in my report. I've had golfers and tennis elbow in the past. Neither caused a huge discoloration covering a majority of the inside of my forearm. This was surely not tendonitis. The bruise lasted for about 3 weeks. Never reappeared. I bought a BP machine & I did have very high BP for over 4 months. Back to normal after approximately 6 months. The tree nut/coffee/alcohol allergy lasted several months.	4	8-14 Days	1	1	J&J		N	No	1-Post	No	I visited a general care clinic and an emergency room visit both for the painful bruising.		
8	M	61	SI 12/27/22-Afib	UAL	LTD	Heart afib, pericarditis, stroke, long haul lung issues	4 & 5	1-3 Months	1	4	J&J	J&J(1)	Y	No	2-Prior	No			
9	M	57	Valid, NO SI	FFT	Working	High blood pressure. BP checked & tracked for 20+ yrs. Most of that time it was checked every six months (FAA medical) I've never a problem with high bp. Approx. 4 months after getting both shots my dentist took my bp & it was very high. I reported this to my doctor who had me record for 2 weeks; to ensure no anomaly. BP remained high, prescribed bp medicine.		4-6 Months	2	2	Pfizer (2)		N	No	0	No			
10	F	50	Valid, NO SI	UAL	Working	Reynaud's Syndrome & possible Lupus. Immediately following the 2nd injection, numbness & tingling in fingers of my left hand (injection side). I thought hit a nerve & would be temporary. For the next 6 months, numbness & tingling increased to fingers on both hands, but only when I was cold. I also started losing hair. Finally went to my doc for full labs=ANA positive, which is indicative of possible Lupus. Waiting for an appointment with a Rheumatologist.... I am 100% sure I had NO symptoms of tingling prior to the 2nd vax and I first had tingling immediately following the shot.	4	1-7 Days	1	3	Pfizer (2)		N	No	1-Post	No	Symptoms and blood test confirmation		
11	M	44	Valid, NO SI	UAL	Working	I have what feels like a heart flutter. I voiced my concern to both my personal & FAA drs. I passed my EKG, & personal dr said to give it time. I'm requesting full work up. About 6mos after the shot I had my first episode of concern. I was trying to hurry and get my trash out as I could hear the garbage truck. My heart started fluttering & I had to sit down. For 30 mins it fluttered. About 3mos later while at lunch with a friend it happened again, lasted for about 30mins. Went to pc. Said would need to get seen by heart care while I feel it. I went to my FAA medical & got my EKG. No issue. I mentioned to my AME that I have felt my heart feel fluttery, like it's out of beat. It makes me sit down. As a former cardiac doctor he said same as pc. I've had 2 other episodes since. I don't feel right, not like myself. I want to know what it is. I've flown with other pilots whom have described the same. One said it took a couple times before finally he caught it & got an ablation.		4-6 Months	3	4	Pfizer (2)		N	No	2-Post	No			
12	M	29	Valid, NO SI	UPS	Working	Heart palpitations, hesitations. Feels like my heart stops once every day or two, bad palpitations. Did not experience these in my life until after the shot, & I'm very healthy		15-30 Days	1	2	J&J		N	No	0	No			
13	M	37	Valid, NO SI	UAL & USAF	Working	Heart rate dropped to 34 BPM during the observation period. Ever since the vaccine I've had multiple major joint related issues. I had zero before.	8	<24 Hours	5	4	J&J		N	No	1-Post	No			

	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence	Do NOT Plan to tell PRIOR TO NEXT FAA. HOPE WILL IMPROVE BEFORE I MUST REPORT.	Do NOT plan to mention WHETHER OR NOT I IMPROVE, HOPE NOT DETECTED
14	M	53	Valid, NO SI	UAL	Working	Irregular heart beat. Starting feeling like my heart was skipping a beat. I have an I watch so I took the elg on the watch I I could see my heart was having irregular heat beats every now & then. It lasted a couple months & went away. My PC listened to my heart & did elg. Was not too concerned.		15-30 Days	1	2	Moderna (2)	Pfizer (1)	Y	Yes	1-Prior/1-Post but PreBooster	Yes	EKG		
15	M	49	Valid, NO SI	JBL	Working	Hypertension. I started suffering from hypertension for the first time in my life between 4-6 months after my second shot.		4-6 Months	2	3	Moderna (2)		N	No	1-Post	No	Blood pressure results		
16	M	58	SI 08/18/22- Afib	JBU	Working	Afib. I had the second Pfizer shot on 11-20-21. The next morning I woke up to a heart rate between 90-170 bpm. On 12-23-21 I had an ablation to correct the problem. I've had no further symptoms.		<24 Hours	2	3	Pfizer (2)		N	No	0	No	EKG,		
17	M	63	Deferred 06/20/2022 Mitral Valve	JBU	LTD	Heart issues		4-6 Months	1	2	J&J		N	No	2-Post	No			
18	M	64	SI 11/30/21- Afib	JBU	Working	Atrial Fibrillation		1-7 Days	1	3	Moderna (2)		N	No	1-Post	No	EKG		
19	M	56	SI 12/16/22- Heart Condition	SWA	Working	Artery blockage in the heart. within a month of second shot, experienced shortness of breath. Failed stress test.		8-14 Days	1	4	Pfizer (2)		N	No	2-Post	No			
20	M	55	Valid, NO SI	JBL	Working	AFib episodes.Brain fog, AFib, Exhaustion,	3 & 7	+6 Months	1	3	Moderna (2)		N	No	2-Post	No	Verified AFib episodes on cardio reading machine		
21	M	50	SI 1/20/22- OSA	UAL	Working	Heart Palpitations. After 2nd shot, intense pain that moved to different quadrants of my body over the next 3-4 weeks. Extreme fatigue accompanied the pain. It culminated in heart palpitations, & an erratic rhythm. I was afraid to do serious workouts after that for fear of it intensifying the heart issues. The fatigue has lasted with me to this day while its intensity oscillates where it often feels like, I have flu like symptoms, but testing indicates, I don't have the flu or Covid. My overall health history medically changed for the worse since my Covid shot. I cannot tell a doctor, or my employer for fear of losing my job and my livelihood. I hope that it gets better over time, but I probably won't tell anyone as long as it doesn't get worse."	4 & 7	1-7 Days	1	5	Pfizer (2)		N	No	1-Prior/1-Post	No		I agree.	I agree.
22	M	57	Valid, NO SI	JBU	Working	Right Bundle Branch Blockage on EKG after booster.RBBB on EKG 2 weeks following Moderna booster. Never any anomalies on EKGs prior.		8-14 Days	2	2	Moderna (2)	Moderna (1)	Y	No	3+1-1-Prior/1-Post/1-Post Booster	No	EKG		
23	M	64	Valid, NO SI	FDX	Working	High blood pressure/severe left arm pain. In November 2021 went to doctor with severe pain in left arm. Blood pressure was tested at 180/110. Sent to hospital for tests. Stayed overnight. Pressure spiked at 220/140. Given nitro glycerine. Eventually discharged. Now on medicine to control blood pressure. No myocarditis diagnosis. Seems to be under control with medication. Am slowly getting off medication with diet & exercise. I was off status for 6 months am back flying now.		8-14 Days	1	4	Moderna (2)		N	No	0	No	X-ray,EKG, ECG, and ultra sound measurement of heart.		
24	M	34	Valid, NO SI	UAL	LTD	Tachycardia, headaches, high blood pressure, extreme seasonal allergies	4 & 5	15-30 Days	2	4	Pfizer (2)		N	Yes	1-Prior/1-Post	Yes	Doctor statements		
25	M	43	Valid, NO SI	GTH	Working	A slight change in EKG from previous readings		1-7 Days	1	3	Pfizer (2)		N	No	2-Prior	No	EKG		
26	M	51	Valid, NO SI	CARGO	Working	Enlarged left side of heart. Left side of heart enlarged, myocardial		+6 Months	1	3	Pfizer (2)		N	No	2-Post	No	MCG, ECG		

	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence	Do NOT Plan to tell PRIOR TO NEXT FAA. HOPE WILL IMPROVE BEFORE I MUST REPORT.	Do NOT plan to mention WHETHER OR NOT I IMPROVE, HOPE NOT DETECTED
27	M	36	Valid, NO SI	AAL	Working	Vascular health decline. Started getting cold appendages shortly after the second injection, can't wait to see what the future holds for the symptoms of this rushed vaccine		1-7 Days	2	3	Moderna (2)		N	No	1-Prior/1-Post	No			
28	M	44	Valid, NO SI	UAL	Working	I worry I may have a vaccine injury documented in the future. I've been fortunate not to have any serious side affects. I was coerced to get the vaccine by my employer. I chose to get the J&J as I wanted the one & done. I very much did not want to get 2 jabs of the other options. I do have some concerns that I may have some slight side affects related to vaccine but have not been concerned enough to document to VAERS or report to any medical professional. During my last class 1 medical in March I had an EKG & was somewhat shocked that the doctor asked if I had ever had a heart attack as he apparently noticed something on the EKG that gave him pause & indicated a possible previous heart injury. This was the first EKG I've ever heard that question asked on. He said it met requirements & said we'll see what the next one next year looks like. I also worry a bit about my neck area feeling a bit more tender/sore occasionally over the last year or so. Specifically, I sometimes worry that I might have goo/gunk/clots in my carotids, or in other places of my body, due to the history of the J&J		4-6 Months	2	2	J&J		N	No	1-Post	No		I have not decided.	I have not decided.
29	M	35	Valid, NO SI	UAL	Working	Hear Palpitations, ill. 2 days after the second Pfizer dose I had intense vomiting, diarrhea, nausea, and exhaustion. Several months after my heart would sometimes feel like it was beating hard for no reason.		1-7 Days	1	2	Pfizer (2)		N	No	0	No		I agree.	I agree.
30	M	44	SI 05/10/22-Enlarged Aorta	SWA	Working	Heart beats hard all the time, palpitations, anxiety, blood pressure swings. I'm very healthy, run a lot & eat healthy. Never had any of these "symptoms" until receiving these shots. I don't have any proof, but would bet a lot of money that Pfizer is what caused my issues. Now on SI medical because I had my heart palpitations checked out & they found mildly enlarged aorta during tests.		4-6 Months	1	1	Pfizer (2)		N	No	0	No		I have not decided.	I agree.
31	M	63	SI-6/1/23	SWA	Unemployed (Likely LTD)	Cardio myopathy. 4 months after vaccine, heart raced for 20 minutes. Went to cardiologist who did numerous testing, diagnosed cardio myopathy, restricted ventricular output, which I did not have any of this 5 years earlier.		4-6 Months	2	4	Moderna (2)	Moderna (1)	Y	No	1-Post Booster	No	mri with contrast, treadmill with contrast, ultrasound	I agree.	I agree.
32	M	51	Valid, NO SI	FAR 121	Working	High blood pressure. W/1 2 mo of receiving the 2nd vaccine my blood pressure spiked into the hypertension stage 2 range w/no changes in diet, exercise, or stress. It has take almost 2 years to return it to normal levels.		1-3 Months	2	2	Pfizer (2)		N	No	1-Post	No			
33	M	41	Valid, NO SI	GTI	Working	My blood pressure has jumped within a month of the booster, random sores to this day will still pop up at the injection site of the booster, I have become highly sensitive to developing random rashes on places like my face, my arms, and hands almost as if I have eczema, but my MD tells me this is not eczema at all, shortness of breath after any exercise as if I have very bad asthma, which I had never had a issue with before.	4 & 9	1-7 Days	4	3	Pfizer (2)	Moderna (1)	Y	No	1-Post/1-Post-Booster	No			

	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence	Do NOT Plan to tell PRIOR TO NEXT FAA. HOPE WILL IMPROVE BEFORE I MUST REPORT.	Do NOT plan to mention WHETHER OR NOT I IMPROVE, HOPE NOT DETECTED
34	M	55	SI 8/A/22- Pulmonary Embolism w/Unobstructed Kidney Stones	SWA	Working	Bilateral Pulmonary Embolism brought on by DVT in right thigh. "I am an avid athlete--run, bike, swim. first of 2022 began feeling was losing shape in my running, had not changed my workout routine. Did not notice on bike or stationary. Near end of February went running. After a half mile could not catch my breath. I found if I walked 100-150 yards I could recover quickly but I was unable more than a quarter mile run without having to stop. I finished 3 miles alternating, chalking up to heat & humidity. 2 weeks later on the Peloton. 10 minutes into a moderate ride losing breath again. slowed & finished but now concerned. Next day tried to run, couldn't go +100-150 yards w/o losing breath. Finished 2 miles doing 150 yards running, 150 yards walking. now very concerned. assumed was my heart & scheduled cardiologist next day. spoke w/friend ENT doc. He asked if any pain or other symptoms. No. He said if anything else, go to the ER. Next am woke out of breath. felt like a 30lbs weight on my chest. went to the ER, CT Scan showed large blockage in my lung. Hematologist said		4-6 Months	1	2	Pfizer (2)		N	No	1-Post	No			
35	M	36	Valid, NO SI	UAL	Working	Pericarditis		15-30 Days	1	1	Pfizer (2)		N	No	3+Prior	No			
36	M	45	Valid, NO SI	AAL	Working	spike in BP & heart rate. Normal blood pressure my entire life. Healthy & exercise religiously. Shortly after receiving the vaccine, I experienced an increased resting heart rate & high bp. Not medicated due to hi pb. Trying to control through more natural methods. am absolutely convinced the vaccine had an impact on my circulatory system.		1-3 Months	1	2	Moderna (2)		N	No	1-Prior/1-Post	No	Blood pressure checks with my PCM at an annual physical.		
37	M	55	Valid, NO SI	Corporate	Working			1-3 Months	2	3	Moderna (2)		N	No	1-Post	No			
38	M	56	Valid, NO SI	JBL	Short Term Disability	Cardiac Artery by-pass graph. LAD 90% blockage. Approx 2 weeks after booster shot began getting chest pain when walking uphill or at a fast pace. Few weeks later pain would travel down my left arm. would go away within minutes after exerting. Went to PC who ordered calcium ct scan & cardio visit. Cardiologist ordered nuclear stress test & angiogram. Blockage was near intersection of LAD & left main artery so a stent not an option. Cardiac surgeon did robotic LIMA single vessel cardiac artery bypass graph. Successful Surgery & currently doing cardiac rehab. On short term disability waiting for 6 months after surgery for additional stress test & angiogram. If clear then the paperwork process begins for the FAA		8-14 Days	3	4	Pfizer (2)	Pfizer (1)	Y	No	1-Post but Pre-Booster	No	Calcium CT, nuclear stress test, angiogram.		
39	M	57	Valid, NO SI	UAL	Working	Heart issues		<24 Hours	2	3	Pfizer (2)		N	No	3+Prior & Post	No			
40	M	53	Valid, NO SI	SWA	Working	Heart Palpitations/irregular heart rate. W/1 week of taking the booster heart would start racing for no reason. Lasted less than an hour then return to normal Persisted for 9 mo-yr. Has gotten gradually better to where it is almost non existent now.		1-7 Days	1	1	Pfizer (2)	Pfizer (1)	Y	No	0	No			
41	M	50	Valid, NO SI	FAR 121	LTD	Diaphragm paralysis. Otherwise healthy pilot diagnosed with diaphragm paralysis 6 months ago w/hypertension as the initial onset symptom. Unsure of cause	5	+6 Months	1	5	J&J		N	No	3+Prior & Post	No			
42	M	60	Valid, NO SI	AAL	Working	Mitro Valve regurgitation. About a year after last booster, my AME detected a heart murmur that has turned out to be a Mitro valve problem		+6 Months	1	3	Moderna (2)		N	No	3+Prior & Post	No			

	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence	Do NOT Plan to tell PRIOR TO NEXT FAA. HOPE WILL IMPROVE BEFORE I MUST REPORT.	Do NOT plan to mention WHETHER OR NOT I IMPROVE, HOPE NOT DETECTED
43	M	52	Valid, NO SI	UAL	Working	Myocarditis tinitus. Lower cardio output	14	15-30 Days	1	3	Moderna (2)		N	No	2-Post	No			
44	M	41	Valid, NO SI	NKS	Working	Irregular EKG for first time. Elongated QRS. Ultimately followed up with stress test with no other negative findings. First time in my career having a bad EKG which happened to be 2 weeks after second dose. Two weeks after my second dose of Pfizer I attended my annual class 1 medical appointment. My EKG had an elongated QRS and as such I was required by the regulatory authority to attend a cardio stress test. The stress test was almost 8 months later and there were no further negative findings. My employer at the time required the vaccine. I have since switched to an airline that does not. I took it under duress at the time to keep my job.		8-14 Days	2	3	Pfizer (2)		N	No	1-Post	No	EKG, Stress Test.		
45	M	61	Deferred pending	FFT	LTD	CAD		>6 Months	1	4	J&J	J&J (1)	Y	No	1-Post/1-Post Booster	No			
46	M	41	Valid, NO SI	Corporate	Working	Myocarditis		1-3 Months	1	2	Moderna (1)		N	No	3+Prior & Direct	No			
47	M	54	Valid, NO SI	SWA	Working	Heart issues		1-3 Months	2	4	Pfizer (2)	Pfizer (1)	Y	No	1-Post/1-Post Booster	No		I agree.	I agree.
48	M	48	Valid, NO SI	UAL	Working	Heart palpitations detected on EKG during FAA medical following 2nd vaccine dose. Has not recurred in follow up EKG's, cardiologist cleared the concern for FAA		1-3 Months	1	1	Pfizer (2)		N	No	1-Prior/1-Post	No			
49	M	39	Valid, NO SI	JBL	Working	Hospitalized approx 2 weeks after 2nd dose due to irregular EKG, symptoms included dizziness & lightheadedness. Passed out approx. 20 min after 2nd dose. Felt dizzy & lightheaded for almost 2 weeks afterwards before seeking medical attention. 1st visit to urgent care thought perhaps dehydration. 2nd visit included an EKG as a precaution. It came back abnormal, & was recommended go to ER. Admitted for observation. Further EKGs at hospital all w/abnormal indications. CT Scan & Echo were normal. I was released the following day with no medicine or adverse findings. Continued to feel "off" for several months.		<24 Hours	1	2	Pfizer (2)		N	No	1-Post	No	Abnormal EKG that resulted in overnight stay of hospital. Further testing included Echocardiogram and CT Scan were normal.		
50	M	42	Valid, NO SI	DAL	Working	blood clot		1-3 Months	1	3	Pfizer (2)		N	No	0	No			
51	M	33	Valid, NO SI	US Army	Working	Significant fatigue & heart concerns. After vaccine I noticed a significant reduction in ability to run long distances & exercise in general. Had chest pains so went to flight doctor & had EKG w/irregularities from my baseline EKG as part of my normal flight physicals	7	8-14 Days	1	4	Pfizer (2)		N	No	2-Post	No	EKG		
52	M	65	Valid, NO SI	UAL	Retired Since	Cardiomyopathy		15-30 Days	1	2	Pfizer (2)	Pfizer (1)	Y	No	1-Prior/1-Post Booster	No			
53	M	44	Valid, NO SI	DAL	Working	Myocarditis		1-7 Days	5	3	Moderna (2)		N	No	3+Prior & Post	No	EKG, ultrasound, blood panel		
54	M	50	Valid, NO SI	DAL	Working	Myocarditis. 2-3 days after 2nd Moderna shot, I had sudden onset tachycardia. After about 20 minutes it subsided. I had a few instances thereafter not as long or significant. I did not feel right for about 6 months.		1-7 Days	1	3	Moderna (2)		N	No	1-Post	No			

	Sex	Age	Medical	Employer	Status	Description	Comorbidit y	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long- Covid	Supporting Evidence	Do NOT Plan to tell PRIOR TO NEXT FAA. HOPE WILL IMPROVE BEFORE I MUST REPORT.	Do NOT plan to mention WHETHER OR NOT I IMPROVE, HOPE NOT DETECTED
55	M	59	Valid, NO SI	Corporate	Working	Heart Murmur.Changed AMEs due to upcoming international trip, roughly 9 mo. after Pfizer vaccine. AME was a Cardiologist by trade, & commented that my heartbeat had a murmur. He asked if I had ever been diagnosed prior-NO. Recommended I see Cardiologist to verify. My regular AME in PA had passed away, so I located my "new regular AME" & began going to him every 6 mo for FAA 1st Class. On next evaluation, he noticed that I had symptoms of a heart murmur as well, & recommended that I see Cardiologist. His observation was not restrictive nor did it impact the status of my FAA Medical, was purely recommendation. I have not been successful in securing examination for many reasons (operational tempo at work, availability of doctors in my area, change in PC.), but I hope to soon.		+6 Months	1	2	Pfizer (2)		N	No	1-Post	No	EKG		
144	M	60	Deferred- Severely Increased HGA1C & GBS 8/22	FAR 121	Retired Since	Severe Jump in HGA1C & Severe Muscular & Joint Pain Similar to Guillian Barre	5	8-14 Days	1	5	J&J	Moderna (1)	Y	No	1-Post but Pre-Booster	No	Labs, summaries, Dr notes		
56	M	54	Deferred 12/17/22	UPS	LTD	Heart attack/stroke	5	+6 Months	1	4	Pfizer (2)	Pfizer (2)	Y	No	1-Prior	No		I have not decided.	I have not decided.
						Comorbidity Codes													
						3- Brain Fog/Mental/Memory				Health Assessment									
						4-Autoimmune				1- Extremely Healthy									
						5-Neurological				2- Good									
						7- Chronic Fatigue				3- Average									
						8-Musculoskeletal				4- Fair									
						9-Respiratory				5-Extremely Unhealth									
						13-Ocular													
						14-Autism													

Menstrual Events (1 Pilot Report)

Nazir et al., conducted a systemic review of 14 studies that included 78,138 women of which they found 52% suffered adverse menstrual effects after CV-19 vaccination (2022). Reported by a female, age 37, (Figure 66) with a valid First Class Medial-No SI, this pilot indicates she works for a Part 135 charter airline. She provided no information as to whether she plans to discuss her concerns with her AME or inform the FAA. The pilot lists no comorbidities, but noticed abnormal menstrual periods beginning 1-3 months after the second vaccination, and states that she is struggling with

infertility. She rated her health as “1-extremely healthy” prior to the vaccination, and now considers herself “3-average health.” The first dose of Pfizer BioNTech in was received in June 2021, and the second in August of the same year. She has not taken any boosters. Her case was not reported to VAERS; however, she did enroll in VSafe but says she has not been contacted. Prior to vaccination, she had CV-19 twice. Now, she has no plans for further vaccination and does not suffer from long-haul COVID symptoms.

Figure 66

Q36 Pilot Reporting Adverse Menstrual Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long Covid
57	F	37	Valid/NoSI	Charter	Working	Abnormal Cycle/Infertility		1-3 Months	1	23	Pfizer (2)	N	N	Y	2 Prior	No
						Health Assessment Code										
						1- Extremely Healthy										
						2- Good										
						3- Average										
						4- Fair										
						5- Poor										

Brain Fog, Mental, & Memory Issues (6 Pilot Reports)

Pilots in this class (Figure 67) were grouped together based on their descriptive symptoms which include “Short-Term Memory Loss;” “Cognitive Abnormalities;” “Brain Fog/Difficulty Concentrating/Acute Anxiety;” “Persistent Brain Fog;” “Heart Issues and Claustrophobic;” and “Brain Fog, AFib, Exhaustion.” The NIH defines “Brain Fog” as a “range of neurocognitive symptoms that can include forgetfulness and problems focusing, concentrating, and paying attention” (2023, para.1). While normally

a function of persistent CV-19 infection (long-haul COVID) a new study ties cognitive changes to gut Microbiome—specifically, the depletion of serotonin as a result of CV-19, especially in “long-haulers” (2023). Serotonin is also linked to food digestion and sexual desire, per NIH, which may explain some of the adverse effects discussed below. The quest to find the link between long-haul symptoms and vaccines is ongoing. Authors Vogel & Couzin-Frankel (2023) point to comments from Karl Lauterbach, German Minister of Health, who acknowledged, “...Long COVID–like symptoms after vaccination are a real phenomenon” (p. 18). The article then details several on-going post-vaccine research studies in various phases of development.

This group includes five males and a female ranging in age from 43-57. The female, with additional autoimmune issues, states she is on LTD, but says she has not reported this issue to the FAA and does not plan to do so. Only one other pilot in this cohort answered the question about disclosure simply stating, “I have not decided.” The lone pilot with an SI indicates it was issued in 2016 and is, therefore, unrelated. The survey is unable to determine if the underlying condition that necessitated the SI may have played a role in this pilot’s claim of vaccine adverse effects. The female (on LTD from a major airline) is working in FAR 91 flight training. All male pilots state they are currently working for major U.S. carriers.

There are three stand-alone cases who report no comorbidities. Two pilots with brain fog/mental/memory issues report coexisting cardiological issues. One has autoimmune comorbidities. Two pilots report immediate (less than 24 hours) symptom onset. All say their physical health had decreased since the vaccine or booster. Only the female took boosters (4+ doses).

A single pilot indicates that his case was reported to the VAERS system; however, none reported to VSafe. All indicate they have had CV-19 at some point in the past. Four say they believe they suffer from long-haul COVID symptoms. Note, all survey participants were presented the following definition of long-haul COVID provided by the CDC.

Long COVID is broadly defined as signs, symptoms, and conditions that continue or develop after initial COVID-19 or SARS-CoV-2 infection.

The signs, symptoms, and conditions are present four weeks or more after the initial phase of infection; may be multisystemic; and may present with a relapsing–remitting pattern and progression or worsening over time, with the possibility of severe and life-threatening events even months or years after infection. Long COVID is not one condition. It represents many potentially overlapping entities, likely with different biological causes and different sets of risk factors and outcomes (2023a, para. 1).

Figure 67

Q36 Pilots Reporting Adverse Brain Fog, Mental, & Memory Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long Covid	Supporting Evidence
58	M	54	Valid/NoSI	UAL	Working	Short-Term Memory Loss		1-3 Months	1	2	Pfizer (2)	N	N	N	2 Prior	N	
59	M	54	Valid/NoSI	UAL	Working	Cognitive Abnormalities (Brain Fog) have never/extremely rarely experienced brain fog. Since vaccine in May 2021 (after being shamed by the company during Captain Charm School) I have had multiple episodes of cognitive malfunction best described as an inability to focus and concentrate (brain fog). I felt shamed into taking the vaccine after being embarrassed during Captain Charm School being made to feel like a third class citizen and "leper" for not having received a shot to date at that time.		1-7 Days	1	2	J&J	N	N	N	3+ Pre & Post	N	
60	M	43	Valid/NoSI	UAL	Working	Brain Fog not result of positive Lyme Disease. "22, 2021 at 9:48 am Per Dr. "not sure can differentiate what caused what I believe all three were present and contributed to your 'brain fog' have not seen that symptom from Lyme disease so still feel most likely came from the vax but have seen enough of this in other patients to recommend avoiding the booster especially since you are not at high risk of serious illness"		8-14 Days	2	3	J&J	N	Y	N	2 Post	Y	Drs. Notes/Diagnosis
61	F	45	Valid/NoSI	N/A (Part 91)	LTD	Persistent Brain Fog/Hives. Hives down arm and persistent brain fog. Didn't stop from getting covid twice	4	<24 Hours	2	4	Moderna (2)	4+ (Pf/Pf/M/Pf)	N	N	2 Post Booster	Y	
6	M	57	Valid/SI	SWA	Working	Claustrophobic	1	<24 Hours	2	3	Pfizer (2)	N	N	N	2 Pre & Post	Y	
20	M	55	Valid/NoSI	JBL	Working	Brain Fog, Afib, Exhaustion	1 & 7	Over 6 Months	1	4	Moderna (2)	N	N	N	2 Post	Y	Verified AFib episodes on cardio reading machine
						Comorbidity Codes		Health Assessment									
						1-Cardiological		1-Extremely Healthy									
						4-Autoimmune		2-Good									
						7-Chronic Fatigue		3-Average									
								4-Fair									
								5-Poor									

Auto-Immune Events (17 Pilot Reports)

The NIH defines autoimmune disease as defects caused by immune system “malfunctions” occurring when the body “mistakenly attacks healthy cells, tissues, and organs...weakening bodily function” and includes over 80 identifiable, named diseases (2024, para. 1). Pilots in this cohort were grouped together by their descriptive

symptoms that include: “decreased immune function;” “allergies;” “Long Haul;” “Lupis;” “hives;” “Inflammatory Issues or Inflammation;” and “weird bumps.” The group does not include those who merely answered “yes” to suffering from long-haul COVID symptoms. Instead, only those pilots who specifically state “Long-Haul” or “Long COVID” in their descriptive responses are categorized in this group.

Of the 17 pilots in this cohort (Figure 68), three are female and 14 are male. They range in age from 32-64 years old. Four have Deferred FAA Medical certificate applications. One has a valid SI medical due to his COVID-19 vaccine issues. Nine report they are actively flying; eight are on LTD. One is an Air Force Pilot, and one of the 16 remaining pilots also serves in the military as his second job. This group again contains the female pilot who reports that she is working in Part 91 training while out on LTD. Other than the lone military pilot, all in this group work(ed) for major carriers. Of the pilots not Deferred or on SI, only one plans to tell his AME/FAA about his condition. Three say they would not tell their AME, and eight choose not to answer.

Six pilots report only autoimmune issues. Eleven report comorbidities including: cardiological (6); Brain Fog/Mental (1); neurological (3); musculoskeletal (1); respiratory (1); ocular (1); auditory (2); and renal (1). Symptom onset ranged from immediately to 6+ months post-vaccine with the majority (13) occurring within days, not months. All are fully vaccinated, and six took at least one booster. Three state their cases were reported to VAERS, and the one male pilot who reported his condition to VSafe says he was contacted twice. Seven claim to suffer from long-haul COVID. Finally, ten believe they have supporting evidence (clinical notes, tests, etc.) to substantiate their claims.

Figure 68

Q36 Pilot Reporting Adverse Auto-Immune Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
2	M	53	Valid/NoSI	DAL	Working	Tinnitus, non-specific T-wave abnormality on EKG, decreased immune function. 5 hours after 2nd dose, strong fever & immune response, noticed tinnitus increase after (18 hrs). Next FAA EKG T wave abnormality appeared & has remained since. Get sick more often & more severely than in the past. After taking NAC, zinc, quercetin & vit D regiment weekly my immune system has recovered some what.	1 & 14	1-7 Days	2	3	Moderna (2)	N	Y	N	2 Post Vax	N	
7	M	64	Valid/NoSI	UAL	Working	Aged me 5 yrs in appearance in months. BP 190/115 for several mos. Strange painful bruising. Allergy to all tree nuts, alcohol, coffee-hives. All symptoms resolved 6 mos. Always had normal BP so the spike of 190/115 a few weeks after the shot is likely caused the shot. Never had hives before the shot. I dont bruise easily literally never bruise. Bruise I had was on inside of forearm. Strange gray color & very painful. ER did a D-Dimer test, negative. Logged it as tendonitis. I've had golfers & tennis elbow. Neither caused huge discoloration covering a majority of the inside of my forearm. This was surely not tendonitis. The bruise lasted for approx 3 weeks. Never reappeared. Bought a BP machine & tracked very high BP for 4+ mos then normal after approx 6 mo. The tree nut/coffee/alcohol allergy lasted several months.	1	8-14 Days	1	1	J & J	N	Y	N	1 Post Vax	N	Doctor statements
8	M	61	Valid, w/SI	UAL	LTD	Heart afib, pericarditis, stroke, long haul lung issues	1 & 5	1/3 Months	1	4	J&J	J&J (1)	N	N	2-Prior	Y	
10	F	50	Valid/NoSI	UAL	Working	Reynaud's Syndrom & Possible Lupis. Immediately post 2nd injection, numbness & tingling in fingers of my left hand (injection side). Thought a nerve hit & would be temp. For next 6 mos, numbness & tingling increased to fingers on both hands, but only when was cold. Started losing hair. Got full bloodwork. ANA positive, indicative of potentially having Lupus. Waiting for an appointment with a Rheumatologist.... I am 100% sure I had NO symptoms of tingling prior to the 2nd vax & I first had tingling immediately following the shot.	1	1-7 Days	1	3	Pfizer (2)	N	N	N	1 Post Vax	N	
24	M	34	Valid/NoSI	UAL	LTD	Tachycardia, headaches, high blood pressure, extreme seasonal allergies	1 & 5	15-3- Days	2	4	Pfizer (2)	N	N	Y-2Contacts	1 Prior/1 Post	Y	Doctor statements
33	M	41	Valid/NoSI	GTI	Working	BP jumped within a month of booster, random sores to this day will still pop up at the injection site of the booster, highly sensitive to developing random rashes on my face, my arms, & hands almost as if eczema, but MD says not eczema, shortness of breath after any exercise as if I have very bad asthma, which I had never had before.	1 & 9	1-7 Days	4	3	Pfizer (2)	1 Moderna	N	N	or/1 Post Before	N	
61	F	45	Valid/NoSI	N/A (Part 91)	LTD	Hives on arms, brain fog.	3	< 24 Hours	2	4	Moderna (2)	4+ (PH/PH/M/PF)	N	N	2 Post Booster	N	Symptoms and blood test confirmation
62	M	58	Deferred	UAL	LTD	Autoimmune system failure. Dana-Farber, Westchester Medical (NYC), and NIH have found no other cause. Neutropenia (2019), able to maintain w/ therapeutic treatment. Contracted COVID in Jan 2021 with no complications. After vax, could not maintain neutrophils. Numerous hospitalizations (>140 days) over next 18 months. Seem to be regaining neutrophils following treatment.		15-30 Days	2	5	Moderna (2)	N	N	N	1 Prior Vax	N	CBC labs - neutropenic prior to COVID vax; clear change in neutrophil count after 2nd vax.

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
63	M	59	Deferred	UAL	LTD	Post Acute infectious disease. Post covid symptoms/immune system . Mild covid infection 7-19-2022.Mild covid infection 7-19-2022 immune system developed post acute phase infectious disease doctor diagnosed post covid symptoms		+6 Months	4	3	Pfizer (2)	1 Pfizer	N	N	1 Post Booster	Y	Blood work very high antibodies
64	M	44	Deferred	UAL	LTD	Hyper-Inflammatory Auto-Immune Response with numerous resulting secondary symptoms		<24 Hours	N/A	N/A	J&J	N	N	N/A	N/A	N/A	7+ yrs of quarterly blood work <Vax (includ week prior) vs. bi-monthly blood work post Vax indicates immediate & continued immune response & subsequent inflammation.
65	M	37	Valid/NoSi	FDX/USNR	Working	Tumors/Fibrom in Hand, Swollen/painful Fingers. 2 days+ 2nd Pfizer shot, hard mass in right hand appeared. Initially assumed was blister. Months later was surgically removed. Shortly after surgery, four finger joints started hurting with visible hard masses/lumps. Provided all data to several physicians who all denied it was vaccine related. All refused to enter into VAERS	8	1-7 Days	1	2	Pfizer (2)	N	N	N	3+ Prior Vax	Y	
72	F	35	Valid-NO Si	FAR 121	Working	Nerve injury due to the idiot at Walgreens not properly injecting the vaccine into my muscle and injecting the vaccine too close to my ulnar nerve. AND a severe allergic anaphylaxis reaction	5	<24 (Immediately)	N/A	N/A	Pfizer (2)	N	N/A	N/A	N/A	N/A	Diagnosis of nerve fan damage from specialist for ongoing pain that lasted approximately 18 months. It took a while for a doctor to take my pain and numbness seriously.
87	M	32	Valid/NoSi	USAF	Working	Permanent Inflammation & Histamine Condition. Itchy Skin/Rash. IWithin 48 hrs of booster began experiencing COVID symptoms. Additionally, developed severe rash, intense chest pains (GERD), & internal organ pain.		48Hour Post Booster	1	4	Moderna (2)	1 Moderna	N	N	1 Post Booster	Y	
88	M	46	Valid/NoSi	UAL	LTD	Weird Small Bumps on Head Duration 2 Months		8-14 Days	N/A	N/A	Pfizer (2)	N	N	N	N/A	N	I visited a general care clinic and an emergency room visit both for the painful bruising.
112	M	59	Valid, NO Si	UAL	Working	tinnitus and major flu like illness	14	1-7 Days	1	3	J&J	N	Y	N	1-Prior/1-Post	N	
120	M	33	Valid/NoSi	DAL	Working	Inflammatory Issues. Post 2nd dose had first kidney stone. My mom also had kidney stone pot 2nd dose Moderna. I've had inflammation issues since booster, mainly in my eye. Iritis.	13 & 16	8-14 Days	2	3	Moderna (2)	1 Moderna	N	N	1 Post Booster	Y	Surgery, MRI, XRay
121	M	64	Deferred	AAL	LTD	Long Covid		4-6 Months	1	4	Pfizer (2)	N	N	N	1-Prior/1-Post	Y	Mayo Dr's Diagnosis
						Comorbidity Codes		Health Assessment Code									
						1-Cardiological		1-Extremely Healthy									
						3-Brain Fog/Mental		2- Good									
						5-Neurological		3- Average									
						8-Musculoskeletal		4- Fair									
						9-Respiratory		5-Extremely Unhealthy									
						13-Ocular											
						14-Auditory											
						18-Renal											

Neurological Events (21 Pilot Reports)

Chatterjee & Chakravarty (2022) wrote extensively about post-CV-19 vaccination neurological complications. Their findings are of particular interest to this cohort, specifically the following:

There is a greater than expected occurrence of severe neurological adverse events such as cortical sinus venous thrombosis, Bell's palsy, transverse myelitis, and Guillain–Barré syndromes along with other common effects such as headaches following different kinds of COVID-19 vaccination (para. 2).

The 21 pilots in this group (Figure 69), including two females, range from 35-68 years old. Four have Deferred Medical Certificates they attribute to their vaccine complications. One pilot reports his SI is the result of COVID-19 vaccine complications. Two indicate that their SI's were issued prior to the pandemic (hyperthyroidism and retinal). The remaining 14 have valid Medical Certificates. Two are military or former military airmen. One is a 46-year-old retired U.S. Air Force pilot who holds a valid First Class Medical. The other is a 41-year-old U.S. Army pilot who holds a valid Second Class Medical. Additionally, one civilian pilot serves in the Air National Guard. Six pilots report they are on LTD. Two report they are retired—one at the time of his deferral. The second retired pilot presents conflicted data, but was retained in the cohort. He states that he is 68 with a third class medical. It is more likely that his First Class Medical Certificate was not renewed after turning 65, and he merely has third class privileges on that certificate. He was retained because he states he retired from American Airlines in 2021 and received the vaccine in late 2020.

Nine pilots report comorbidities—cardiological (5); autoimmune (3); chronic fatigue (1); musculoskeletal (1); auditory (1). Onset ranges from immediately to 6+ months post vaccination with over half being within 30 days of vaccination. All but one pilot indicates their health is worse, post vaccination. Nine received the J&J vaccine. Two received two doses of Moderna, and 10 received two doses of Pfizer BioNTech. Four pilots took boosters. Only one pilot’s case was reported to VAERS (an immediate blackout followed by tremors post-second dose), and none were reported to VSafe. Five believe they have symptoms associated with long-haul COVID. Of the 12 working pilots who claim to suffer neurological vaccine adverse effects, eight refuse to answer whether or not they plan to report their condition to their AME, and four say they will not disclose, hoping they are not detected. However, four also claim to have supporting evidence.

Figure 69

Q36 Pilots Reporting Adverse Neurological Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidit y	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long- Covid	Supporting Evidence
66	M	57	Valid/No SI	DAL	Working	Migraine Headaches		4-6 Months	1	2	J&J		N	N	2-Post	N	
67	F	53	Deferred	UAL	LTD	Neurological Spell. Advised not to get Shingles vaccine before COVID vaccines because possibility of interference & unknown side effects. It didn't dawn on me that if it could interfere after CV Vax. Got 1st Shingles vaccine on 7/15/21. 7/20 approx 0615 driving remember feeling like I was swimming/flying through a thick murky soup. Auto accident. No memory of any treatment. later found electrodes on my upper torso and after reading the report realized they had taken blood and done a mobile EKG no memory. Went to Mayo next day. CT Scan Normal. Normal MRI, EEG abnormal. admit 5 days, monitored 24/7, continuous EEG, cardio, cognitive & sleep tests. Unable conclusive diagnosis-Neurological Spell. Asked if could be byproduct of 2 CV Vax & Shingles Vax. Told no studies. Asked to initiate. Unwilling to say or do anything that would taint the vaccine data.		1-3 Months	2	2	Moderna (2)		N	N	1-Post	N	6 days in the Mayo Clinic - Multiple EEG's, Cognitive Tests, Heart Tests, Sleep Tests
68	M	46	Valid/No SI	USAF	Retired	Headaches. Never got these headaches before covid		15-30 Days	2	3	J&J		N	N	2-Prior	N	

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
69	M	56	Deferred	UAL	LTD	Parkinson's		15-30 Days	2	4	J&J		N	N	1-Post	N	
70	M	53	Valid/No SI	SWA	Working	Headaches, Spinal Neuropathy		Immediately	1	3	Pfizer (2)		N	N	1 Prior/1 Post-pre Booster	N	
71	M	47	Valid/No SI	GTI	Working	Bell's Palsy-7th cranial nerve inflammation, 1 week, same from military service vaccines		1-7 Days	1	3	J&J		N	N	1-Prior/1-Post	N	
72	F	35	Valid/No SI	FAR 121	Working	Nerve Injury from injection near Ulnar Nerve & Severe Anaphalaxis reaction	4	Immediately	N/A	N/A	Pfizer (2)		N	N	N/A	N	Diagnosis: nerve fan damage from specialist for 18 mo.pain Took time for a doct to take pain & numbness seriously.
73	M	59	Valid/No SI	SWA	Working	Essential Tremors in Hands		4-6 Months	1	3	Pfizer (2)	Pfizer-1	N	N	1Post & 1 Post Booster	N	Diagnosed by a neurologist
74	M	41	Valid/No SI	UAL	Working	Blacked out then shakes & tremors lasting 4-6 hours post second dose		Immediately	1	3	Pfizer (2)		Y	N	2 Post	N	Diagnosis
75	M	53	Valid/No SI	SWA	Working	Headaches, Tinnitus	14	4-6 Months	1	2	Moderna		N	N	3+ Post	Y	
76	M	53	Valid/No SI	UAL	Working	Hand Numbness		8-14 Days	1	3	J&J		N	N	1 Prior/1 Post	N	
77	M	36	Valid/No SI	SWA & ANG	Working	Nervous System Damage, loss of sensation in extremities-Left side, Left foot/ankle still without sensation/feeling		Immediately	1	3	J&J		N	N	1 Prior/1 Post	Y	
78	M	41	Valid/No SI	US Army	Working	Migraine Headaches, Insomnia		+6Months	1	4	Pfizer (2)		N	N	1 Post	N	
79	M	44	Valid/No SI	FAR 121	Working	Tingling and burning pan in toes & fingers. Tingling and pain in toes mainly and some in fingers. Have done any text and exam that is there including blood work, X-ray, MRI, allergy test. Several specialists... no one has been able to diagnose the issue. No nerve, bolts or auger problem.		+6Months	1	2	Pfizer (2)		N	N	1 Prior	N	All the tests that indicated previously
8	M	61	Valid SI-Afib post Vax	UAL	LTD	Stroke, Heart Afib, Periarthritis,	1 & 4	1-3 Months	1	4	J&J	J&J-1	N	N	2 Prior	Y	
24	M	54	Valid/No SI	UAL	LTD	Headaches, Tachycardia, High BP, Extreme seasonal allergies	1 & 4	15-30 Days	2	4	Pfizer (2)		N	N	1 Prior/1 Post	N	Doctor statements
41	M	50	Valid/No SI	FAR 121	LTD	Diaphragm Paralysis	1	+6Months	1	5	J&J		N	N	1 Prior/1 Post	Y	
144	M	60	Deferred	FAR 121	Retired	Severe Jump in HGA1C & Severe Muscle and Joint Pain similar to Guillain-Barre	1	8-14 Days	1	5	J&J	Moderna-1	N	N	1 Post Vax/Pre Booster	N	Labs, summaries, Dr notes
56	M	54	Defered	UPS	LTD	Stroke/Heart Attack	1	+6Months	1	4	Pfizer (2)	Pfizer-2	N	N	1 Prior	Y	
82	M	45	Valid SI-Hyper Thyroidism 2018	UAL	Working	3 Mo of extreme cold/shivering episodes, chronic fatigue. Was freezing cold in rooms < 80 degrees for 3 mo+ vaccination. Eventually went away, & daily activities mostly normal, but excessive napping. No energy to jog as did prior to vax. Is subtle but always present. As creature of habit, historically slept 7 hrs/night, never nap. Now sleep 7 hrs but am exhausted all the time.	7	15-30 Days	1	2	Pfizer (2)		N	N	1 Post	N	
98	M	68	Valid SI-Retinal-2008	AAL	Retired	Inflammation in both arms-loss of use of both arms for two weeks, still pain and inflammation in both	8	1-7 Days	1	4	Pfizer (2)		N	N	1 Post	N	MRI, x-Rays
						Comorbidity Codes		Health Assessment									
						1-Cardiological		1- Extremely Healthy									
						4-AutoImmune		2- Good									
						7-Chronic Fatigue		3- Average									
						8-Musculoskeletal		4- Fair									
						14-Auditory		5-Extremely Unhealthy									

Chest Pain (3 Pilot Reports)

While not a clinical diagnosis by the NIH, this category was created because it was impossible, from the information provided, to determine the source of the pain (cardiological, neurological, musculoskeletal, etc.). Based on the survey data, these three male pilots (Figure 70) are concerned about losing their FAA Medical Certificates. Pilot #80 wrote “no way” under employer but did indicate he works for a FAR 121 carrier. Pilot #3 stated in his narrative, “I do not want to go to the doctor and compromise my medical certificate.” None answered the questions concerning their intent to report their conditions on their next FAA Medical application. While none reported comorbidities, none took boosters. All have had the virus at least one time after their vaccine. One claims to suffer long-haul symptoms.

Figure 70

Q36 Pilots Reporting Chest Pain Post-Vaccination

[illegible]

Chronic Fatigue (8 Pilot Reports)

Research on Chronic Fatigue as a result of COVID-19 vaccines is evolving. Semmler, et al., detailed what is known as “post-acute COVID-19 vaccination syndrome (PACVS),” the symptoms of which include, “exhaustion, malaise, chronic fatigue” and are most often accompanied by cardiovascular and/or neurological “disturbances” (2023). The researchers point out that PACVS encompasses “chronic, debilitating symptoms” which “severely compromise the quality of life” (para. 1).

Based on the description presented, eight male pilots (Figure 71) are included in this cohort, all between the ages of 35-55. Three have valid SI Medical Certificates issued in advance of their vaccinations. Hyper-Thyroidism and Obstructive Sleep Apnea were the two of three reported details. The other chose not to report the cause of his SI. One is working as a corporate pilot; one is an active-duty U.S. Army pilot. The remaining six are employed and actively working for major U.S. carriers.

Comorbidities in this group include two with cardiac issues; one with “Brain Fog;” one with autoimmune issues; and one with neurological symptoms. Onset ranged from 1 day to 6+ months post vaccination. All report an overall degradation in their general health. One pilot took two doses of Moderna. The remaining seven all took two doses of Pfizer. None took a booster or reported their case to VAERS or VSafe. All have had Covid-19. None say they suffer from long-haul COVID effects. Four say they do not plan to report their condition to their AME in hopes that it is not detected. Four did not answer.

Figure 71

Q36 Pilots Reporting Chronic Fatigue Post-Vaccination

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
82	M	45	Valid SI-Hyper Thyroidism 2018	UAL	Working	3 Mo of extreme cold/shivering episodes, chronic fatigue. Was freezing cold in rooms < 80 degrees for 3 mo+ vaccination. Eventually went away, & daily activities mostly normal, but excessive napping. No energy to jog as did prior to vax. Is subtle but always present. As creature of habit, historically slept 7 hrs/night, never nap. Now sleep 7 hrs but am exhausted all the time.	5	15-30 Days	1	2	Pfizer (2)	N	N	N	1-Post	N	
83	M	45	Valid SI-2014	CORPORATE	Working	Chronic Fatigue. Very fatigued, very poor metabolism		1-3 Months	3	4	Pfizer (2)	N	N	N	1-Prior	N	
84	M	49	Valid/No SI	UAL	Working	Fatigue		1-3 Months	1	3	Pfizer (2)	N	N	N	1 Prior/1Post	N	
85	M	35	Valid/No SI	AAL	Working	Chronic Fatigue		15-30 Days	2	3	Pfizer (2)	N	N	N	3+ Post	N	
86	M	51	Valid/No SI	UAL	Working	Increased levels of Fatigue		4-6 Months	2	3	Pfizer (2)	N	N	N	1 Post	N	
20	M	55	Valid/No SI	JBL	Working	Afib, Exhaustion, Brain Fog	1 & 3	+6Months	1	3	Moderna (2)	N	N	N	2 Post	N	Verified AFib on cardio machine
21	M	50	Valis SI-OSA- 2020	UAL	Working	Extreme fatigue accompanies pain. Culminated in heart palpitations, & an erratic rhythm. Afraid to do serious workouts fearing intensifying heart issues. The fatigue continues while intensity oscillates where it often feels like I have flu-like symptoms, but tests indicate no flu or Covid	1 & 4	1-7 Days	1	5	Pfizer (2)	N	N	N	1 Prior/1-Post	N	
51	M	33	Valid/No SI	US ARMY	Working	Significant Fatigue & Heart Concerns. After vaccine I noticed a significant reduction in ability to run long distances & exercise. Had chest pains so went to Flt Doc for EKG. Show irregularities from my baseline EKG (part of my normal flight physicals)	1	8-14 Days	1	4	Pfizer (2)	N	N	N	2 Post	N	EKG
						Comorbidity Codes		Health Assessment Code									
						1-Cardiological		1- Extremely Healthy									
						3-Brain Fog/Mental/Memory		2- Good									
						4-Autoimmune		3- Average									
						5-Neurological		4- Fair									
								5-Extremely Unhealthy									

Musculoskeletal Events (13 Pilot Reports)

Pilots' symptoms in this group include complaints of muscle soreness, aching joints, and localized pain. It is possible that Deep Vein Thrombosis (DVT) or other diagnoses could cause such pain, but because, for example, a report of "pain in the leg," contains no further information, it is included in this group. More clinical information is needed to determine exact causation, which is beyond the scope of this report. Searching for a connection between the vaccine and "new-onset arthritis," in 2023, Liu and his team conducted a systemic review of 31 articles regarding joint diseases and arthritis, post-vaccination, concluding enough of a link exists to call for a large scale, controlled study. Perhaps, some of our pilots fall into this area.

In the study cohort, 13 pilots (Figure 72) report musculoskeletal issues, of which five of list auto-immune and "brain fog" co-morbidities. All are males ranging from 37-68. Twelve have either valid FAA First Class Medicals or unrelated Special Issuance Medicals and are employees of major carriers. Additionally, four serve in the U.S. military in secondary careers.

Symptom onset ranges from less than 24 hours post-vaccine to over six months. Nine report an overall health decline. The two-shot Moderna course was completed by two pilots, one of which had two additional Moderna boosters. Seven chose J&J, none of which received boosters. Three completed the Pfizer two-shot course with no boosters. One did not receive the Pfizer second injection due to his immediate adverse reaction. No pilots' cases were reported to VAERS, although one did attempt to report to VSafe. He states he received no contact. Three pilots report never having had COVID-19, but two indicate they suffer from long-haul COVID symptoms. Three say they possess

supporting radiological evidence of their adverse effects, one of which had surgery to remove a mass. Four pilots chose to answer whether they had reported their condition to their AME or the FAA. Only the pilot who had the hand lumpectomy did so. One pilot answered about their intentions to disclose stating they hope they improve before their next FAA physical, and if not, they hope their condition is not detected.

Figure 72

Q36 Pilots Reporting Adverse Musculoskeletal Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbid- ity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long- Covid	Supporting Evidence
89	M	35	Valid/NO SI	NKS	Working	Change in muscle feeling		+6Months	2	4	Moderna (2)	Moderna (2)	N	N	1-Prior	Y	
90	M	43	Valid/NO SI	FAR 121	Working	Undiagnosed, unreported. Right leg feels weird since vaccine. Began as slight burning sensations & tightness in the same location approx 2 weeks after vaccine. Was concerned about blood clots but no symptoms. I didn't seek medical attention. It has just recently began to subside. Most prevalent when squatting.		15-30 Days	2	2	J&J	N	N	N	1-Prior	N	
91	M	42	Valid/NO SI	SWA	Working	Strange cramps about 2 weeks after vaccine. Continues to this day, & USAF Never had experienced prior to the vax.		15-30 Days	1	2	J&J	N	N	N	3+Prior	N	
92	M	39	Valid/NO SI	JBL	Working	Bursitis, osteoarthritis, torn rotator cuff		<24 Hours	1	2	Pfizer (1)	N	N	N	1-Prior/1-Post	N	MRI
93	M	54	Valid/SI 2017	UAL	Working	Joint Pain. Deep Joint Pain in Elbow Area injected are w/ a day of vaccine that progressed to joint pain in the other arm		1-7 Days	1	2	J&J	N	N	N	0	N	
94	M	47	Valid/NO SI Unrelated	UAL	Working	Muscle fatigue. Overall tired feeling (muscles) after exercise that normally is not fatiguing		8-14 Days	1	2	J&J	N	N	Y-0	0	N	
95	M	62	Valid/NO SI	UAL	Working	Joint Pain and stiffness with muscle weakness.		+6Months	1	3	Pfizer (2)	N	N	N	1-Prior/1-Post	N	
96	M	61	Valid/NO SI	UAL	Working	Left shoulder pain - never subsided. Primary Care Doc. When I arrived, the assistant was friendly and funny as she took my vitals. She asked if I had been vaccinated and if I had any side affects. When I told her that was why I was there, her tone became very business like and all humor ended. When I met with the doctor, his tone also changed dramatically when I told him that I had an injury because of the vaccine.		1-7 Days	1	2	Moderna (2)	N	N	N	0	N	
97	M	53	Valid/NO SI	FAR 121	Working	Pain in left leg.		15-30 Days	2	2	J&J	N	N	N	1-Prior/1-Post	N	

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbi ty	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe CV-19	Long- Covid	Supporting Evidence
98	M	68	Valid/SI 2008 Retina	AAL	Retired	Inflammation in both arms. Lost use of both arms for 2 weeks & still have occasional pain & inflammation in both	5	1-7 Days	1	4	Pfizer (2)	N	N	N	1-Post	N MRI & Xrays
13	M	37	Valid/NO SI	UAL	Working & USAF	Heart rate dropped to 34 BPM during observation period. Since vaccine I've had multiple major joint related issues. None prior.	1	<24 Hours	5	4	J&J	N	N	N	1-Post	N
65	M	37	Valid/NO SI	FDX	Working & USN	Tumors/fibroma in hand, swollen/painful finger joints. 2 days after 2nd shot, developed hard mass in my right hand. Initially assumed was a blister. Never went away. Months later surgically removed. Shortly after surgery, four finger joints started hurting with visible hard masses/lumps. Provided all data to several physicians who deny it is vaccine related. All refused to enter into VAERS	4	1-7 Days	1	2	Pfizer (2)	N	N	N	3+Prior	Y Surgery, MRI, Xrays
111	M	40	Valid/NO SI	UAL	Working	Immediate pink eye and occasional joint pain in hip and knee	15	1-7 Days	2	2	J&J	N	N	N	2-Post	N
						Comorbidity Codes										
								Health Assessment								
						1-Cardiological		1-Extremely Healthy								
						4-Autoimmune/Allergies		2-Good								
						5-Neurological		3-Average								
						15-Ocular		4-Fair								
								5-Extremely Unhealthy								

Respiratory Events (6 Pilot Reports)

A search for information exploring respiratory illnesses, post-vaccination, produced three case studies. A 60-year-old, diagnosed with Dyspnea, was reported as “consistent with the diagnosis of drug-induced interstitial lung disease (Yoshifuji et al., 2022 para. 1). The second article detailed a 65-year-old with “COVID-19 vaccine-induced pneumonitis” (Matsuzaki et al., 2022). The third examined a COPD patient who

was hospitalized for “hypoxic respiratory failure” (Mumm & Elbashir, 2021, para. 1).

No other large studies were found, and the CDC does not list side effects in this category on their site.

Still, six pilots report respiratory complaints including reduced function; persistent coughing up of mucus; Pleurisy; shortness of breath and being winded; Dyspnea; and asthma. All reporters (Figure 73) are males ranging in age from 41-62 with valid First Class Medical Certificates and are employed by major carriers. One serves as a pilot in the Army National Guard, and one pilot reports he on “short term” sick leave from his carrier. Only one pilot reports a comorbidity—autoimmune complications. Onset in three cases occurred within 7 days. Two experienced breathing stress 1-3 months post vaccination. The final reporter states “I cough up coagulated mucus and can’t get it to go away. Not a smoker.” He indicates onset more than six months. All but one rate their health as degraded after their vaccination. Three received two Moderna vaccines, and three received two Pfizer. None took a booster, and no cases have been reported to VAERs or VSafe. Five of the six pilots state they have had COVID-19. Finally, none answered any questions related to reporting their conditions to their AMEs or the FAA, either in the past or in the future.

Figure 73

Q36 Pilots Reporting Adverse Respiratory Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidit y	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long- Covid	Supporting Evidence
99	M	58	Valid/No SI	JBL	Short Term Sick	Reduced Lung Function. Cannot perform any type of cardio workout as previous to vaccine		1-3 Months	1	2	Moderna (2)	N	N	N	1-Prior/1-Post	N	
100	M	50	Valid/No SI	JBL	Working	Persistent Coughing Up Coagulation, Mucus. Not Smoker		+6 Months	1	2	Pfizer (2)	N	N	N	1-Post	N	
101	M	62	Valid/No SI	UAL	Working	Pleurisy. Felt pressure on the left side of chest, shoulder to sternum several days after the second shot. Within 48 hrs, pressure sensation turned into pain. Went to ER. Blood tests, several EKG's and MRI. No lab evidence of heart attack but they had an old MRI on file. Doc said area around my heart was inflamed 28% larger than previous MRI several years ago. ER did rule out a heart attack and felt that the pain and sensation was due to the inflammation. Sent to PC for further tests. Nuclear stress test & echocardiogram several days later because the pain/pressure still hadn't gone away but was not getting worse. Both of those tests normal and the given the amount of inflammation around the heart the doctor concluded a diagnosis of pleurisy and put me on high dosages of ibuprofen. After about a week, the sensation of pain and pressure went away.		1-7 Days	1	4	Moderna (2)	N	N	N	3+ Prior & Post	N	Medical Diagnosis, EKG, Ecocardiogram, MRI, Stress Test
124	M	49	Valid/No SI	FDX	Working	Short of breath a lot. Never had it before. Again 3-6 months after second shot started experiencing random shortness of breath.		1-3 Months	2	3	Pfizer (2)	N	N	N	1-Post	Y	
102	M	45	Valid/No SI	SKW & ArmyNG	Working	Dyspnea & Easily winded during physical exertion immediately following vaccination.		<24 Hours	2	5	Pfizer (2)	N	N	N	3+ Prior & Post		
033	M	41	Valid/No SI	GTI	Working	My blood pressure has jumped within a month of the booster, random sores to this day will still pop up at the injection site of the booster, I have become highly sensitive to developing random rashes on places like my face, my arms, and hands almost as if I have eczema, but my MD tells me this is not eczema at all, shortness of breath after any exercise as if I have very bad asthma, which I had never had a issue with before.	1 & 4	1-7 Days	4	3	Moderna (2)	N	N	N	0	Y	
								Health Assessment Code									
						Comorbidity Codes		1-Extremely									
						1-Cardiological		2-Good									
						4-AutoImmune		3-Average									
								4-Fair									
								5-Extremely Unhealthy									

Liver Events (1 Pilot Report)

Guardiola et al. (2022) examined post-vaccination elevated liver enzymes concluding while rare, “We observed longer latency and most injury occurred after the second dose” (para. 6). A single male (Figure 74), age 40 with a valid First Class Medical Certificate who is working for a major carrier showed signs of elevated liver enzymes at least 6 months after his second Pfizer vaccine. He states he did not take a booster and had COVID-19, post-vaccination. He does not suffer from long-haul COVID, and his case was not reported to VAERS or VSafe. He refrained from answering questions regarding reporting his condition to his AME or the FAA, and provides little other information.

Figure 74

Q36 Pilot Reporting Adverse Liver Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
103	M	40	Valid/No SI	JBL	Working	Elevated Liver Enzymes		+6 Months	2	3	Pfizer (2)	N	N	N	1-Post	N	
								Health Assessment Code									
								1- Extremely									
								2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealthy									

Gastrointestinal Events (3 Pilot Reports)

Several published works relate the COVID-19 vaccine to gastrointestinal complications including individual case studies, large-cohort studies, and examination of specific symptoms. Leung (2022) explains the relationship between “gut microbiota” and the interactions of the vaccine stating:

With such substantial changes in the gut microbiota [caused by the vaccine] one would expect some alterations in bowel habits after vaccination. On a theoretical basis, vaccine-induced loss of diversity would increase the opportunity of pathogens to thrive in the intestine (para. 15).

Three pilots (Figure 75) report suffering post-vaccine gastrointestinal issues including a Crohn’s Disease flare-up after 20 years; stomach lining inflammation; and digestive difficulty/stress causing an irritable bowel and a new-found gluten intolerance. All are males between the ages of 40-61, and all have valid First Class Medical Certificates, although one does have an SI for an unrelated Sleep Apnea diagnosis. These pilots are all actively employed by major carriers. Symptom onset ranged between two weeks and several months. Case #106 is unique in that the original onset may be related to having had COVID-19, but his narrative suggests the vaccines may have aggravated or caused additional episodes. Each pilot completed all courses representing all three brands—Pfizer, Moderna, and J&J—although none took a booster. Two pilots say their health is worse after the vaccine, but none reported their cases to VAERS or VSafe. Two indicate they do not have long-haul COVID. One did not answer. Two also indicate that

they have supporting clinical evidence. When asked if they had or were planning to report their concerns to their AMEs or the FAA, two did not answer and one says “no.”

Figure 75

Q36 Pilots Reporting Adverse Gastrointestinal Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
105	M	40	Valid-NO SI	UAL	Working	1st Crohns Flare Up in 20 yrs, within months of injection. Diagnosed 2003. was stable on meds.		1-3 Months	2	2	J&J	N	N	N	0		
106	M	61	Valid-SI 2013 Sleep Apnea	SWA	Working	Inflammation of stomach lining. Then I had covid for the first time. Symptoms of a distended & aching stomach Started approx 2 mo post recovery. Gastroenterologist scoped my stomach & said the lining was inflamed & red. He said he had seen quite a bit of this from post Covid patients. Symptoms went away after several months. When I got the first covid shot, the same symptoms reappeared. Treated with Omeprazol and they went away. When I got the second shot, they came back again worse than before. They continue, off and on today.		15-30 Days	1	2	Pfizer (2)	N	N	N	3+Prior & Post	N	Endoscopy of stomach
107	M	52	Valid-NO SI	JBL	Working	I became gluten-sensitive (not celiac) a few months after the vaccine. Vaccination-approx March 2021. July 2021 began having loose stools & digestive distress. Quit eating gluten while searching for cause. Symptoms improved, but not consistently. Went to a gastroenterologist for a battery of tests including a gluten sensitivity test which showed me as a 1 on a 0-4 scale. No prior gluten-sensitivity.		4-6 Months	2	4	Moderna (2)	N	N	N	1-Prior/1-Post	N	Gluten sensitivity blood test.
								Health Assessment Code									
								1- Extremely Healthy									
								2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealthy									

Ocular Events (3 Pilot Reports)

Ocular issues, while not nearly as publicized in the media as other adverse effects, are of primary importance to pilots. Haseeb et al. (2022) conducted a comprehensive review of the studies available at that time stating, “we found numerous ophthalmic adverse events following COVID-19 vaccination” (para. 6). Because the three pilots (Figure 76) who reported ocular issues have comorbidities, their cases will be discussed under those topics. The data below is presented merely for review.

Figure 76

Q36 Pilots Reporting Adverse Ocular Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
111	M	40	Valid/No SI	UAL	Working	Immediate Pink eye and occasional joint pain in hip and kneeww	8	1-7 Days	2	2	J&J	N	N	N	2-Post	N	
4	M	61	Valid/SI Oct2022	UAL	Working	Eyes bother me. Hypertension	1	8-14 Days	3	4	J&J	N	N	N	1 Prior/1-Post	N	
120	M	33	Valid/No SI	DAL	Working	Inflammatory issues. Diagnosed. Not correlated by Doctor. After 2nd dose, first kidney stone. Mother also had a kidney stone 2nd Moderna. I've had inflammation issues since I had the booster as well, mainly in my eye. Iritis.	4 & 16	8-14 Days	2	3	Moderna (2)	Moderna (1)	N	N	1 Post Booster	N	
						Comorbidity Codes		Health Assessment Code									
						1-Cardiological		1-Extremely									
						4-Autoimmune		2- Good									
						8-Musculoskeletal		3- Average									
						16-Renal		4- Fair									
								5-Extremely Unhealthy									

Auditory Events (9 Pilot Reports)

Tinnitus is a ringing or other loud sound in one's ears when no sound is present (HHS, 2023). So common is this post-vaccine complaint, the director of Mayo Clinic's Vaccine Research Group and editor-in-chief of the journal *Vaccine*, Dr. Gregory Poland, himself a sufferer, is calling for more research (Henderson, 2023). The article in *MedPage Today* detailing Dr. Poland's experience also discusses a recent search of the VAERS database for complaints of tinnitus. He reports that almost 17,000 records were returned (2023).

Turning to our subset, nine pilots complain of tinnitus and other auditory effects (Figure 77). All are males between the ages of 50-60, of which all but two have valid First Class Medical Certificates. The remaining two have valid SI's, one for post-vaccine Tinnitus, and the other for an unrelated Sleep Apnea diagnosis. All are actively working at major carriers. Comorbidities include: Cardiac (2); Autoimmune (2); and Neurological (1). Onset began anywhere from 18 hours post-vaccination up to 6+ months. Five pilots took the single-dose J&J vaccine, none of which took a booster. The single pilot who took the two-course Pfizer vaccine also took a Pfizer booster. The remaining three pilots took two doses of Moderna and no boosters. Three report their overall health condition as having remained excellent, and none complained of comorbidities. The remaining six report a decline in health. Adverse auditory vaccine effects appear to be one of the most common reported maladies. Five of the pilots' cases were entered into VAERS, and one pilot did try VSafe, but he has had no contact. Only two reporters have not had COVID-19. Conversely, one believes he has long-haul COVID. Only the pilot with the SI due to Tinnitus opted to answer the disclosure

questions stating that he told his AME and the FAA. The remaining eight pilots declined to answer.

Figure 77

Q36 Pilots Reporting Adverse Auditory Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
112	M	59	Valid-NO SI	UAL	Working	Tinnitus and major flu like illness	4	1-7 Days	1	3	J&J	N	Y	N	1-Prior	N	
113	M	60	Valid-NO SI	UAL	Working	Tinnitus-I fly the aircraft w/the quietest cockpit. The fact that I have tinnitus leads me to believe the vaccine is the cause.		+6 Months	1	1	J&J	N	N	N	0	N/A	
114	M	50	Valid-NO SI	UAL	Working	Sudden Semineural Hearing loss in right ear. FAA medical, hearing aid post treatment, tinnitus & ringing to this day in right ear with improvement of hearing loss through 30 day 60mg Prednisone oral treatment.		1-7 Days	1	1	J&J	N	Y	N	3+ Prior & Post	N	ENT, audiogram, MRI head & neck injection
115	M	60	Valid-NO SI	UAL	Working	Tinnitus -I just notice tinnitus. I still hear well. I normally don't notice it.		15-30 Days	1	1	J&J	N	Y	N	0	N/A	
116	M	58	Valid SI-2023 Tinnitus	UAL	Working	Tinnitus		4-6 Months	2	3	J&J	N	Y	Y-No Contact	3+ Post	Y	Doctor notes
117	M	54	Valid SI-2021 CPAP	FDX	Working	Tinnitus in left ear-started ringing after 2nd booster & has not ceased		1-7 Days	1	2	Pfizer (2)	Pfizer (2)	N	N	0	N/A	
43	M	52	Valid-NO SI	UAL	Working	Myocarditis, Tinnitus-Lower cardio output	1	15-30 Days	1	3	Moderna (2)	N	N	N	2-Post	N	
2	M	53	Valid-NO SI	DAL	Working	Tinnitus increase, non-specific T wave abnormality on EKG, decreased immune system function. 5 hrs after 2nd dose, strong fever & immune response, noticed tinnitus increase after that passed. (18 hrs). At next FAA EKG t wave abnormality appeared & has remained since. I get sick more often & more severely than in the past. After taking NAC, zinc, quercetin & vit D regiment weekly my immune system has somewhat recovered.	184	1-7 Days	2	3	Moderna (2)	N	Y	N	2-Post	N	
75	M	53	Valid-NO SI	SWA	Working	Headaches, Tinnitus	5	4-6 Months	1	2	Moderna (2)	N	N	N	3+Post	Y	
						Comorbidity Codes		Health Assessment Code									
						1-Cardiological		1-Extremely Healthy									
						4-Autoimmune		2-Good									
						5-Neurological		3-Average									
								4-Fair									
								5-Extremely Unhealthy									

Olfactory Events (1 Pilot Report)

A recently published case study centered on a person who did not lose his sense of smell post-vaccination, but rather, constantly smelled a burning odor. In that case,

olfactory hallucinations (Phantosmia) lasted for 21 months after taking the J & J COVID vaccine. One other vaccine-related study was found in which two women were diagnosed with hyposmia (loss of smell) 3-5 days after taking the Pfizer vaccine. No mention was made of Moderna side effects; however, due to the threat of fire onboard and the needed ability to smell smoke, a pilot's sense of smell is critical.

The single reporter of olfactory distress (Figure 78) is a 55-year-old male employed by a major carrier who holds a valid First Class Medical Certificate and suffers no comorbidities. He took a two-course dose of Moderna, then reports that due to concerns of not being allowed back in the country from international travel, approximately nine months later, he took a Moderna booster. Within 1-7 days of the booster, he reports losing all sense of smell, which has not returned. This pilot indicates that his overall health has declined from excellent to average. His case has not been reported to VAERS, and he did not enroll in VSafe. The pilot had COVID-19 one time between his receiving the final dose of the vaccine and the booster. He also refused to answer any disclosure questions.

Figure 78

Q36 Pilot Reporting Adverse Olfactory Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
118	M	55	Valid/No SI	UAL	Working	I have lost all sense of smell and it has not returned.		1-7 Days	1	3	Moderna (2)	1-Mod	N	N	1-Post but Pre Booster	N	
								Health Assessment Code									
								1- Extremely									
								2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealthy									

Renal Events (3 Pilot Reports)

While new-onset kidney disease (Lim et al., 2022) and nephrotic syndrome (Izzedine et al., 2021) have been associated with adverse vaccine effects, research could not locate any studies relating nephrolithiasis (kidney stones) to the CV-19 vaccines. Meanwhile, two of the three pilots in this cohort experienced Kidney Stones post-vaccination. The third mentioned kidneys and dehydration issues.

All three pilots (Figure 79) are males ranging in age from 33-56 with valid First Class Medical Certificates. Two are actively working as pilots for major carriers. One is on LTD. One of the actively working pilots also presented autoimmune and ocular comorbidities. Symptom onset ranged from 1-2 weeks to 6+ months. All report a reduction in overall health, post-vaccine. Two took two doses of Pfizer. Pilot #12 took two doses of Moderna and a Moderna booster. Interestingly, he mentions a possible heredity connection stating his mother also experienced kidney stones after receiving the Moderna vaccine. All report having had CV-19 either post-vaccination or post-booster. Pilot #119, who speaks of dehydration and possible kidney issues, also states that he has had CV-19 three or more times and suffers from long-haul effects. Only the pilot on LTD plans to notify the FAA of his condition, likely upon reapplication. The remaining two working pilots did not answer.

Figure 79

Q36 Pilots Reporting Adverse Renal Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
119	M	56	Valid SI-2014	SWA	Working	Kidney (opinion only) I am considerably more dehydrated and need to drink more water than I ever previously had to drink		1-3 Months	1	2	Pfizer (2)		N	N	3+Prior & Post	Y	
120	M	33	Valid SI-2014	DAL	Working	Inflammatory issues. Diagnosed but not correlated by Doctor. After 2nd dose, first kidney stone. Mother also had kidney stone after 2nd Moderna. I've had inflammation since booster mainly in my eye. Iritis.	4 & 13	8-14 Days	2	3	Moderna (2)	Moderna (1)	N	N	1 Post Booster	N	
104	M	51	Valid SI-2014	UAL	LTD	Kidneystones & high grade dysplasia requiring a permanent ileostomy		+6Months	2	4	Pfizer (2)		N	N	1-Post	N	
						Comorbidity Codes		Health Assessment Code									
						4- Autoimmune		1- Extremely Healthy									
						13-Ocular		2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealth									

Libido Events (1 Pilot Report)

In their article, “Effects of SARS CoV-2, COVID-19, and its vaccines on male sexual health and reproduction: where do we stand?” Lo et al. state, “Libido can be affected by biochemical, anatomical, and psychosocial factors” (2021, para. 11).

Although the psychosocial factors surrounding libido and societal sexual behaviors during the pandemic are the subject of much study, very little CV-19 disease or vaccine related biochemical and anatomical research exists. It is possible more people are suffering in this class, and it is incumbent upon those in the medical profession to further explore this topic. It is also possible outside stressors (psychosocial) are causing this

pilot’s difficulties. While little information that is presented, this topic is an important one, as evidenced by the pilot taking the time to report his suffering.

The reporter (Figure 80) is a 38-year-old male pilot with no comorbidities and a valid First Class Medical Certificate. The pilot reports he has had one J&J vaccine and one J&J booster after which, onset began 8-14 days later. He reports that he considers himself otherwise extremely healthy and has never had CV-19.

Figure 80

Q36 Pilot Reporting Adverse Libido Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
122	M	38	Valid-NO SI	QXE	Working	Loss of Libido		8-14 Days	1	1	J&J	J&J	N	N	0		
								Health Assessment Code									
								1- Extremely									
								2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealthy									

A1C/Diabetes Events (1 Pilot Report)

Per the Cleveland Clinic, “an A1C test measures the average amount of sugar in your blood over the past few months” and can be indicative of prediabetes, Type 1 diabetes, or Type 2 diabetes—disorders related to the body’s ability to regulate glucose (2022b, para. 1). Sakurai et al. presented a detailed cased study of a woman who developed Type 1 Diabetes post-vaccine concluding, “...Type 1 diabetes should be added

to the list of possible adverse effects of COVID-19 vaccination, even in subjects without prior histories of diabetes” (2022, para. 14).

One pilot (Figure 81) reported elevated A1C test results 15-30 days after receiving a Pfizer booster, having previously taken the two-course Pfizer vaccine. He is a 59-year-old male pilot with a valid First Class Medical Certificate, and employed by a major carrier. The pilot declines to say his disclosure intentions.

Figure 81

Q36 Pilot Reporting Adverse A1C/Diabetes Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
123	M	59	Valid-NO SI	SWA	Working	My A1C has been elevated since I took the vaccines With essentially the same diet my A1C has elevated from around 6% to 7.7%		15-30 Days	2	2	Pfizer (2)	Pfizer (1)	N	N	2-Post Booster	N	Blood Tests
								Health Assessment Code									
								1- Extremely									
								2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealthy									

Weight Gain (2 Pilot Reports)

While there is no way, from the information presented, to tie weight gain to receiving a CV-19 vaccine, it is enough of a concern that two pilots presented their conditions. Zhao & Wu (2022) examined the possible side effects of vaccines on the endocrine system citing the changes in blood chemistry that can result in, or exacerbate diabetes, thereby driving weight gain. They also cite the potential for pituitary and

thyroid issues, post-vaccination. All this, taken together, including the pilot with the lowered libido and the pilot with the elevated A1C, suggests that further study of the effects of the COVID vaccine on the endocrine system may be needed.

Two pilots (Figure 82) suggest they have gained sufficient weight to warrant participating in this study, one of whom has an official diagnosis from his physician. Both pilots are male. The first is a 52-year-old corporate pilot who possesses a valid First Class Medical Certificate. The second is a 44-year-old major airline pilot who also has a valid First Class Medical Certificate. Neither report other comorbidities, but both state their overall health has decreased. Onset occurred within months of getting the vaccines—J&J (1 dose) and Moderna (2 doses). Neither took a booster, reported their condition to VAERS or VSafe, or claim to suffer long-haul symptoms. Both decline to answer questions regarding disclosure.

Figure 82

Q36 Pilots Reporting Adverse Weight Gain Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
125	M	52	Valid-NO SI	Corporate	Working	Weight Gain-Nothing officially Diagnosed by Doctor		4-6 Months	2	3	J&J	N	N	N	1-Prior	N	
126	M	44	Valid-NO SI	SPA	Working	Weight Gain		1-3 Months	2	4	Moderna (2)	N	N	N	3+ Post	N	
								Health Assessment Code									
								1- Extremely									
								2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealthy									

Generally Lower Health (3 Pilot Reports)

While the symptoms presented did not allow further classification of these three pilots (Figure 83), they were grouped together based on their narratives. The pilots are all male and ages 42, 64, and 64. Each has a valid FAA First Class Medical and are working for major carriers. Onset ranged from less than 24 hours, post-vaccination, to 3 months. The first pilot suggests that he is healthier post-vaccine based on his answer; however, the narrative and that selection do not match. All three pilots took one dose of the J&J vaccine and no boosters. None have reported any data to VAERS or VSafe, and all have had CV-19. Pilot #108 claims to have long-haul COVID. All decline to state their intentions to inform their AMEs or the FAA.

Figure 83

Q36 Pilots Reporting Generally Lower Health

[illegible]

Condition Not Reported (18 Pilots Responded)

Somewhat troubling is the final group of pilots who took the time to complete the survey claiming adverse vaccine effects, but who provided no details about their maladies. Without detailed data, there is no way to determine the severity of their situations. This cohort (Figure 84) includes 16 males and 2 females ranging in age from 25-61 years old. One (53-year-old male) has an SI First Class Medical Certificate issued in July 2022 for DVT Blood Clots and states he is actively working. Perhaps, his concerns are vascular; however, not enough information is presented to classify this pilot. While he did not report the date of his vaccination, it is likely the DVT's occurred after vaccination considering the timeframe necessary to receive an SI. A 57-years-old male U.S. Army Pilot has an SI Second Class Medical Certificate issued in December 2022 but does not report the cause.

Of the remaining 16 pilots who have First Class Medical Certificates, all claim to be actively working, except one (female age 25) who separated from the U.S. Army in May 2023 and provided no additional employment data. The 15 other respondents are employed by major carriers including one who also serves in the U.S. Air Force as his secondary job.

Condition and comorbidities were undeterminable. Onset of what this subgroup considers their symptoms range from immediately (less than 24 hours post vaccine) to six plus months. Of those who answered, only one pilot states he did not experience a health condition decline. The four pilots who report a two-step decline all took the single-dose J&J, none of whom took a booster. The three remaining J&J recipients did not answer regarding their health assessment. Seven pilots received the Pfizer two-dose vaccine, one

of whom took an additional Pfizer booster. Three Pilots chose the Moderna two-course, one of whom took two Moderna boosters. One pilot reports “other” for their vaccine choice and their booster choice, but did not disclose brand. Only the 25-year-old military female pilot’s case was reported to VAERS. No pilots reported their situation to VSafe or report suffering long-haul symptoms. Of note, while these pilots did not produce detailed descriptions, six claim to have “supporting evidence.”

Only four participants answered the disclosure questions. The female military pilot (age 25) says she reported her condition to her AME, but that her AME did not report her condition to the FAA. She also says her employer is aware. The three other responders each say they did not report their condition to their AME or the FAA. One suggests he hope his situation will not be detected at his next FAA certification. The other two hope for improvement, but they have not decided whether they will present their medical information or hope not to be detected. This cohort represents the need to encourage more pilot participation in future surveys and to convey confidentiality assurances so that pilots feel comfortable providing their personal information.

Figure 84

Q36 Pilots Who did not Report Details Regarding Adverse Effects

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	Vsafe	CV-19	Long-Covid	Supporting Evidence
127	M	58	Valid/NO SI	UAL	Working	Blank		1-3 Months	1	4	J&J	N	N	N	1-Post	N	N
128	M	48	Valid/NO SI	FAR 121	Working	Blank		1-3 Months	3	4	Pfizer (2)	N	N	N	2-Post	N	N
129	M	46	Valid/NO SI	UAL & USAFR	Working	Blank		<24 Hours	1	3	J&J	N	N	N	1-Prior/1-Post	N	Y
130	M	30	Valid/NO SI	UPS	Working	Blank		<24 Hours	N/A	N/A	J&J	N	N/A	N/A	N/A	N/A	N
131	M	61	Valid/NO SI	SWA	Working	Blank		1-7 Days	N/A	N/A	J&J	N	N/A	N/A	N/A	N/A	N
132	M	36	Valid/NO SI	DAL	Working	Blank		<24 Hours	2	3	Pfizer (2)	N	N	N	3+ Prior & Post	N	N
133	M	42	Valid/NO SI	ASA	Working	Blank		+6Months	1	2	Pfizer (2)	N	N	N	1-Prior/1-Post	N	N
134	M	38	Valid/NO SI	FAR 135	Working	Blank		+6Months	N/A	N/A	J&J	N	N/A	N/A	N/A	N/A	N
135	M	57	Valid SI-No date	US Army	Working	Blank		4-6 Months	2	4	Other	1-Other	N	N	1-Post Booster	N	Y
136	M	53	Valid SI 2023 DVT/Clot	UPS	Working	Blank		+6Months	1	2	Moderna (2)	N	N	N	1-Post	N	Y
137	M	43	Valid/NO SI	UPS	Working	Blank		8-14 Days	N/A	N/A	Pfizer (2)	Pfizer (1)	N/A	N/A	N/A	N/A	Y
138	F	47	Valid/NO SI	AAL	Working	Blank		4-6 Months	N/A	N/A	Moderna (2)	N	N/A	N/A	N/A	N/A	N
139	M	45	Valid/NO SI	UAL	Working	Blank		4-6Months	1	3	J&J	N	N	N	3+ Prior & Post	N	N
140	M	50	Valid/NO SI	GTI	Working	Blank		1-3 Months	2	4	J&J	N	N	N	1-Prior	N	N
141	M	43	Valid/NO SI	DAL	Working	Blank		1-7 Days	1	2	Pfizer (2)	N	N	N	2-Post	N	Y
142	F	25	Valid/NO SI	US Army	Retired/Resigned	Blank		1-3 Months	1	4	Pfizer (2)	N	Y	N	0	N	N
143	M	48	Valid/NO SI	UAL	Working	Blank		<24 Hours	2	2	Pfizer (2)	N	N	N	2-Post Booster	N	Y
145	M	58	Valid/NO SI	FAR 121	Working	Blank		4-6 Months	N/A	N/A	Moderna (2)	Moderna (2)	N/A	N/A	N/A	N/A	N
								Health Assessment Code									
								1- Extremely									
								2- Good									
								3- Average									
								4- Fair									
								5-Extremely Unhealth									
								1- Extremely Healthy									

Discussion

With the overview of the respondents' medical conditions complete, to fully analyze the applicability of this data and its representational validity, we must further refine the population from which the study participants are drawn. This will allow us to determine the proper required sample size. However, because many options exist, we begin with a discussion of the best fit. Turning back to Table 3 (reprinted below), we can see the FAA raw data is based on certificates issued, not necessarily certificates in use.

Table 3 (Reprinted for convenience)

Comparison of Sample Size Requirements For Total Pilot Population

Required Sample Size*			
Total Pilots:	Percent Confidence Level	Margin Of Error	Required Sample Size
292980	95%	+/-5%	384
	98%	+/-4%	844
	98%	+/-3%	1303
275672**	95%	+/-5%	384
	98%	+/-4%	844
	98%	+/-3%	1302

*Assumes response distribution 50%

**292,980 less adjustments for age (-9803; -7059; -446)

Source: (NBRI, 2024)

This study exceeds the required sample size to meet the 95% and the 98% confidence levels in both pilot pools listed above, with 1,248 Participants, of which 145 claim they suffer adverse effects from the COVID-19 Vaccine. However, a pattern begins to emerge as the majority of respondents were active or formerly active airline pilots.

If the study cohort is further refined to include only U.S. airline pilots (including the fractional operator, NetJets, due to its pilot group's union representational status), the following table represents the possible population. Because the pandemic and mandate occurred prior to the study opening in 2023, determining the actual pilot cadre at each airline was not as simple as merely repeating the union websites' numbers. For example, in the case of United Airlines, ALPA's website claims the airline employs 16,800 pilots today (ALPA, 2024). However, after combing the airline's FY2022 Annual Report for the year ending 12/31/2022, one finds the airline only employed 12,231 pilots at that time (UAL, 2024). Due to the surge in post-pandemic hiring 2022, this number is likely more representative of the size of the pilot group at the time of the mandate. Therefore, each available airline annual report was consulted to determine the number of pilots on property (Figure 85). Only in the event that the report did not contain the number of pilots on property at the end of 2022 was the more liberal, 2024 ALPA data used. The source is indicated for each airline's total pilot population.

Figure 85

Airline Pilot Population by Employer

Union Affiliation	Airline	Total Pilot Population	Study Participants	Vaccinated Study Participants	Participants Reporting Harm	Source For Pilot Population Totals:
ALPA	Air Transport International	543	2	1		2022 Annual report
ALPA	Air Wisconsin	439	1	1		ALPA
ALPA	Alaska	3292	8	5	1.0	2022 Annual Report
ALPA	Amerijet International	260	0	0		ALPA
ALPA	Breeze Airways	407	2	1		ALPA
ALPA	CommuteAir	395	0	0		ALPA
ALPA	Delta	13180	59	44	8.0	2022 Annual Report
ALPA	Endeavor Air	1565	1	1		ALPA
ALPA	Envoy	1850	2	0		2022 Annual Report
ALPA	FedEx Express	5277	58	22	5.0	ALPA
ALPA	Frontier	1997	26	19	2.0	2022 Annual Report
ALPA	Hawaiian	1012	2	2		2022 Annual Report
ALPA	iAero Airways	198	0	0		ALPA
ALPA	JetBlue Airways	4314	74	29	12.0	2022 Annual Report
ALPA	Kalitta	800	4	1		ALPA
ALPA	Mesa Air Group	800	1	0		ALPA
ALPA	Piedmont	740	1	1		2022 Annual Report
ALPA	PSA	1550	5	2		2022 Annual Report
ALPA	Ravn Alaska	55	0	0		ALPA
ALPA	Spirit	3184	48	12	3.0	2022 Annual Report
ALPA	Sun Country	456	2	1		2022 Annual Report
ALPA	United	12231	248	175	49.0	2022 Annual Report
ALPA	Western Global	100	0	0		ALPA
ALPA Total		54645	544	317	80.0	
CAPA	ABX	326	0	0		2022 Annual Report
CAPA	American Airlines	13450	88	51	10.0	2022 Annual Report
CAPA	Atlas Air	2700	25	13	5.0	2022 Annual Report
CAPA	Cape Air	247	0	0		APC Statement
CAPA	Horizon Air	625	1	1	1.0	2022 Annual Report
CAPA	Nejets	300	8	3		Corporate Statement
CAPA	Omni Air	341	7	1		2022 Annual Report
CAPA	Republic Airlines	2445	2	1		Corporate Statement
CAPA	Silver Airways	130	0	0		APC Statement
CAPA	UPS Airlines	3314	20	17	5.0	UPS CBA Press Release
CAPA Total		23878	151	87	21.0	
SWAPA	SWA	9342	326	101	17.0	2022 Annual Report
IBT	Allegiant	1100	16	3		2022 Annual Report
IBT	GOJet	325	1	1		APC Statement
Total Union		89290	1038	509		
SkyWest		4704	8	3	1.0	
121 AIRLINE PILOTS			86	52	12.0	
Total:		93994	1130	563	131.0	
*Assumes Response Distribution of 50%						
FAA TOTAL	FAA TOTAL ATP 12/31/2022	162105	1132			
* Source (2022 Active Civil Airman Statistics-Table 4, FAA)						

After analyzing the above data, groups were clustered examining the required sample sizes to achieve various level of confidence (Figures 86-93) in different potential samples. The goal is at least a Confidence Level of 95%. Each assumes a response distribution of 50%.

The first grouping is by national union affiliation and is calculated using the above cited sources. The 83 pilots who say that they work for unnamed U.S. FAR 121 carriers are not included. In this subset, the study population size of ALPA pilots was sufficient. To examine CAPA pilots, the Confidence Level is inadequate at only 78%. However, when counted together, the confidence level jumps to 99%. A population of U.S. airline pilots affiliated with ALPA & CAPA (Figure 86) appears to be a good option.

Figure 86

U.S. Airline Pilot Population by Union Affiliation

Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margine of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
ALPA Pilots	54645	542	98%	5%+/-	536	80	317	25.23659306
CAPA Pilots	23878	151	78%	5%+/-	150	21	87	24.13793103
ALPA & CAPA	78523	693	99%	5%+/-	658	101	404	25

The next data grouping compares what many pilots consider to be the “big five” U.S. carriers (Figure 87). This also appears to be a good option.

Figure 87*U.S. “Big Five” Airline Carriers Pilot Population*

Five Largest Airlines								
Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margin of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
American	13450	88				10	51	
Delta	13180	59				8	44	
FedEx Express	5277	58				5	22	
United	12231	248				49	175	
Southwest	9342	326				17	101	
Total:	53480	779	99%	5%+/-	656	89	393	22.64631043

Unfortunately, Figure 88 proves that not enough participants indicate they are employed by freight carriers to achieve an acceptable level of confidence in that group.

Figure 88*U.S. Airline Pilot Population-Freight Carriers Only*

Freight Pilots								
Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margin of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
FedEx Express	5277	58				5	22	
Kalitta	800	4					1	
Amerijet International	260	0					0	
Western Global	100	0					0	
Air Transport International	543	2					1	
ABX	326	0					0	
UPS Airlines	3314	20				5	17	
Atlas Air	2700	25				5	13	
Total:	13320	109	70%	5%+/-	107	15	54	27.77777778

If one chooses to examine all passenger carriers, adding in the pilot populations of those carriers not represented in the survey, the requisite sample size needed for a 99%, +/-5%, confidence was met.

Figure 89

U.S. Airline Pilot Population-Passenger Carriers Only

Passenger Pilots								
Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margin of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
Delta	13180	59				8	44	
Endeavor Air	1565	1					1	
Envoy	1850	2					0	
Piedmont	740	1					1	
United	12231	248				49	175	
Air Wisconsin	439	1					1	
Alaska	3292	8				1	5	
Breeze Airways	407	2					1	
CommuteAir	395	0					0	
Frontier	1997	26				2	19	
Hawaiian	1012	2					2	
JetBlue Airways	4314	74				12	29	
Mesa Air Group	800	1					0	
Spirit	3184	48				3	12	
PSA	1550	5					2	
Ravn Alaska	55	0					0	
Horizon Air	625	1				1	1	
Cape Air	247	0					0	
Republic Airlines	2445	2					1	
Silver Airways	130	0					0	
SWA	9342	326				17	101	
Allegiant	1100	16					3	
GOJet	325	1					1	
SkyWest	4704	8				1	3	
American	13450	88				10	51	
Total:	65929	920	99%	5%+/-	657	104	453	22.9580574

Another population of interest is what was once called “national airlines,” based on size and capacity (Figure 90). However, this group does not meet the required minimum confidence level of 95%.

Figure 90

U.S. Airline Pilot Population “National” Carriers

National: Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margine of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
Alaska	3292	8				1	5	
Frontier	1997	26				2	19	
Hawaiian	1012	2					2	
JetBlue Airways	4314	74				12	29	
Spirit	3184	48.0				3	12	
ALLEGiant	1100	16					3	
Total:	14899	174	81%	5%+/-	170	18	70	25.71428571

Not enough participants were available in regional/commuter airlines (Figure 91) or charter operators (Figure 92) to warrant these population subsets, either.

Figure 91

U.S. Regional/Commuter Airlines Pilot Population Charter Operators Pilot Population

Regional/Commuter Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margine of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
Endeavor Air	1565	1					1	
Envoy	1850	2					0	
Piedmont	740	1					1	
Air Wisconsin	439	1					1	
Breeze Airways	407	2					1	
CommuteAir	395	0					0	
Mesa Air Group	800	1					0	
PSA	1550	5					2	
Ravn Alaska	100	0					0	
Horizon Air	625	1				1	1	
Cape Air	247	0					0	
Republic Airlines	2445	2					1	
Silver Airways	130	0					0	
GOJet	325	1					1	
SKYWEST	4704	8				1	3	
Total:	16322	25	38%	5%+/-	25	2	12	16.66666667

Figure 92

U.S. Charter Operators Pilot Population

Charter/Other Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margin of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
Sun Country	456	2					1	
iAero Airways	198	0					0	
Nejets	300	8					3	
Omni Air	341	7					1	
Total:	1295	17	32%	5%+/-	17	0	5	N/A

Finally, the total pilot population was used to calculate the required number of study participants and is the only case in which the 83 pilots who did not include their employer, by name, were counted. The required sample size for this population exceeds both the 95% and 99% confidence level with margins of error of +/-5% and +/- 4%, respectively. This researcher is confident that the study group of 1,132 commercial airline pilots is representative of the entire U.S. commercial airline pilot population with only a 4-5% chance that it is not. In general terms of adequacy of sample size, the number of study participants exceeds that which is required to be at least 99% confident that the data provided truly represents the entire U.S. commercial pilot population (1,132>1,026). With regard to the representative nature of those reporting adverse events, this researcher is 95% confident that the data represents the population (564>383).

Keep in mind, pilots suffering adverse events who are not part of the population (military, corporate pilots, etc.) were eliminated. Thus, when grouped together—vaccinated and unvaccinated—the percentage of pilots stating they have experienced

adverse effects from the COVID-19 vaccine is 11.57%. When only the vaccinated are considered, the percentage rises to a staggering 23.22%.

Figure 93

Percentage of U.S. Airline Pilots Suffering Adverse Vaccine Effects

Possible Pilot Population	Total Pilot Population	Study Participants	Confidence Level	Margin of Error	Required Sample Size	Participants Reporting Effects	Total Vaccinated	Percent Affected
All Pilots	93994	1132	99%	+/-4%	1026	131	564	11.5724381
* Includes the 83 Pilots who declare they work for a US 121			95%	+/-5%	383	131	564	23.22695035

Analysis

Once the final set of data was culled to include only the 1,132 participants, as defined above, each of the major effected systems' data were reduced by removing anyone not included in the 1,132 study pool. Further reduction in adverse events was conducted by examining only those reports of effects that would cause a pilot to have his FAA First Class Medical deferred or require a Special Issuance. Also, it is impossible to classify some reports, for example "chest pains," to determine if the symptoms are neuromuscular, cardiac, or respiratory without further information. Therefore, they were eliminated (Table 10). (Those symptoms may still be significant enough to warrant an SI or deferral.)

Table 10*Remaining Study Participants & Adversely Affected Medical Systems*

Number of Study Participants	Adversely Affected System
52	Cardiological
4	Auto-immune
12	Neurological
5	Respiratory
6	Tinnitus
1	Olfactory (Ability to detect smoke events)
2	Renal (Kidney Stones)
82	Total

In additions, these 82 pilots also suffer 24 serious comorbidities; however, they were only categorized by the primary system affected. These remaining pilots' submissions were further analyzed for trend information keeping in mind that analysis beyond basic descriptive statistics is not possible. Without pre-pandemic FAA Aeromedical expected population occurrence data, t-testing for overall statistical significance cannot be completed on the study group. However, the fact that 82 of 564 (14.54%) of the vaccinated U.S. airline pilot population in a properly sized, arguably over-sampled test that includes 50% unvaccinated participants is concerning.

Consider the following parsed findings in only the cardiological adverse event cohort. Fifty-three pilots across 10 jet carriers (average age 51.22 years) report significant adverse cardiac events, post-vaccination, including myocarditis, pericarditis, Afib, an enlarged aorta, heart attack, heart attack-induced stroke, low heart rate (34 bpm),

abnormal EKG's, accelerated heart rates up to 170 bpm, and blood clots. Those same pilots reported their last vaccines were:

9	J&J
15	Moderna
29	Pfizer

Thirty-one of the 53 cardiological participants said they were “extremely healthy” before the vaccine and 15 indicated “good.” After receiving the vaccine or booster, only five remain in the “extremely healthy” group, while 13 say their health has degraded to “good.” Regarding this group’s FAA certification, four of the cardiac pilots indicate their First Class Medicals have been Deferred, and ten have already received SI’s for their condition. Most concerning is that 39 pilots who indicate they have serious concerns, but report that they have not and/or do not plan to tell the FAA about their condition for fear of losing their careers. This fact alone should be enough to demand regulatory oversight.

Drilling down further, when one eliminates any report that does not include direct reference to myocarditis or pericarditis, five pilots (Figure 94), detailed in the Q36 cardiological adverse events section, remain.

Figure 94

U.S. Airline Pilot Survey Participants Indicating Pericarditis & Myocarditis

Pilot	Sex	Age	Medical	Employer	Status	Description	Comorbidity	Onset	Health Prior	Health Post	Vaccine	Booster	VAERS	CV-19
8	M	61	SI 12/27/22-Afib	UAL	LTD	Pericarditis	Afib, Stroke	1-3 Months	1	4	J&J	J&J(1)	Y	2 Times < Vax
35	M	36	Valid, NO SI	UAL	Working	Pericarditis		15-30 Days	1	1	Pfizer (2)		N	3+ Times < Vax
43	M	52	Valid, NO SI	UAL	Working	Myocarditis	Tinnitus	15-30 Days	1	3	Moderna (2)		N	2 Times > Vax
53	M	44	Valid, NO SI	DAL	Working	Myocarditis		1-7 Days	5	3	Moderna (2)		N	3+ < & > Vax
54	M	50	Valid, NO SI	DAL	Working	Myocarditis		1-7 Days	1	3	Moderna (2)		N	1 Time > Vax

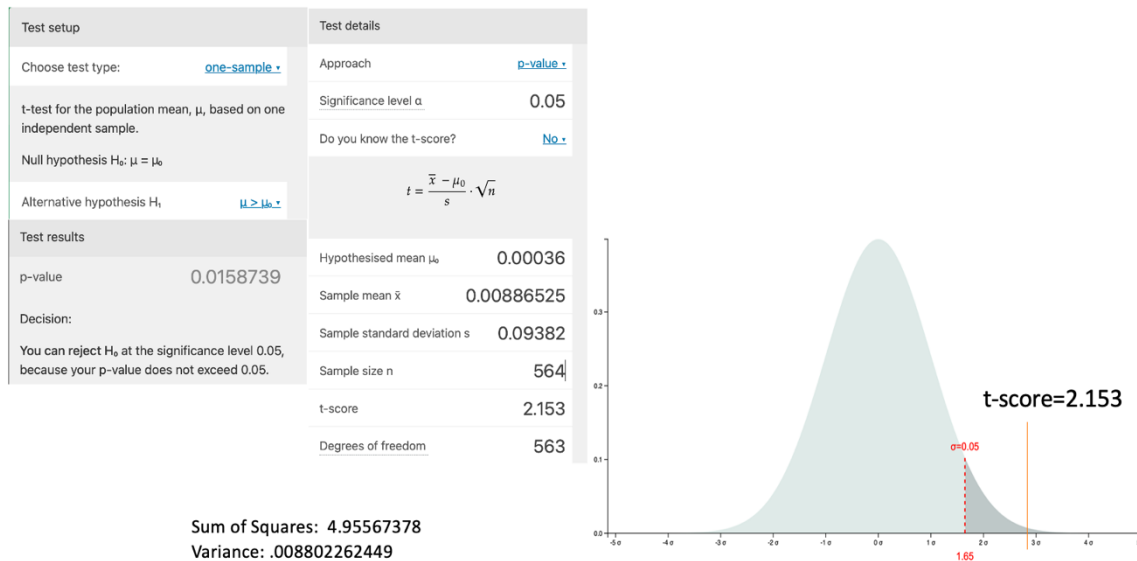
While pilot-specific comparison data is not available for pericarditis and myocarditis, general population incidence rates evolved over the last four. Today, as a result of ongoing research specifically targeting increased reports of pericarditis and myocarditis, the CDC generally says the incident in the total vaccinated population is 36/100,000 cases (CDC, 2023e). (Note: Since publishing this document, the CDC has removed their reference at the cited location. Instead, they direct inquiries to the source document published in *Morbidity and Mortality Weekly Report*, dated April 8, 2022 by Block, et al. Author Bill Hathaway also references 36/100,000 (CDC rate) in his May 2023 article, “Yale study reveals insights into post-vaccination heart inflammation cases.” Newer data was undiscoverable; however, this is the highest rate research was able to locate on the CDC’s website.)

Using the study cardiological subset $5/564 = .008865$ mean sample occurrence, in a standard Right-Tailed T-test of the population means, we can conclude that the average incidence of pericarditis and myocarditis among commercial airline pilots who accepted the COVID-19 vaccines exceeds the CDC’s average incidence rate ($p=.0158739$, SI.05).

Therefore, as shown in Figure 95, we can reject the null hypothesis that $H_0: u=u_0$, and accept the alternative $u>u_0$.

Figure 95

T-Test Calculations:



Keep in mind, of the five pilots who state they have pericarditis or myocarditis, only one is on LTD. That pilot indicates he previously had an SI for Afib issued December 27, 2022, due to taking the vaccine because of his employer's mandate (United Airlines). He says that he has since had a stroke and suffers Pericarditis which rendered him on LTD in May of 2023. This pilot has serious medical conditions he attributes to the CV-19 vaccine. The other four pilots, however, are actively flying for major carriers without Special Issuance letters and refused to indicate whether they have or plan to tell the FAA about their conditions. This is extremely concerning; however, it is possible that they recovered and were able to get regular First Class Medical Certificates. In at least this one area, further study, is warranted among airline pilots.

At the same time, larger, more clinically detailed pilot-specific studies may find safety alerts across other morbidities such as Tinnitus. While no generally accepted CDC overall population occurrence rates are published for Tinnitus, the fact that this study found 9 cases in 564 reports or a mean of .015958 may be compelling. Amortized out, this would equate to some 1,596 cases per 100,000 people. More data is needed before any conclusions can be made.

CHAPTER V

CONCLUSION

In the fall of 2021, the CDC reported that vaccine uptake of at least one dose in the adult population over the age of 18 was 81.5% leaving only 18% unvaccinated (CDC, 2021). In May of 2023, the number was further confirmed when the CDC published that “at least 270,227,181 or 81% of the population have received at least one dose” of COVID-19 vaccines (20245a). Keep in mind, the data in this study is extremely skewed toward a 50/50 vaccinated/ unvaccinated population, within a mere 12 pilots. If the CDC data is correct, one can deduce that it is likely many more pilots are suffering adverse effects. Had the study participant pool been limited to only vaccinated, and those able to publish the call for participants (unions and airlines) had supported scientific inquiry, the results may have been even more compelling. As it stands, this study concludes: in a properly-sized sample of U.S. Commercial Airline Pilots, slanted toward the unvaccinated, a statistically significant number were found to suffer pericarditis and myocarditis, post-CV-19 vaccine, at rates higher than the published CDC average.

Because baseline information concerning incidents of medical disqualification is not available from the FAA, and because the sample in this study is skewed toward the unvaccinated, finding other ways to substantiate the data is necessary. Even if only anecdotal, these sources can shine light and begin to point future researchers in the proper direction. One option is the pilot unions who have data they do not publicize. For example, by examining the number of pilots making disability insurance claims, pre-pandemic vs. post-pandemic, trends can be examined. Many of the pilot LTD insurance

programs are self-funded and managed by the unions or partially funded by the pilots and their carriers. ALPA also has a product called “loss of license” insurance for use in the event a pilot becomes, among other things, medically unqualified (ALPA, 2024). Yet, nothing compels the unions or carriers to disclose claimant data. Consider that all ten of the medically “deferred” study participants in the final (cardiac) cohort are on LTD. Below is an example of several pieces of data published by the unions. Because they have a duty to fairly represent their members, it is unlikely that their data is unsubstantiated. Figure 95 is from Southwest Airline’s Phoenix Union Representative.

Figure 96

Southwest Pilots Association (SWAPA) Phoenix Pilot Update

PHX BOD RECAP SWAPA

1,197 Days Since Our Contract Became Amendable

298 Pilots Have Left SWA This Year

December 12, 2023

PHX December BOD Recap

Hello Phoenix Pilots,

Kevin and I attended the fourth quarter SWAPA BOD meeting and have some items to share with you.

Your NC has been working nonstop over the last few weeks to close out negotiations and present an AIP to the SWAPA BOD. As of this writing, there is still work to be done; the language is nearly complete, and establishing a reasonable implementation schedule is the primary focus.

One of the primary goals for our new CBA was a complete rewrite, which the Company resisted. Nevertheless, your NC has, in effect, accomplished the rewrite in actual language or by capturing intent. It has been a herculean effort, and our NC and SMEs deserve kudos. It is a tremendous win for our Membership, but it also means that there will be unprecedented changes to digest and understand.

SWAPA is developing various educational pieces to introduce and guide our members through the many changes. When an AIP is ultimately reached and if the BOD votes to send it to the Membership as a TA, you can expect a wave of these resources to be published for your consumption. Discard any preconceived notions or spin and see the information for yourself. Study the new contractual language, SWAPA educational articles, and video presentations as they become available.

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this will prepare you for the Town Hall meetings and Road Shows.

The Benefits Committee presentation stood out during this BOD week. Their data shows that Pilot disability claims have increased 350% from last year. This reinforced the importance of establishing industry-leading benefits in our new CBA. Kevin and I will not forward a TA that falls short of this objective.

Please donate to the SWAPA PAC. Currently, only 35% of our Pilots contribute. Interestingly, First Officers outnumber Captains in participation. The SWAPA PAC is your most substantial and direct method of affecting what happens in Washington concerning our industry. In the current session, the PAC's engagement helped strip out cockpit cameras from a recent bill. Illustrating the value of your PAC dollars, our very own Governmental Affairs Committee (GAC) Chairman Chip Hancock was recognized as one of the top lobbyists (amongst more than 13,000) on the Hill for 2023. Think of the PAC/GAC as SWAPA's long-term negotiating committee. No single issue should dissuade you from contributing. [Click here to support the SWAPA PAC.](#)

On the safety side, pay heed to the Company's emphasis items, including Engine Shutdown, walk arounds, dripstick protocols, and FOM 3.1.2. These are substantial changes, and a review is recommended. Some of these measures are in place to align Southwest Airlines with IATA certification.

Fly safe,

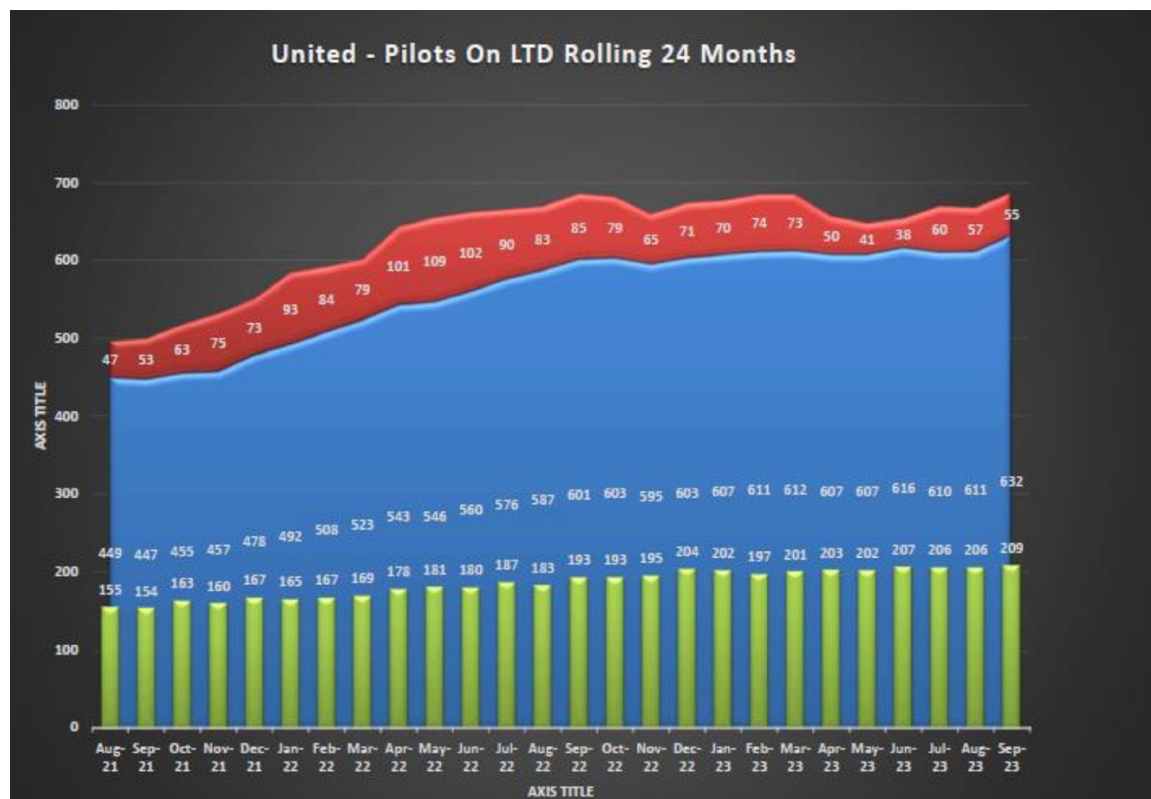
Kevin and Brian

(Source: Reese & Marin, 2023)

The SWAPA representatives cite a 350% increase from 2022 to 2023 in disability claims among its members. Figure 65 presents another example from United’s ALPA Retirement and Insurance Committee Chairman that was published in October 2023.

Figure 97

United Pilots LTD Claims October 2023



(Source: Greene, 2023)

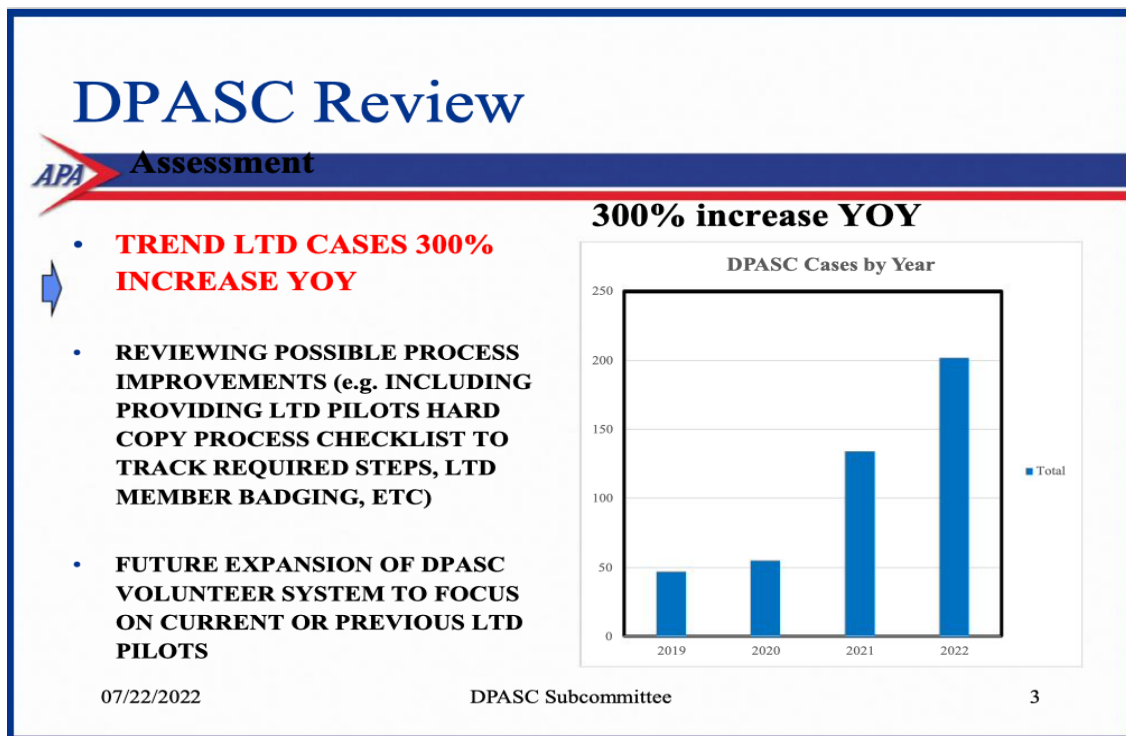
One can see that in August of 2021, the month the United Airlines mandate was imposed, 449 pilots were collecting LTD benefits of which 155 were permanently disabled. An additional 47 pilots were projected to file claims as soon as their regular sick leave was exhausted. Moving right and forward in time, the numbers trend dramatically higher. Some may suggest that this is due to aggressive post-pandemic

hiring at the airline. However, one must consider that the disability benefit is calculated as a percentage of one's pay at the time one invokes the policy. While hiring was ramping up at United after the pandemic, newly hired pilots are generally younger and healthier. It is more likely this chart is representative of those who were on property at the time of the mandates. However, without further information, no substantiated claims can be made. It would be easy for UAL ALPA to produce the data.

Finally, Figure 98 was presented by the American Pilots Association (APA) Aeromedical Committee via Power Point presentation at their July 20, 2022, Board of Directors meeting. The slide details a 300% increase, between 2021 and 2022 in pilot LTD claims.

Figure 98

APA LTD Claims



(Source: Glaser, A., 2022)

Recommendations

Table 11 lists the recommendations generated from this comprehensive research project, and are detailed in the following paragraphs. While the unions and the airlines have the LTD data, it is unlikely the FAA knows how many pilots are on disability because pilots are not required to report this information. The first recommendation is a formalized reporting process for all pilot LTD insurance claims.

Another hypothesis concerns FAA medical certification deferral rates, equally difficult information to gather. If more pilots are being medically deferred by their AMEs than prior to the pandemic, this data is worthy of investigation. The question is, “how many pilots who report on their FAA Form 8500-08 that they work for major airlines (FAR 121 carriers), did not reapply for medical certificates in the subsequent six months in any given, rolling six-month period?” If one compares the pre- and post-pandemic data, trends may be discovered. Unfortunately, accessing this data requires more FOIA requests which, thus far, have been fruitless. On the other hand, Congress can intervene by requesting the data. However, even if suspicions prove true, will a connection to the vaccines be found? Or, are there other possible factors for increased deferrals such as general population aging, changes in regulatory standards, or something else? The second recommendation is a thorough audit of FAA medical deferral data.

In an effort to answer these important questions, the third recommendation is for a nation-wide, commercial airline pilot study to be conducted by a university, blue-ribbon panel of independent researchers, or third party organization that is granted full access to FAA data, without regard for union or other stakeholder input. However, participation must be supported by the pilot unions. When the proposal for a study was presented to

CAPA, they at least took time to meet and discuss study methodology and intent. However, because assurances could not be made toward a specific outcome, CAPA leaders refused to assist. ALPA President Ambrosi's response to the request to assist is quoted in Chapter 1 and appears in the Appendix C. Suffice it to say, Captain Ambrosi brushed off the topic of scientific research by playing the unity card, suggesting that because the pandemic is over and the world has moved on, so should this researcher. Captain Ambrosi represents over 500 pilots who completed the survey, yet he seems far out of touch with his constituency. The results prove that ALPA pilots are at the heart of the issue. Captain Ambrosi should never let union politics stand in the way of safety, and, thus, should immediately call for further research.

While it is vital to the safety of the flying public that only healthy pilots are in the skies, a level of accountability for those at the FAA responsible for approving an EUA drug for use prior to conducting any pilot-specific studies, and for those in corporate and union roles who mandated or turned a blind eye to the mandates, is a must. Not until all who are responsible are held accountable, will pilots' views regarding open and honest disclosure to their AMEs change. The fourth recommendation is the addition of a checkbox on the FAA Form 8500-08 disclosing the vaccination status of every pilot applicant so that AMEs can initiate conversations with applicants about their health; educate pilots about early warning signs and symptoms; and remind pilots of required disclosure and reporting. This will also allow CAMI to collect data and conduct future analyses. At the same time, the fifth recommendation is the development of a system to expedite processing of First Class Medical Deferrals and SI's related to the COVID-19 vaccine so that pilots do not suffer needless delays awaiting decisions from CAMI.

Finally, Congress must take control and mandate the FAA establishes definable protocols for approving future drugs, vaccines, or medical interventions for use in the U.S. pilot population. Included therein must be a requirement that no EUA drug or vaccine ever again be mandated in safety critical populations.

Table 11

Summarized Study Recommendations

1. Establish a formalized pilot LTD tracking system.
2. Conduct FAA medical deferral data audit.
3. Conduct a nationwide study of all U.S. commercial pilots through an anonymous online data collection platform overseen by an independent research group affiliated with one or more collegiate Aviation Departments who are members of the University Aviation Association, or other outside organization without interference from any stakeholder.
4. Include a block on the FAA Form 8500-08, Pilot Medical Application, indicating applicant vaccination status, brand, and dosage.
5. Establish an expedited Deferral/Special Issuance process for vaccinated First Class pilot applicants.
6. The U.S. Congress, in its oversight roll, must ensure the FAA establishes definable, verifiable approval protocols are in place for any future drug/vaccine interventions allowed for use in the pilot population.
7. The U.S. Congress must ensure no EUA drug/vaccine is ever again mandated in any safety critical population.

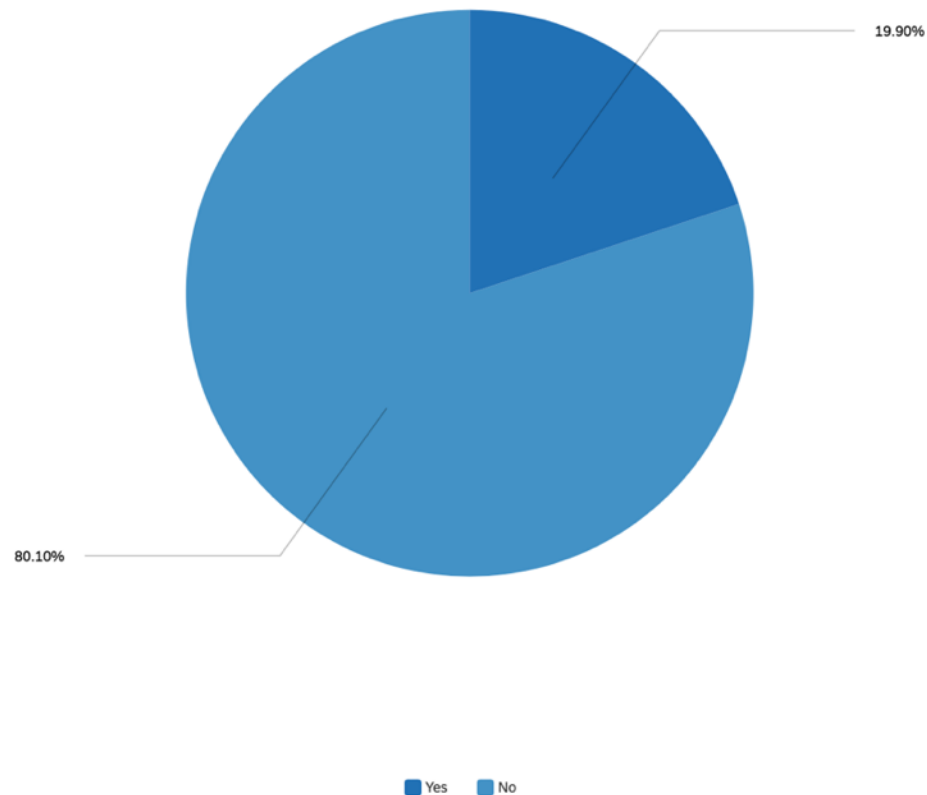
The Future

The final two survey questions involve the participant's opinion of the oversight systems in place to protect their health and the safety of the flying public (Figures 98 & 99). When asked if they thought the FAA used due diligence in approving the COVID-19 vaccines, the pilots answered overwhelmingly "no." Of the 1,231 pilots who

participated in the survey, only 245 answered “yes.” These percentages demonstrate the level to which airline pilots believe the safety systems failed them.

Figure 99

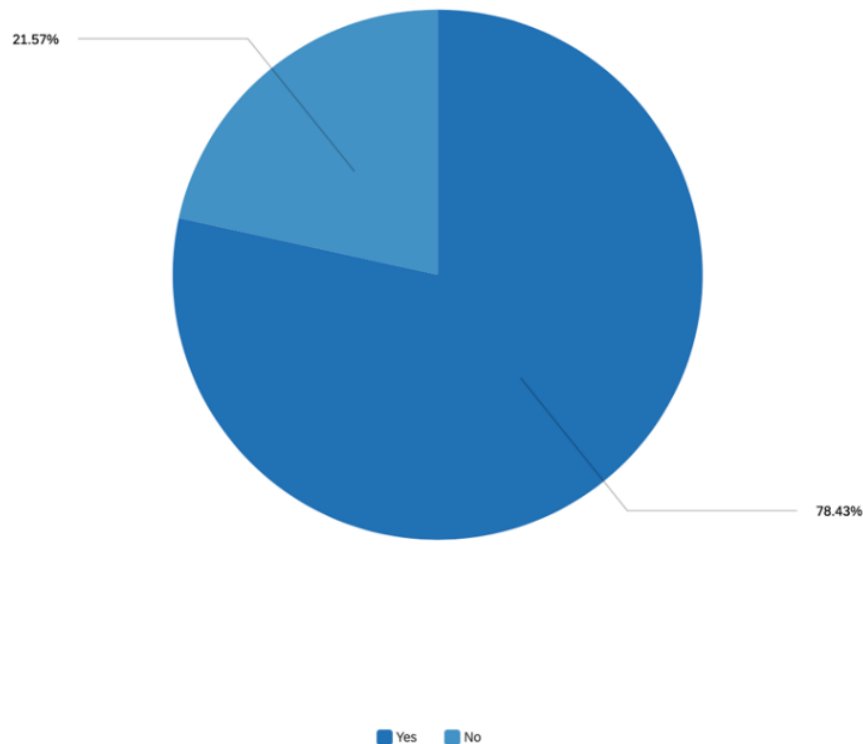
Did the FAA Use Due Diligence When Approving the COVID Vaccines For Pilots



Finally, when asked if safety risks exist today due the FAA’s approval of the COVID-19 vaccines, only (264) said no.

Figure 100

Percentage of Pilots Who Believe Safety Risks Exist Due to the COVID-19 Vaccines



Whether through fear, lack of oversight, or the need to survive, the normally interactive, interconnected systems disengaged, failing the individual pilots. As these systems reengage going forward, they must work together toward a common safety goal.

Post-Flight

As was discussed in the very beginning of this work, the reason aviation is so finitely safe is the discipline and dedication of individual, professional pilots. Post flight, or in this case, post event, debriefs provide a wealth of information concerning attitudes and actions. Yet, post-pandemic, very few have asked the simple questions regarding what, as an industry, we did right; what we could have done better; and, were our actions

safe. This research posits that the answer to the final question, concerning the health and well-being of individual pilots and the safety of all who fly is, “no.” Interestingly, it appears most pilots agree. While the desire to get the job done, no matter the personal risk or potential self-detriment, is arguably one of the most valued traits in airline pilots, their government and, in some cases, their unions and employers, failed to protect them. It is the individual pilot who pushed through the pandemic; who worked when others would not leave their homes delivering vaccines and much needed personal protective equipment across the globe; and, who did what so many advised was the right and compassionate thing to do—take an unproven vaccine at great risk to their health and their careers—for the greater good.

How this will affect the future of air travel is unknown considering this study does not address the more than 300,000 active pilots working across the globe, outside our borders. However, those pushing to eliminate safety systems such as the two-pilot cockpit in favor of cost-savings (Whitley, 2022) and lowering hiring standards for airline employment and captain upgrades (Pallini, 2022) may need to step back and accept the reality that these safety systems are in place because the human link in the chain can break. Meanwhile, many more professional pilots may lose their medical certifications from adverse vaccine effects. Hence, extending the mandatory pilot retirement to at least age 67 quickly affords airlines a qualified pilot pool to help maintain schedule consistency across the industry while pilots seek treatments and recertification.

It is also worthwhile to comment about the exploration into the lived experience of the study participants during the pandemic. Fear and frustration were overwhelming themes across the study results. Fear manifested in the comments such as when airline

pilots were asked to name their employer, and one pilot answered, “oh no way.” It is curious that a pilot would think her answer to a nationwide, anonymous survey could reveal her personal identity among an almost 100,000-member pilot population, thereby allowing her employer, or the FAA, to target her. Her answer would be unique, however, if it were not repeated many times.

Frustration also manifested itself in comments buried in the medical stories of those affected. Many expressed concern that few doctors were willing to link their adverse effects to the vaccine for fear of professional reputational harm. Many pilots also expressed frustrations that their doctors would not report their events to the VAERS system. It is this researcher’s hope that those who claim to suffer find peace and good health.

Finally, the recent concern by so many about increased vaccine hesitancy as a result of mandates is inarguable in this study cohort. Nearly 80% of respondents say they will not take a vaccine if one is mandated in the future, even if it means the end of their careers. That is an astounding and sobering statistic for public health officials to ponder considering the fact that no one has any idea what that future health crisis could be. This definitive answer highlights the loss of trust in the safety systems that have served pilots for so long. Trust is a hard thing to rebuild. The first step, in any recovery, requires the admission of failure. Then, the safety systems must reengage toward a common goal with a commitment from regulators that they will never again allow such systems to fail the individual pilots and the U.S. flying public.

EPITAPH

Since concluding the final draft of this project, I received four more reports of co-worker deaths, and two pilots who were just diagnosed with stage 4 cancers. I wonder when it will end. Each was relatively young; some from medical battles and others unexpectedly. There is no way to know if their demise was due to the COVID-19 vaccines. However, to each, I dedicate the following—a traditional pilot poem often read at the funerals of aviators. ---Fly West, All.

High Flight

BY JOHN GILLESPIE MAGEE JR.

Oh! I have slipped the surly bonds of Earth
And danced the skies on laughter-silvered wings;
Sunward I've climbed, and joined the tumbling mirth
of sun-split clouds,—and done a hundred things
You have not dreamed of—wheeled and soared and swung
High in the sunlit silence. Hov'ring there,
I've chased the shouting wind along, and flung
My eager craft through footless halls of air

Up, up the long, delirious, burning blue
I've topped the wind-swept heights with easy grace
Where never lark nor ever eagle flew—
And, while with silent lifting mind I've trod
The high untrespassed sanctity of space,
Put out my hand, and touched the face of God.

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APPENDIX A

FOIA Requests

FOIA Request

I am making a FOIA request seeking data stored in the FAA Civil Aerospace Medicine Institute (CAMI) Inflight Incapacitation Data Registry (IDR) and Autopsy databases. These systems may also be known as “Incapacitation Database”, “Incapacitation Data Registry (IDR)”, or “Medical Analysis and Tracking System (MANTRA)”.

The database might be found in the following locations:

Office of Aerospace Medicine
Federal Aviation Administration
800 Independence Ave., S.W.
Washington, DC 20591

or

Civil Aerospace Medical Institute
Federal Aviation Administration
Oklahoma City, OK 73169

or

for further location of database this reference exists:

Technical Report: DOT/FAA/AM-21/28

Title and Subtitle: Incapacitation Data Registry History and Development

Report Date: June 2021

Task: AM-B-HRR-521

Background Research Information

A representative screenshot of the Microsoft Access Database is included below for reference of its existence. It may be upgraded to a different technology platform.

The screenshot displays a Microsoft Access database window titled "Medical Information". It features several tabs: "Medical Class", "Medical Classification", "TOX ID", "AME Code", "History Codes", "Restriction Codes", "EKG Codes", "Medications", "Incidental Autopsy Findings", "Path Codes", "SODA/Waiver Codes", "SI Codes", "Category", and "Cause of Death". The "Category" tab is currently selected, showing a table with columns: "Rank", "Category", "Drug Origin", and "D". The first row of data shows "1" in the Rank column, "VASCULAR" in the Category column, and "D" in the Drug Origin column. The "Cause of Death" tab is also visible, showing a "Category Comments" field with text: "Cerebral vascular accident", "FAA neurological consultant", "Transient cerebral arterial infection secondary to chronic renal insufficiency".

APPENDIX A Continued

The screenshot shows the 'Incapacitation Database' web application. At the top left is a logo with a shield and wings. The title 'Incapacitation Database' is in large blue text, with 'Version: Standalone Model' below it. The interface features a search bar and several filter buttons: 'Complete', 'Teaching Case', 'Teaching Case', 'Sequence', 'NTSB # or 2017 Process', 'Follow Up', 'Last Name', 'First Name', 'Initial', 'In/Out', 'DOB', 'Age', 'Gender', 'Social Security #', 'PIA', 'First Certificate #', 'Event Number', 'Occupation Code', 'Employee Code', 'APF ID', and 'Check Record'. At the bottom are buttons for 'Download', 'Physician Record', 'SQL Complete', and 'View Record'.

The screenshot shows the 'Narratives' section of the database. It has a tabbed interface with 'CAM Narrative', 'FAA Narrative', 'Safety of Flight', 'NTSB Cause', 'NTSB Factors', 'NTSB Narrative', and 'NTSB Full Report'. The 'NTSB Cause' tab is selected, showing a text area with the following content: 'NTSB Cause: Probable Cause: THE PILOT IN COMMAND BECAME PHYSICALLY INCAPACITATED (HEART ATTACK)'.

The system includes provisions for protecting Personally Identifiable Information (PII). Hardcopy records may exist which were generated from this database. If any part of this request may not be released due to Privacy Act or other lawful Personally Identifiable Information (PII) data protection requirements, a redaction should be used while releasing the remainder of the data.

Requested Data

- Time period: 2000 to Present
- Query constraint: All records in time period.

Examples of Structured Data

The following are database fields existing in the database. Search results should include at least any of these fields. Any fields which may not be released due to Privacy Act, HIPAA, and PII policy constraints may be redacted. The following data fields are a reference demonstrating what data is known to exist, but this should not be interpreted as the data needed to be released in a specific data schema. It is acceptable to provide the data from these fields in a comparable human-readable (e.g. form) format.

APPENDIX A Continued

Table 1.

Data Dictionary

FIELD NAME	DATA TYPE	LENGTH	DESCRIPTION
CASE_NBR	Long Integer	4	Unique Identifier assigned to each case
INC_DATE	Date/Time	8	Date of incapacitation of impairment
LAST_NAME	Text	30	Last name
FIRST_NAME	Text	30	First name
INITIAL	Text	1	Middle initial
SEX	Text	1	Gender
DOB	Date/Time	8	Date of birth
AGE	Integer	2	Age
SSN	Text	9	Social security number
PILOT_CERTIF_NBR	Text	15	Pilot certificate number
PL_NBR	Text	15	PL number
MEDICAL_CLASSIFICATION	Text	8	Medical classification
MEDICAL_CLASS	Text	8	Medical class (e.g., I, II, III)
CREW_MEMBER	Text	15	Crew member (e.g., Pilot, Captain, First Officer)
FLIGHT_TIME_TOTAL	Long Integer	4	Flight time total

FIELD NAME	DATA TYPE	LENGTH	DESCRIPTION
AT_NONE_COMMENTS	Memo	0	Action taken - None comments
AT_OTHER	Yes/No	1	Action taken - Other (yes/no)
AT_OTHER_COMMENTS	Memo	0	Action taken - Other comments
AT_PATH_CODES	Yes/No	1	Action taken - Path codes assigned (yes/no)
AT_PATH_CODES_COMMENTS	Memo	0	Action taken - Path codes assigned comments
AT_REAFFIRMED	Yes/No	1	Action taken - Reaffirmed (yes/no)
AT_REAFFIRMED_COMMENTS	Memo	0	Action taken - Reaffirmed comments
AT_RECERTIFIED	Yes/No	1	Action taken - Recertified (yes/no)
AT_RECERTIFIED_COMMENTS	Memo	0	Action taken - Recertified comments
AT_SI_CODES	Yes/No	1	Action taken - Special issuance codes assigned (yes/no)
AT_SI_CODES_COMMENTS	Memo	0	Action taken - Special issuance codes assigned comments
OUTCOME	Memo	0	Outcome narrative
FOLLOW-UP	Memo	0	Follow-up narrative
COMMENTS	Memo	0	Comments
TEACHING_CASE	Yes/No	1	Is this a good teaching case (yes/no)
TEACHING_CASE_SELECTOR_INITIALS	Text	5	Initials of physician that selected this case as a teaching case

FIELD NAME	DATA TYPE	LENGTH	DESCRIPTION
TEACHING_CASE_NARR	Memo	0	Explanation why this case was selected as a teaching case
FORM_USED	Yes/No	1	Was a medical case alert form used (yes/no)
FORM_USED_REGION	Yes/No	1	Form completed by region (yes/no)
REGION_ID	Text	3	Region which completed case alert form
MCA_DATE_REGION	Date/Time	8	Date form completed by region
FORM_USED_CAMI	Yes/No	1	Form completed by CAMI (yes/no)
MCA_DATE_CAMI	Date/Time	8	Date form completed by CAMI
SUSPENSE_DATE	Date/Time	8	Date to revisit this case
RECORD_COMPLETE	Yes/No	1	Data entry complete (yes/no)
COCKPIT_INTERVENTION	Text	7	Cockpit intervention required (yes/no)
SAFETY_OF_FLIGHT	Text	4	Safety of flight compromised (yes/no)
SAFETY_OF_FLIGHT_NARR	Memo	0	Safety of flight narrative
MULTIPLE_ENTRIES	Text	3	Airman has multiple records in database (yes/no)
DIWS_APPLICANT_ID	Text	50	DIWS unique airman identifier
SSN_ALTERNATE	Text	9	Alternate social security number
DEADHEADING_CREWMEMBER	Yes/No	1	Airman deadheading (yes/no)
PAX_CREWMEMBER	Yes/No	1	Airman passenger (yes/no)

FIELD NAME	DATA TYPE	LENGTH	DESCRIPTION
SENT_609_OR_709_LETTER	Yes/No	1	Action taken - Sent 609 or 709 letter (yes/no)
RESPONDED_609_OR_709_LETTER	Text	3	Action taken - Responded 609 or 709 letter (yes, no, N/A)
COMMENTS_609_OR_709_LETTER	Memo	0	Action taken - 609 or 709 letter comments
ELIGIBILITY_LETTER_SENT	Yes/No	1	Action taken - Eligibility letter sent (yes/no)
RESPONDED_ELIGIBILITY_LETTER	Text	3	Action taken - Responded eligibility letter (yes, no, N/A)
ELIGIBILITY_LETTER_COMMENTS	Memo	0	Action taken - Eligibility letter comments
AT_DECEASED	Yes/No	1	Action taken - Deceased (yes/no)
AT_DENIED_COMMENTS	Memo	0	Action taken - Denied comments
AT_EKG_CODES	Yes/No	1	Action taken - EKG codes assigned (yes/no)
AT_FOREIGN_OR_UNKNOWN	Yes/No	1	Action taken - Foreign or unknown (yes/no)
AT_FOREIGN_OR_UNKNOWN_COMMENTS	Memo	0	Action taken - Foreign or unknown comments
AT_HISTORY_CODES	Yes/No	1	Action taken - History codes assigned (yes/no)
AT_HISTORY_CODES_COMMENTS	Memo	0	Action taken - History codes assigned comments
AT_NOT_APPLICABLE	Yes/No	1	Action taken - Not applicable (yes/no)
AT_NOT_APPLICABLE_COMMENTS	Memo	0	Action taken - Not applicable comments
AT_NONE	Yes/No	1	Action taken - None (yes/no)

APPENDIX A Continued

FIELD NAME	DATA TYPE	LENGTH	DESCRIPTION
SERIOUS	Long Integer	4	Number of serious injuries onboard
MINOR	Long Integer	4	Number of minor injuries onboard
NONE	Long Integer	4	Number of non-injured onboard
INCAP	Text	15	Incapacitation or impairment
INCAP_POSSIBILITY	Text	10	Possibility of incapacitation or impairment (e.g., possible, probable, certain)
AME_CODE	Text	8	Aeronautical Examiner code
SI_CODE	Yes/No	1	Special issuance (yes/no)
CATEGORY_COMMENTS	Memo	0	Category comments
CAM_NARR	Memo	0	CAM narrative
FAA_CAUSE	Memo	0	FAA cause
FAA_NARR	Memo	0	FAA narrative
NTSB_NBR	Text	21	NTSB number
NTSB_FACTORS	Memo	0	NTSB factors
NTSB_CAUSE	Memo	0	NTSB cause
NTSB_NARR	Memo	0	NTSB narrative
NTSB_FULL_REPORT	Memo	0	NTSB full report
AT_CERTIF_SURRENDERED	Yes/No	1	Action taken - Certificate surrendered (yes/no)
AT_CERTIF_SURRENDERED_COMMENTS	Memo	0	Action taken - Certificate surrendered comments
AT_CORRESPONDENCE	Yes/No	1	Action taken - Correspondence (yes/no)

FIELD NAME	DATA TYPE	LENGTH	DESCRIPTION
DIVERSION_COUNTRY	Text	30	Country to which flight diverted
DIVERSION_LOCATION_ID	Text	5	Location ID to which flight diverted
ACCIDENT_OCCURED	Text	3	Accident Occured (yes/no)
ACCIDENT_CITY	Text	30	City where accident occurred
ACCIDENT_STATE	Text	30	State where accident occurred
ACCIDENT_COUNTRY	Text	30	Country where accident occurred
ACCIDENT_LOCATION_ID	Text	5	Location ID where accident occurred
AIRCRAFT_MFG	Text	30	Aircraft manufacturer
AIRCRAFT_MODEL	Text	30	Aircraft Model
AIRCRAFT_TYPE	Text	15	Aircraft Type (e.g., aircraft, rotorcraft)
CFR_PART	Text	15	CFR title was operating under at time of incident
TAIL_NBR	Text	7	Aircraft tail number
FLIGHT_NBR	Text	10	Flight number
SCHEDULED	Text	12	Scheduled or non-scheduled flight
FLIGHT_ACTIVITY	Text	20	Flight activity at time of incident (e.g., personal, cargo, passenger)
HOMEBUILT/SPORT UTILITY	Text	50	Homebuilt or Sport utility aircraft
FLIGHT_PHASE	Text	20	Phase of flight (e.g., taxiing, take off, landing)
FATAL	Long Integer	4	Number of fatal injuries onboard

FIELD NAME	DATA TYPE	LENGTH	DESCRIPTION
FLIGHT_TIME_LAST_SIX_MONTHS	Long Integer	4	Flight time over the last six months
EMPLOYER_CODE	Text	5	Employer code
OCCUPATION_CODE	Text	5	Occupation code
DECEASED	Text	3	Deceased (yes/no)
DIED_ONBOARD_AIRCRAFT	Text	10	Died onboard aircraft (yes, no, N/A)
PRIMARY_CAUSE_OF_DEATH	Text	20	Primary cause of death
SECONDARY_CAUSE_OF_DEATH	Text	20	Secondary cause of death
CAUSE_OF_DEATH_NARR	Memo	0	Cause of death narrative
TOX_ID_NBR	Text	12	CAM Toxicology number
AUTOPSY	Memo	0	Autopsy narrative
ORIGIN_CITY	Text	30	City - Origin of flight
ORIGIN_STATE	Text	30	State - Origin of flight
ORIGIN_COUNTRY	Text	30	Country - Origin of flight
ORIGIN_LOCATION_ID	Text	5	Location ID - Origin of flight
DESTINATION_CITY	Text	30	City - Destination of flight
DESTINATION_STATE	Text	30	State - Destination of flight
DESTINATION_COUNTRY	Text	30	Country - Destination of flight
DESTINATION_LOCATION_ID	Text	5	Location ID - Destination of flight
DIVERSION_OCCURED	Text	3	Diversion Occured (yes/no)
DIVERSION_CITY	Text	30	City to which flight diverted
DIVERSION_STATE	Text	30	State to which flight diverted

APPENDIX A Continued

Request Waiver of Fees

This request is a joint effort between parties of:

- Congressional oversight inquiry.
- Research project by PhD at Oklahoma State University.
- Public research group Medical Freedom Act.

Request waiver of all fees based on:

- For educational and research use.
- Of urgent public interest.
- Promotes the open disclosure of public information to the general public.
- Will be indefinitely shared, at no cost, with other research institutions, NGOs, and the general public via public website <https://mymedicalfreedom.org/>
- Will be made available to several members of Congress.
- Elemental to pending law making activities.
- No additional cost for electronic delivery to any member of the public.
- Burden of work is extremely low since PII protections are built in and since the database can trivially export an entire dataset requiring only a few minutes of operator preparation.

Request expedited release because of current and ongoing congressional investigations, private party investigations, and research institution activity.

Delivery Format

Results should only be delivered using electronic means. The following combinations of data transfer are preferred:

- Order of preference of file formats:
 1. Original MS Access database
 2. Spreadsheet in an unencrypted industry standard format such as Open Document Format or Microsoft Excel format.
 3. Other structured data format including SQL, XML, PDF, or other parseable open-standard.
 4. A print-equivalent format such as PDF.

Requester Information



APPENDIX A Continued

2023-01-17

To Whom It May Concern:

This is a FOIA request made of the FAA and its sub-offices includes CAMI and the FAA Aeromedical Branch.

Scope

Date range of request: 2015-01-01 to Present.

FOIA Request

For each Airman, request the de-identified ECG/EKG results which are uploaded into the FAA's AMCS medical information system, in the 8500-8 section. The Aviation Medical Examiner (AME) uploads this data in 300 dpi+ PDF format to the AMCS system. These original files (de-identified) are requested. Each ECG/EKG record should contain the following for each record:

- Airman's age.
- Airman's sex.
- Date of the medical examination in which the ECG/EKG was submitted.
- Class of medical certificate sought.
- Result of application (granted, denied).
- For each Airman, the following:
 - Airman's PR interval heart numerical observation value. RT interval is the distance between the start of a P-wave and the start of the QRS complex.
 - Airman's QT interval. The distance between the start of the QRS complex and the end of the T wave.
 - Airman's ST interval. The distance between the end of the QRS complex and the end of the T wave.
 - Airman's TP interval. The distance between the end of the T-wave and the start of the next P wave.
 - Airman's RR interval. The distance between the peaks of two R waves that measure heart rate.
- Airman's COVID-19 vaccination status, including any boosters taken, and manufacturer of each vaccination.
- Any other cardiac related conditions expressed in a written narrative for that Airman noted in the 8500 section of AMCS including "Abnormalities/pathologies for heart arrhythmias" and any "normal variants". These are specified on Page 250 of the 2022 Guide for Aviation Medical Examiners (Updated 05/25/2022).

Query results should be clearly grouped by year then by Airman. For each de-identification and/or redaction, please provide a rationale.

APPENDIX A Continued

Fee Waiver

Request fee waiver based on the following facts:

- The requesters are a joint non-commercial scientific entity.
- This concerns the operations of several branches of the US government, of which the FAA represents the executing branch of a larger federal program currently being studied.
- This disclosure will provide significant understanding of government activities and operations by allowing the public to understand how the FAA changed a recent policy where an EKG PR value 'acceptable range' was increased from 0.12 to 0.20 (a long established medical science value) to the FAA's new EKG PR pilot criteria of 0.12 to 0.30, supported by current de-identified pilot data.
- Member of the news media. The requesters jointly operate as members of the media and with members of the media including: mymedicalfreedom.org, medicalfreedomact.org, movefreely.org, usfreedomflyers.org, hae4hf.org. Provides publicly available "news" and "media" information via website as a matter of historical record without fees. The data from these entities is also shared routinely with members of US Congress and members of various state legislatures.
- The requested information is in the public interest. Currently there is significant US Congressional interest in determining medical factors contributing to inflight pilot incapacitation events. A single such event can cost hundreds of lives and greatly impacts the flying public. Identifying safety signals is paramount to identifying medical issues putting the flying public at great risk. Working in concert with medical organizations, scientific organizations, members of Congress (e.g. Senator Ron Johnson), and pilot safety organizations, this FOIA will allow joint data sharing and will help medical experts and members of Congress to make safety recommendations to the FAA in addition to other legislative and executive branches of the US government.
- The requested information is significantly "meaningfully informative" since the information does not already exist in the public domain and thus would greatly contribute to public understanding of government operations and activities.
- The requested information will contribute to a wide understanding for a broad audience of persons interested in the subject including: various medical institutions, various US state governors, various US Senators, various scientific and research institutions, various pilot organizations, various pilot unions (International Airline Pilot's Association), various private individuals working as pilots, various medical doctors, including FAA AMEs, and various public health interest groups.
- Educational institution. This request is being made in conjunction with the scholarly work of an aerospace researcher at Oklahoma State University and will be used directly in a safety research project. Information available upon request.
- No commercial interest exists in any capacity. All information will be freely available indefinitely to any member of the public as "public domain".
- All results should be delivered electronically only. No duplication or other office supply expenses are needed. Data already exists in an FAA database and all requested information can be trivially retrieved through simple query.

APPENDIX A Continued

Expedite

Request that disclosure of this information be expedited:

- Vital to entities contributing to Congressional research on recent escalation of pilot medical issues (Senator Ron Johnson, Governor Ron DeSantis).
- Vital to upcoming legislation.
- Vital to the immediate safety interests of the American flying public.

Delivery Format

Delivery format should be electronic only, available via electronic delivery. Requester may offer other electronic delivery options if FOIA official requests it.

Requester(s):

Sl.walker@osu.edu

APPENDIX B

Survey Questions

Adverse Effects due to the COVID-19 Vaccine Among US Commercial Pilots

As a US-based Commercial and/or Military Pilot, you have been identified as a potential member of the survey sample and are invited to participate in this study conducted by Oklahoma State University's College of Education & Human Sciences, School of Educational Foundations, Leadership and Aviation Graduate Degree Program presented by Captain Sherry L. Walker under the direction of Dr. Timm J. Bliss, Program Coordinator & Principal Investigator.

The study's purpose is to explore possible adverse reactions to the COVID-19 vaccine in the US Commercial Pilot population. Your choice to participate is voluntary, and you will not be penalized for refusing to take part. You may withdraw your participation and exit the survey at any point.

The study consists of a short (less than 25-minute) survey culminating in your ability to tell your story. If you have already prepared a written version of your story (we suggest), you can merely copy and paste directly into the text box. This survey works on mobile devices, computers, or tablets. You can stop, resume, or exit and discontinue at any point; however, once submitted, your participation is complete. Some questions require answers to continue, while others may be skipped.

Your participation is an important foundational component for Aviation Industry research. There are no known risks associated with this project, which are greater than those ordinarily encountered in daily life. The information you provide in the study is anonymous. This means that your name will not be collected or linked to the data in any way. The researchers will not be able to remove your data from the dataset once your participation is complete.

The results of this data collection will be used in preparation of published research which may be presented to various stakeholders, educational institutions, media, and the general public. There are no direct benefits to you, expressed or implied. You will receive no compensation for participating in this study.

This study was not funded by any organization, private entity, stakeholder, or government entity and is the sole property of Oklahoma State University and the researchers responsible for data collection.

Contacts and Questions: The Institutional Review Board (IRB) for the protection of human research participants at Oklahoma State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at 405-334-1206 or email at: timj.bliss@okstate.edu If you have questions about your rights as a research volunteer or would simply like to speak with someone other than the research team about concerns regarding this study, please contact the IRB at (405) 744-3377 or irb@okstate.edu. All reports or correspondence will be kept confidential.

Statement of Consent: I have read the above information. I have had the opportunity to ask questions and have my questions answered. I consent to participate in the study. (Check appropriate answer).



Approved: 01/27/2023
Protocol #: IRB-23-40

- ☐ Agree
☐ Disagree

APPENDIX B Continued

1. Are you at least 18 years old? Yes/No
2. Are you currently a Commercial Civilian or Military Pilot? If you are a civilian pilot with a Guard or Reserve obligation, please answer the questions as a civilian. You will be asked to list your secondary employer (military obligation) later: Commercial Civilian or Military Only (Active Duty)
3. What FAA Certificates do you hold? ATP (Airplane/Rotor/Glider/Balloon); Commercial Multi-Engine and/or Single Engine (Airplane/Rotor/Glider/Balloon); Flight Engineer; Certified Flight Instructor or No Civilian License, or Military Pilot Only
4. Please list all Type Ratings (i.e. B727, A320, R22, CFJ200, HS-125, etc.) and/or the military planes on which you have qualified:
5. Please indicate your age in whole years:
6. Your FAA Medical Class is: First; Second; Third
7. Your FAA Medical is: Valid, No Special Issuance; Valid, with Special Issuance; Deferred pending decision or on-appeal
Date of last valid FAA Medical Exam:
8. Date of Original FAA Medical Special Issuance:
9. Reason for your FAA Medical Special Issuance:
10. Date of Original FAA Medical Deferral:
11. Reason for FAA Medical Deferral (Please include official language if available):
12. Are you on Military Flight Status? Yes, Flight Status; No, non-flight status due to medical reasons; No, non-flight status due to NON-medical reasons

APPENDIX B Continued

13. Date of last valid Military Flight Physical
14. Check the best answer regarding your current FAA medical condition as of today's date: My FAA Medical is valid. I have NO pending medical concerns (Civilian & Military with Civilian FAA Medical); My FAA Medical is valid, BUT I have a condition/concern I plan to report at my next FAA Medical (Civilian & Military with Civilian FAA Medical); My FAA Medical is valid, BUT I have a condition/concern I DO NOT plan to report at my next FAA Medical (Civilian & Military with Civilian FAA Medical).
15. Check the best answer regarding your current Military medical condition as of today's date: My Military Medical Flight Status is valid. I have NO pending medical concerns (Military only or Military with FAA Medical); My Military Medical Flight Status is valid, BUT I have a condition/concern I plan to report at my next Military Flight Physical (Military only or Military with FAA Medical); My Military Medical Flight Status is valid, BUT I have a condition/concern I DO NOT plan to report at my next Military Flight Physical (Military only or Military with FAA Medical).
16. Is your FAA Medical Special Issuance related to your COVID-19 Injection?
Yes/No
17. In addition to your FAA Medical Special Issuance, do you have medical concerns you believe are related to your COVID-19 injection? Yes/No
18. Is your FAA Medical Deferral due to complication you believe are related to your COVID-19 injection? Yes/No

APPENDIX B Continued

19. In addition to your FAA Medical Deferral, do you have medical concerns you believe are related to your COVID-19 injection? Yes/No
20. Is your Removal from Military Flight Status due to complications you believe are related to your COVID-19 injection? Yes/No
21. In addition to your Removal from Military Flight Status, do you have medical concerns you believe are related to your COVID-19 injection?
22. Because you answered that your OFFICIAL FAA Medical Special Issuance, FAA Medical Deferral, or removal from Military Flight Status are unrelated to your COVID-19 Vaccine condition/concerns, proceed without regard to these pre-existing Special Issuance/Deferral/Removal conditions. The following questions ONLY reference your medical concern/condition you believe are related to your COVID-19 injection: Continue
23. Have you received a medical determination from a health care provider that directly relates your medical concern/condition to the COVID-19 injection?
Yes; No; I Do Not Know
24. Have you reported your medical condition/concern that you relate to the COVID-19 vaccine to your personal physician? Yes/No
25. Have you reported your medical condition/concern that you related to the COVID-19 vaccine to your Aviation Medical Examiner (AME) or Military Flight Surgeon? Yes/No

APPENDIX B Continued

26. Have you or your Aviation Medical Examiner (AME)/Flight Surgeon reported your medical condition/concern that you relate to the COVID-19 vaccine to the FAA or governing military body? Yes/No
27. Have you reported your medical condition/concern that you relate to the COVID-19 vaccine to your employer? Yes/No
28. Even though you have not yet reported, do you PLAN to tell your AME or your Flight Surgeon about your condition/concern at your NEXT FAA or Military Flight Physical? Yes; No; I have not decided.
29. Do you agree with the following statement?
- I do NOT plan to mention my medical condition/concern that I believe is related to the COVID-19 vaccine to anyone PRIOR TO MY NEXT FAA OR MILITARY FLIGHT PHYSICAL IN HOPES THAT I WILL IMPROVE BEFORE I MUST REPORT. I agree; I disagree; I have not decided
30. Do you agree with the following statement?
- I do NOT plan to mention my condition/concern that I believe is related to the COVID-19 vaccine to anyone, WHETHER OR NOT I IMPROVE, IN HOPES THAT MY CONDITION/CONCERN WILL NOT BE DETECTED AT MY NEXT FAA OR MILITARY FLIGHT PHYSICAL. I agree; I disagree; I have not decided
31. Are you now, or did you in the past, work with AMAS (formerly known as ALPA Aeromedical) regarding your COVID-19 related concern, or condition? Yes/No

APPENDIX B Continued

32. You are: Actively working; On Short-Term Disability or Sick List; On Long-Term Disability. Unemployed (If unemployed, answer the following questions with reference to your most recent employer.); Retired (If retired, answer the following questions with reference to your most recent employer.)
33. Month you became unemployed or retired:
34. Year you became unemployed or retired:
35. Your PRIMARY EMPLOYER operates under which of the following? Keep in mind, if you are a civilian pilot who has a military obligation (Guard/Reserve), your primary employer is your civilian employer. Retired/Unemployed indicate your last employer: FAR 121; FAR 135; FAR 91; Military; Other
36. Please indicate your PRIMARY EMPLOYER's type of Company: Air Carrier; Military; Private company (Please indicate type: Medical Evac; Ag; Training; Corporate Pilot, etc. DO NOT STATE COMPANY NAME.)
37. Do you have a secondary employer (i.e.: civilian pilot with military obligations or civilian with two different employers): Yes/No
38. Your SECONDARY EMPLOYER operates under which of the following? Keep in mind, if you are a civilian pilot who has a military obligation (Guard/Reserve), your primary employer is your civilian employer. Retired/Unemployed indicate your last employer: FAR 121; FAR 135; FAR 91; Military; Other
39. Please indicate your SECONDARY EMPLOYER's type of Company: Air Carrier; Military; Private company (Please indicate type: Medical Evac; Ag; Training; Corporate Pilot, etc. DO NOT STATE COMPANY NAME.)

APPENDIX B Continued

- 40. If on Short-Term Disability: Month you began short-term disability:
- 41. If on Short-Term Disability: Year you began short-term disability:
- 42. If on Long-Term Disability: Month you began long-term disability:
- 43. If on Long-Term Disability: Year you began long-term disability:
- 44. Did your PRIMARY Employer EVER mandate the COVID-19 vaccination?
Yes/No
- 45. Month your Primary Employer announced the Mandate:
- 46. Year your Primary Employer announced the Mandate
- 47. What was the reason your Primary Employer gave for the Mandate (select all that apply to the best of your knowledge)? Company Preference Prior to any government mandates.; Federal Contractor Mandate/OSHA Mandate only (Was removed after both were rejected by the courts.; Began as Federal Mandates and remained/remains in place due to company preference; Military Mandate; Other
- 48. Is your Primary Employer's mandate still in place? Yes/No
- 49. Month your Primary Employer's mandate was removed:
- 50. Year your Primary Employer's mandate was removed:
- 51. Did your Primary Employer Allow you to seek an exemption to the mandate through the Reasonable Accommodation process? Yes/No
- 52. From your Primary Employer you sought: A Medial Accommodation; A Religious Accommodation; Both; Neither
- 53. Was your request to your Primary Employer's exemption/accommodation (s) granted? Yes, the Accommodation/Exemption I sought was granted; Yes, I

APPENDIX B Continued

sought both Religious & Medical Accommodations/Exemptions, and BOTH were granted; I sought both Religious & Medical Accommodations/Exemptions, but only ONE was granted; No Accommodation/Exemption was granted; I withdrew my application for an Accommodation/Exemption.

54. Why did you withdraw your request to your Primary Employer for an exemption/accommodation?
55. Briefly detail the type and terms of your Primary Employer's exemption/accommodations (s):
56. What was the reason given by your Primary Employer for denying one or more of your requests for an exemption/accommodation?
57. Did your Secondary Employer EVER mandate the COVID-19 vaccination?
Yes/No
58. Month your Secondary Employer announced the Mandate:
59. Year your Secondary Employer announced the Mandate
60. What was the reason your Secondary Employer gave for the Mandate (select all that apply to the best of your knowledge)? Company Preference Prior to any government mandates; Federal Contractor Mandate/OSHA Mandate only. (Was removed after both were rejected by the courts.); Began as Federal Mandates and remained/remains in place due to company preference.; Military Mandate; Other
61. Is your Secondary Employer's mandate still in place? Yes/No
62. Month your Secondary Employer's mandate was removed:
63. Year your Secondary Employer's mandate was removed:

APPENDIX B Continued

64. Did your Secondary Employer Allow you to seek an exemption to the mandate through the Reasonable Accommodation process? Yes/No
65. From your Secondary Employer You Sought: A Medical Accommodation; A Religious Accommodation; Both; Neither
66. Was your request to your Secondary Employer's exemption/accommodation (s) granted? Yes, the Accommodation/Exemption I sought was granted; Yes, I sought both Religious & Medical Accommodations/Exemptions, and BOTH were granted. I sought both Religious & Medical Accommodations/Exemptions, but only ONE was granted; No Accommodation/Exemption was granted; I withdrew my application for an Accommodation/Exemption.
67. Why did you withdraw your request to your Secondary Employer for an exemption/accommodation?
68. Briefly detail the type and terms of your Secondary Employer's exemption/accommodations (s):
69. What was the reason given by your Secondary Employer for denying one or more of your requests for an exemption/accommodation?
70. Did you take a COVID-19 Vaccine Yes/No
71. Which COVID-19 Vaccine did you take? Johnson & Johnson/Janssen (K&J); Moderna; Pfizer-BioNTech; Novavax; Other
72. Date of Johnson & Johnson/Janssen (J&J) Injection?
73. Lot Number of J&J Injection
74. Date of First Moderna Injection?

APPENDIX B Continued

- 75. Lot Number of first Moderna Injection
- 76. Did you take the second dose of the Moderna Injection? Yes/No
- 77. I did not take the second dose of the Moderna Injection because: My reaction to the first dose prevented me from taking the second dose; I chose not to take the second dose; other
- 78. Date of Second Moderna Injection?
- 79. Lot Number of Second Moderna?
- 80. Date of First Pfizer-BioNTech Injection?
- 81. Lot Number of first Pfizer-BioNTech Injection
- 82. Did you take the second dose of the Pfizer-BioNTech Injection? Yes/No
- 83. I did not take the second dose of the Pfizer-BioNTech Injection because: My reaction to the first dose prevented me from taking the second dose; I chose not to take the second dose; other
- 84. Date of Second Pfizer-BioNTech Injection?
- 85. Lot Number of Second Pfizer-BioNTech Injection?
- 86. Date of First Novavax Injection?
- 87. Lot Number of first Novavax Injection
- 88. Did you take the second dose of the Novavax Injection? Yes/No
- 89. I did not take the second dose of the Novavax Injection because: My reaction to the first dose prevented me from taking the second dose; I chose not to take the second dose; other
- 90. Date of Second Novavax Injection?

APPENDIX B Continued

91. Lot Number of Second Novavax?
92. Have you taken a COVID-19 Booster (s)? Yes/ No
93. Please select the most correct answer. Why did you choose to take a booster(s)?
My employer mandated boosters.; personal choice.; other
94. How many boosters did you receive? 1;2;3;4+
95. Booster #1 Brand? Johnson & Johnson/Janssen; Moderna; Pfizer-BioNTech;
Novavax; other
96. Date of Booster #1
97. Booster #1 Lot Number?
98. Booster #2 Brand? Johnson & Johnson/Janssen; Moderna; Pfizer-BioNTech;
Novavax; other
99. Date of Booster #2
100. Booster #2 Lot Number?
101. Booster #3 Brand? Johnson & Johnson/Janssen; Moderna; Pfizer-BioNTech;
Novavax; other
102. Date of Booster #3
103. Booster #3 Lot Number?
104. Booster #4 Brand? Johnson & Johnson/Janssen; Moderna; Pfizer-BioNTech;
Novavax; other
105. Date of Booster #4
106. Booster #4 Lot Number?

APPENDIX B Continued

107. Do you believe you have a medical condition caused by receiving a COVID-19 vaccination or booster? Yes/No
108. Please state the diagnosis or medical condition you are reporting as potential vaccine injury.
109. How soon after the injection that you believe caused you harm did symptoms begin? Immediately (less than 24 hours); 1-7 Days; 8-14 Days; 15-30 Days; 1-3 Months; 4-6 Months; More than 6 Months
110. Do you have supporting evidence such as doctor reports, baseline and/or post-injury medical tests, or other supporting documentation? Yes/No
111. Please state the type of supporting evidence (diagnosis, testing type, EKG etc.)
112. Please provide your story regarding your medical condition. Include all symptoms, diagnosis, onset dates, and any other pertinent details. (You may copy/paste your story in this window.)
113. Was your case submitted to VAERS (Vaccine Adverse Event Reporting System)?
- "Vaccine Adverse Event Reporting System (VAERS) is a national early warning system to detect possible safety problems in U.S.-licensed vaccines. VAERS is co-managed by the Centers for Disease Control and Prevention (CDC) and the U.S. Food and Drug Administration (FDA). VAERS accepts and analyzes reports of adverse events (possible side effects) after a person has received a vaccination. Anyone can report an adverse event to VAERS. Healthcare professionals are required to report certain adverse events and vaccine

APPENDIX B Continued

manufacturers are required to report all adverse events that come to their attention." Yes/No

- 114. Date of VAERS Report:
- 115. VAERS Report Number:
- 116. Did you enroll in and submit your report to V-Safe, a smartphone-based program to collect health assessments after the Covid-19 vaccination? Yes/No
- 117. Date of V-Safe Report/Enrollment:
- 118. Has anyone from V-Safe contacted you to follow up on your report? Yes/No
- 119. How many times have you been contacted? 1/2/3/4/5/6+
- 120. When you took the injection, were you presented with Informed Consent documentation? Yes/No
- 121. On a scale of 1 to 5 with 1 being extremely healthy and 5 being extremely unhealthy, rate the following statement: My health PRIOR to the vaccination was: Extremely Healthy; Good; Average; Fair; Extremely Unhealthy
- 122. On a scale of 1 to 5 with 1 being extremely healthy and 5 being extremely unhealthy, rate the following statement: My health AFTER the vaccination is: Extremely Healthy; Good; Average; Fair; Extremely unhealthy
- 123. I had COVID or suspect I had COVID: 0; 1; 2; 3 or More times
- 124. I had COVID or suspect I had covid (Click all that apply): Prior to the vaccination; after the vaccination, but before taking a booster (s); After the Vaccination and AFTER taking a booster (s); I am unvaccinated, and I had COVID.

APPENDIX B Continued

125. Per the CDC: “Long COVID is broadly defined as signs, symptoms, and conditions that continue or develop after initial COVID-19 or SARS-CoV-2 infection. The signs, symptoms, and conditions are present four weeks or more after the initial phase of infection; may be multisystemic; and may present with a relapsing– remitting pattern and progression or worsening over time, with the possibility of severe and life-threatening events even months or years after infection. Long COVID is not one condition. It represents many potentially overlapping entities, likely with different biological causes and different sets of risk factors and outcomes.” Do you suffer from Long Covid? Yes; No
126. Given what I now know: I would definitely have gotten the vaccine and/or boosters; I would opt not to get the COVID-19 vaccine or boosters.
127. Given what you now know, do you believe everyone should get the COVID-19 Vaccine: Yes, I agree that everyone should get the COVID-19 Vaccine and/or boosters.; No, I do not believe everyone should get the COVID-19 Vaccine and/or boosters.
128. Given what you now know, do you advise people take the COVID-19 Vaccine or boosters: Yes/No
129. If my employer mandates boosters: I will get the booster; I will seek an exemption/reasonable Accommodation in lieu of getting the booster; I will not get a booster even if that means I must quit, retire, or be terminated
130. Do you believe the Federal Aviation Administration (FAA) used due diligence when it approved the COVID-19 Vaccines and/or boosters for pilots? Yes/No

APPENDIX B Continued

131. Do you believe potential safety risks exist due to the Federal Aviation Administration's (FAA) approval of the COVID-19 Vaccines and/or boosters?
Yes/No
132. This is the final question. If you select yes, your survey will be submitted. If you want to go back and/or change answers, you must navigate back NOW using the Left Arrow Key. If you proceed and answer this question, you WILL NOT be able to return. Do you want to submit your survey? Yes/No

Thank you for taking time to complete the survey. If you are suffering from any medical conditions related to your aviation career and need assistance, please contact:

Air Docs Pilot Medical Support Services at www.airdocs.net or 1-989-245-4494

or

Aviation Medical Advisory Service (AMAS) at www.aviationmedicine.com or

1-866-237-6633

APPENDIX C

ALPA President Jason Ambrosi Email

Sent: Thursday, February 9, 2023 4:29 PM
To: Sherry Walker <sherrywalker@att.net>
Cc: Morse, Wendy, First Vice President <Wendy.J.Morse@alpa.org>; Timm Bliss <tim.bliss@okstate.edu>
Subject: Re: Study Proposal-Time Critical

Hi Sherry,

Thanks for reaching out. As you know, I have been a supporter of medical freedom of choice and am sympathetic to your concerns. I helped lead the effort at Delta to obtain medical freedom language concerning the vaccination issue in the TA now being considered by the Delta pilots for a new Delta PWA. However, I am now President of all of ALPA and represent all of its members, who, as you know have divergent views on this issue. A policy requirement under Section 85 of the ALPA Administrative Manual requires us to make an institutional risk/benefit examination of any survey that an entity wants us to sponsor, distribute among, or obtain data from our membership.

Being a particularly polarizing issue, and especially now with it receding, I must be cognizant of the likelihood that ALPA participation in or endorsement of such a survey on this subject could undermine the unity that is at the core of what our union needs to be successful.

I would also like to point out that the information concerning any medical consequences of the vaccine could be obtained from the FAA. While I realize this is not the complete picture, data reported on the medical may be requested from the agency on any adverse impact and adverse conditions caused by the vaccine pursuant to a Freedom of Information Act request.

For the reasons stated above, while I support your plight, I do not believe it would be in the interests of ALPA to be a participant in the study at this time.

In Unity,

Jason



Captain Jason Ambrosi
President

Air Line Pilots Association, International
202-797-4010 | jason.ambrosi@alpa.org

APPENDIX D

Oklahoma State University IRB Approval Letter



Oklahoma State University Institutional Review Board

Date: 01/27/2023
Application Number: IRB-23-40
Proposal Title: Adverse Effects due to the COVID-19 Vaccine Among US Commercial Pilots

Principal Investigator: Timm Bliss
Co-Investigator(s): SI Walker
Faculty Adviser:
Project Coordinator: SI Walker
Research Assistant(s):

Processed as: Exempt
Exempt Category:

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,
Oklahoma State University IRB

VITA

Sherry Lynne Walker

Candidate for the Degree of

Doctor of Education

Dissertation: A REVIEW OF COVID-19 VACCINE USE AND ADVERSE EFFECTS
IN U.S. COMMERCIAL AIRLINE PILOTS

Major Field: Applied Educational Studies-Aviation and Space Education

Education:

Completed the requirements for the Doctor of Education in Aviation & Space
Education at Oklahoma State University, Stillwater, Oklahoma in May 2024.

Completed the requirements for the Master of Science in Natural & Applied
Sciences at Oklahoma State University, Stillwater, OK, in 1995.

Completed the requirements for the Bachelor of Science in Aeronautical Studies at
Embry-Riddle Aeronautical University, Daytona Beach, FL in.

Employment:

Principal, Walker Aero Solutions. 2024-Present.

Captain, Continental/United Airlines. 1998-Present.

Adjunct Human Factors Professor, Indiana Wesleyan University. 2021-Present.

Author & Co-Founder Airline Employees 4 Health Freedom. 2021-Present

TYPE Ratings: B737, B757, B767, B777, Gold Seal CFII, Flight Engineer

Authored Publications:

“Union Pilots are Made, Not Born” ALPA Membership Committee, 2007

“Honor Guard Manual” Continental Airlines Pilot Association, 2007

“Not so friendly skies of United Airlines” Washington Times, Dec, 2021

“Grounded...” Breitbart, Dec. 2021

“United’s Mandate Based on Hypocrisy...” Townhall, Dec. 2021

“Keep the Most Experienced Pilots in the Cockpit,” Breitbart, July 2203