

Analysis of the Military Spouse Unemployment Rate

2024

Isabella Wuco (MPP '24)

Prepared For:



Military Family
Advisory Network



FRANK BATTEN SCHOOL
of LEADERSHIP and PUBLIC POLICY

Acknowledgements

I would first like to thank Janice and Erin at the Military Family Advisory Network for their guidance throughout and commitment to my Applied Policy Project. Their dedication to empowering military families is inspiring and deserves much recognition. Both Janice and Erin are true examples of what it means to commit their careers to a deeply impactful cause. Their knowledge about and experience within the military community made all the difference throughout my completion of this work.

Next, I owe a sincere thank you to Professor Annie Rorem for her mentorship and leadership throughout the APP process. Her unwavering support during this academic year was monumental to the execution of this project. She is a genuine model of leading by action. Professor Rorem taught her students to be bold, confident, persistent, and, most importantly, compassionate.

Lastly and most crucially, my gratitude goes to my family, friends, and loved ones. The past five years at the University of Virginia would not have been so incredible if not for them. Dad, thank you for your decades of service to this country and for instilling in me the gift of endurance and passion. Mom, thank you for the sacrifice you made as a military spouse and mother and for emboldening me to be confident in myself and my abilities. To my sisters, Raquel, Roxanne, and Alessandra, thank you for always being the brightest part of my days, especially through the tougher times. Thank you to my grandparents for being the greatest examples of how to lead with love and live with a dedication to your faith. And to Will, simply saying that you encouraged me this past year would vastly understate just how much you supported me in every endeavor.

Thank you, God, for the many blessings I have been given in this life.

Disclaimer

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, by the Military Family Advisory Network, or by any other agency.

On my honor, I have neither given nor received unauthorized assistance.

Isabella A. Wuco

Noteworthy Abbreviations, Terms, and Numbers

MFAN	Military Family Advisory Network
PCS	Permanent Change of Station (assignment/transfer to a different duty station; military-imposed relocation)
GAO	U.S. Government Accountability Office
OPA	Office of People Analytics
ADSS	Active Duty Spouse Survey (2021, conducted by OPA)
Unemployed	An individual who seeks employment but is unable to obtain employment
540,000	Number of military spouses (excludes spouses who are active duty)
344,000	Number of military spouses in the workforce (employed + not employed and seeking work)
74,000	Number of unemployed military spouses
~22%	Unemployment rate ($74,000 \div 344,000$)
13%	Percent of unemployed military spouses of all military spouses ($74,000 \div 540,000$)

Note: statistics (GAO, 2024 & OPA, 2023)

Executive Summary

Goal

The goal of this policy analysis is to examine the stagnant military spouse unemployment rate and provide alternatives to relieve this problem. The author also makes a recommendation for her client, the Military Family Advisory Network, based on an evaluation of the three potential solutions.

Client

The Military Family Advisory Network is a non-profit organization that aspires to understand the needs of military-affiliated families and implement data-driven changes for a new path forward. They also seek to connect military families to resources to address whichever needs and fill any gaps. Without a current dedicated effort toward the military spouse unemployment rate, MFAN finds it imperative to specifically commit time, effort, and capabilities toward this issue.

Problem & Context

In 2024, active duty military spouses face a 22% unemployment rate (GAO, 2024), compared to the 3.9% civilian unemployment rate (Department of Labor, 2024). Despite involvement from several organizations, the rate has not changed for a decade. Additionally, a PCS move in the last 12 months has the highest effect on unemployment (OPA, 2023). When spouses move, they are disconnected from their networks, hindering their access to career resources.

Criteria & Alternatives

The estimated outcomes are analyzed through four evaluative criteria: cost, effectiveness, administrative feasibility, and sustainability. The author proposes three policy alternatives: (1) AI powered program-matching chatbot, (2) Partner with VMock, and (3) PCS Pantry Box addition. The chatbot would allow unemployed military spouses to converse with the MFAN website integrated technology to discover which programs are best suited for them. The

VMock partnership would grant free three month memberships to unemployed military spouses, so they can have on-demand application material assistance. The PCS Pantry Box addition builds on a recent MFAN program by delivering booklets of available programs to spouses who moved in the last three months.

Recommendation

It is recommended that MFAN may move forward the Program-Matching Chatbot. This solution has the potential to be the cheapest and most effective, when looking at 7 year estimates. It is also the most administratively feasible and sustainable. A chatbot offers an innovative solution to efficiently connect military spouses to the employment programs that exist for them. In place of navigating several websites and deciding which program best suits their needs, they will simply feed characteristics about themselves into the AI tool and receive recommended programs to utilize.

Implementation

MFAN will first need to determine the budget to understand the boundaries and limitations of chatbot specificities and qualities. This will require collaboration between the Programs Team and Executive/Operations. MFAN will then need to research chatbot agencies, in addition to speaking with military spouses to gauge what the job seeker might seek in this technology. The primary stakeholders and key players are MFAN, the chatbot agency, and military spouses. Collaboration across these groups is crucial. As with all program implementations, there are potential roadblocks, such as misalignment between the chatbot agency and MFAN or overload to other military support programs. However, MFAN may mitigate these challenges through clear and strong communication.

To Conclude

The following report dives deeper into the policy analysis of the military spouse unemployment rate, with a call to action in the form of a recommended AI powered chatbot.

Table of Contents

<i>Acknowledgements</i>	<i>i</i>
<i>Disclaimer</i>	<i>ii</i>
<i>Noteworthy Abbreviations, Terms, and Numbers</i>	<i>iii</i>
<i>Executive Summary</i>	<i>iv</i>
<i>About the Client: Military Family Advisory Network</i>	<i>1</i>
<i>The Problem</i>	<i>2</i>
<i>Background and Context.....</i>	<i>3</i>
<i>Literature Review</i>	<i>5</i>
Establishing the Problem.....	5
The Literature on Chatbots.....	6
The Literature on Nonprofit-Corporate Partnerships & VMock	8
The Literature on Traditional Advertisement	9
<i>Evaluative Criteria</i>	<i>11</i>
Cost.....	11
Effectiveness.....	11
Administrative Feasibility.....	11
Sustainability	11
<i>Alternatives.....</i>	<i>12</i>
Program-Matching Chatbot	12
Partnership with VMock.....	13
PCS Pantry Box Addition.....	14

<i>Outcomes Matrix.....</i>	<i>15</i>
<i>Findings and Outcome Analysis.....</i>	<i>16</i>
<i>Recommendation</i>	<i>22</i>
<i>Implementation.....</i>	<i>23</i>
Stakeholders.....	23
Necessary Preliminary Steps to Move the Chatbot Forward	24
Potential Challenges	25
<i>Conclusion</i>	<i>27</i>
<i>References.....</i>	<i>28</i>
<i>Appendix A: Assumptions Table</i>	<i>33</i>
<i>Appendix B: Program Effectiveness Trends</i>	<i>34</i>
<i>Appendix C: RACI Framework, Implementation</i>	<i>37</i>
<i>Appendix D: Preliminary Timeline</i>	<i>38</i>

About the Client: Military Family Advisory Network

The Military Family Advisory Network works toward a future where military families feel empowered to flourish through their life changes and permanent changes of station. They aspire to understand the needs of military-affiliated families and implement data-driven changes for a new path forward. In addition to an ever-growing understanding, they also seek to connect military families to resources to address whichever needs and fill any gaps. MFAN follows a four-step approach (research, educate, act, connect) to ultimately understand military families and their struggles. Without a deep understanding, it is challenging to make changes that effectively reform the livelihoods of those affected. Given this mission, they deem it critical to become more involved with active duty spouse employment, so they may ease the concerns experienced by military families.

Recently, MFAN launched the MFANetwork, which delineates what fostering ‘military family well-being’ means to them. Through a holistic approach, the MFANetwork outlines four pillars of military family well-being: Healthy Bodies, Healthy Families, Healthy Homes, and Healthy Futures. MFAN will address each pillar through data, partnerships, and innovation.

The Problem

In 2024, active duty military spouses face a 22% unemployment rate (GAO, 2024), compared to the 3.9% civilian unemployment rate (Department of Labor, 2024). Too many active duty military spouses are unemployed, contributing to financial instability. Although several non-profits and presidential executive orders have implemented interventions, no action has moved the needle on the unemployment rate, proving there to be a gap that needs to be addressed. Additionally, a PCS move in the last 12 months has the highest effect on unemployment (OPA, 2023). When spouses move, they are disconnected from their networks, hindering their access to career resources. Importantly, active duty spouse job stability is one critical mechanism to ensure that individuals join or retain tenure in the military.

Background and Context

In 1981, Allyson Grossman published a research article titled, “The employment situation for military wives,” which remarked that through the 1970’s, military wives’ labor force participation soared to meet the rate of civilian wives. While this study is outdated, solely observing women and to analyzing the labor market in an era markedly different from 2024’s family-life and economic culture, it shows that research, in some capacity, has focused on military spouse employment for about 40 years.

Now, in 2024, many modern military families need more than one stream of income and do not seek a lifestyle where one individual works and the other remains without a job. While this cannot wholly be accredited to spouse unemployment struggles, 51.2% of military families report difficulties with saving money, with a key reason being insufficient military pay for family support (MFAN, 2022). While there are spouses who choose to stay home without employment on their own convictions, the unemployment rate (22%) applies to individuals who are looking to obtain employment and are unable to.

In the last few decades, several key players have put forth effort, time, and messaging to bring awareness to the unceasing 22% unemployment rate of active duty military spouses. Presidents introduced executive orders and military-focused nonprofit organizations invested in programs directly geared toward tackling the high unemployment rate.

Unsurprisingly, the financial and career instability that military spouses encounter is a driving factor for active duty attrition and reluctance to join the forces. Recent reports on active duty families inform that a grand majority (80%) of respondents felt stressed about finances over the last year (MFAN, 2022). Being in the military presents its own set of unique hardships for service members, making it especially taxing when many spouses cannot retain a second source of income for their families. Nearly half of active duty spouses would like to receive formal training or education but are unable to due to the restraints that come with the lifestyle that they must live (Military OneSource, 2017). The certifications that are

often necessary for acquiring jobs or advancing careers can become unobtainable in a quick-paced life, where about 30 percent of military spouses report a PCS in the last year (Military Community and Family Policy, 2021). Additionally, a recent move within the last 12 moves is associated with a large effect on unemployment (OPA, 2023).

About 81 percent of military members and their spouses have discussed the potential of leaving the armed services. One of the top deciding factors in initiating these conversations is the availability of career options for both spouses. Recent surveys show that almost half of military spouses ranked equal employment opportunities as a very important factor in the decision-making process (Hiring Our Heroes, 2017). This poses a risk to the United States' ability to hire and retain service members to defend the nation. Championing for military spouse employment is a necessary next step to ensuring an ability for military families to properly function in the 21st century.

Literature Review

Establishing the Problem

Federal Reports

In 2024, GAO released the *Military Spouse Employment: Part-Time Workforce Characteristics and Perspectives* report, which investigated characteristics surrounding military spouse part-time employees. GAO conducted this study by relying on results from the DOD's (OPA) 2019 and 2021 military spouse surveys (discussed below), calculating descriptive statistics, and conducting a regression analysis. The research included 15 different variables in its regression, to determine which variables have a statistically significant association with the likelihood of part-time employment among military spouses. The researchers only identified associations that were statistically significant at, minimum, the 95 percent confidence interval and ruled out the potential impact of the COVID-19 pandemic with a 2019 and 2021 outcome comparison. The study revealed that spouses often take part-time work to avoid unemployment, but that this part-time work sometimes presents challenges, such as underemployment and lack of a career path. These findings demonstrate the value in programs and services that amplify military spouses and advocate for deserving employment.

In 2023 (and updated in 2024), OPA released its findings from the 2021 ADSS. The results are generalizable to all active duty military spouses in the United States due to random sampling and weighting (to match the population). While the researchers identified several statistical differences for demographic groups, they notably found significant discrepancies within employment status. The report states that there has been no notable change in the unemployment rate since 2015, and that a PCS move within the last 12 months significantly increases the odds of unemployment (with the largest effect). Spouses also responded that the top problem with PCS moves is unemployment, showing that this trend appeared when asked about employment and with PCS moves. Another finding shows that spousal unemployment increased the odds of both food insecurity and low financial well-being. This

OPA report sheds a light on the military spouse experience, while emphasizing internal and external validity.

The Jobless Burnout

Nonnis et al. published their findings on the phenomena of unemployed individuals (those seeking jobs) facing similar burnout symptoms and conditions as those described by burnt out employed people. Two caveats of this research are worth noting: the psychosocial effects of the job search are in a preliminary stage of research, and this particular study was conducted in Italy (not the United States). Regardless, the findings illuminate the tolls of job hunting on the unemployed. The researchers employed several quantitative analyses to find potential associations and, further, which assertions are statistically significant. Participants took a 16 item survey that measured job burnout (modified to job search burnout) and returned their health statuses across three dimensions, 'Exhaustion', 'Disillusion', 'Disengagement', and 'Effectiveness in Job Search'. Each question item was answered along a Likert scale. The results show a statistically significant and positive association between the duration of the job search period and the feelings of 'Exhaustion', 'Disillusion', and 'Disengagement'. Despite the preliminary stage of this type of research, these findings present a link between the job hunt and negatively impactful emotions.

The Literature on Chatbots

Career-Oriented Chatbots

The limited data that exists on career assistance chatbots offers early trends the effectiveness of this technology. Lee et al. conducted a need assessment of students to determine how a career chatbot might be helpful (2019). The participants responded that a chatbot would be beneficial for offering information and recommendations, providing intervention on career development, serving as a medium/connection between students and advisors, and providing career counseling. While these results are limited, given this is not a scientifically conducted experiment, it does enlighten the direction that research is going, while sharing the interest in career-oriented chatbots.

Suresh et al. conducted baseline research, which also begins to show a trend toward career-oriented chatbots, although the findings should not be heavily relied upon for generalizability (2021). These researchers built a career chatbot based on what survey respondents stated they look for in a career counsellor. Once the AI tool was developed, a segment of the participants was asked to test the chatbot, to which they reported the chatbot being useful in its purpose and able to understand the intent of the messages. There remains hesitancy surrounding this research, given its lack of validity analysis; however, it nonetheless does indicate the potential helpfulness of a service as such.

Chatbot Efficiency and Effectiveness

While the literature on career-specific chatbots is limited beyond demonstrating its usefulness and approval, there is more scientific data on chatbots that serve different purposes. Okanović et al. (2020) conducted a study to see how helpful a chatbot would be with supporting engineers perform a load test. After being asked to select between 1 and 5 for how helpful the tool was (low end, not helpful), the perceived average helpfulness of the chatbot was a 3.3/5, or 0.66. The researchers only pulled from the computer scientist population, and the number of participants was only 47 (with no mention of a statistically tested random sample), leaving room for concern about generalization. However, the next examined study gives stronger reason to believe that the “effectiveness”/helpfulness of a chatbot does hover around the 0.66 range.

Santos et al. (2022) examined a chatbot for the Brazilian Virtual School of Government, Evataalk, whose total amount of interactions for the data collected was 22,771 students. When examining how many students needed to contact human support after the use of the chatbot, they found that an average of 66% of students did not need additional support. The percentage begins around 55.6% and ends around 69.8%; there is a range because the researchers consistently received feedback and improved systems. This again shows a different chatbot’s helpfulness level to be around 66%. With a greater number of

participants and continuous tracking of human-needed support levels, the percentage in this study lines up well with the helpfulness ratio found in Okanović et al.'s piece.

The Literature on Nonprofit-Corporate Partnerships & VMock

The Relationship Between Nonprofit Organizations and Corporate Partnerships

Lefroy and Tsarenko examined the influence of resources provided to non-profits from corporate partners on their relationships (2013). These researchers first engaged in interviews and exploratory research to determine the best manner by which they may survey individuals from different non-profits. This enhances the internal validity of the survey, as they ensured that the questions truly measured the information they were aiming to gather. The produced survey later received 273 usable responses from several different non-profit organizations. The authors conducted statistical analyses for validities and to gauge statistical significance. They found that (on a scale of 1-7, 1 being weak and 7 strong) the average Commitment (from corporate partners) felt by non-profit employees was about 4.92. Other notable figures include Trust being around 5.32, Achievement of social objectives around 4.75, and Dependence around 4.15. These average ratings depict a generally positive relationship between non-profit groups and their corporate partners.

A VMock Examination

In 2023, Moran and Ackerman released the results of their study, which examined students' reactions to and interests in VMock, an AI powered career tool. The authors conducted this research at a public university that had student access to VMock for the past six years, garnering a sample size of 165 students (all of whom had previous experience using this tool). When asked about personal experiences and feelings toward VMock, 44% recalled positive perceptions of the tools; notably, 35% (of the total sample, not 35% of those who remarked positively) stated that VMock was effective in its intended purpose (improving job application materials). While there is not much empirical work surrounding VMock, or other AI career tools, this scientifically conducted research provides reliable analysis on the effectiveness of the service.

The Literature on Traditional Advertisement

United States Postal Office Research

In 2020, the U.S. Postal Office released data that investigated how millennials respond to direct mailing efforts. It is appropriate to apply this research on millennials in this analysis of military spouses since the most populous age range of military spouses is 26-40 years old, which is the millennial age group (OPA, 2023). The research found that 85% of millennials take the time to look through their mail; notably, 66% of respondents stated that they frequently and occasionally use marketing mail as a prompt to go online. This metric is valuable, as it indicates how often people use a paper form of communication to prompt further investigation online.

Additionally, the U.S. Postal Service Office of the Inspector General conducted marketing research (2019) which shows that physical advertisements are more effective in leaving a lasting impression than digital advertisements, across all ages. Memory recall exercises and neuroimaging analysis demonstrated that participants across all ages more easily remembered the advertisements that were in paper form. It is worth noting, however, that physical ads were more slowly processed, which is a concern to consider for military spouses who often have limited time. Producers of traditional paper advertisements must remain aware of the finding that emotional advertisements are more effective in leaving a lasting impression on millennials than functional advertisements. Perhaps, if trying to elicit the attention of a millennial and maintain effectiveness, it may be wise to include emotional marketing in with functional marketing.

The Economic Times: Digital Marketing vs Traditional Marketing: What's The Difference?

It is valuable to include this piece by *The Economic Times* (2023), as it delineates the differences between traditional and digital marketing, while sharing concerns with traditional marketing. The article notes that traditional marketing uses channels such as newspapers, television, radios, billboards, etc. to reach out to potential customers and persuade them to purchase a product/service. There is a high reliance on mass media efforts, making it a less productive and more costly method. Digital marketing, on the other

hand, may be targeted to specific audiences through social media, search engines, emailing, etc. The latter type of marketing allows firms to send personalized messages to individuals depending on their behavior.

Understandably, this draws concerns for mass produced paper advertising efforts; however, with a traditional advertising form that is targeted to military families (rather than a mass disseminated advertisement), some concern about lack of targeting may be relieved¹.

Evaluative Criteria

Cost

It is critical to monitor which programs would be outside of budget, especially in a nonprofit realm where the organization fundraises most finances. Cost can be operationalized by gauging the 2024 dollar (\$) amount of each component of the proposed alternative. In this evaluation, the cost for 7 years of program operation is estimated, with an assumed 3% discount rate².

Effectiveness

Effectiveness narrows down to maximizing the public interest by way of increasing the number of employed military spouses, who would have previously been unemployed. This criterion is important because it measures how well the outcome of the alternative program tackles the primary goal. Effectiveness will be quantified by estimating the number of military spouses who obtain employment from any given alternative.

Administrative Feasibility

Feasibility regards the ease of implementation. Feasibility requires quantitative and qualitative examination, by considering the time it will take to implement the program and the comparison to other programs that MFAN currently administers. There is also literature that analyzes the ease of implementation for related programs. After assessing the typical timeline and literature, feasibility will be denoted as “low,” “medium,” and “high.”

Sustainability

Sustainability measures a program’s ability to maintain itself and endure over a long period of time. The operationalization of this criterion is qualitative, with an examination of the ease by which MFAN may uphold the program. Thus, the categorizations are a “low, medium, high” comparative, classification system. The outcomes of the alternatives will be examined against each other to determine which can sustain best, measured on a spectrum of high to low (high being easier sustainability, low being harder to sustain).

Alternatives

Program-Matching Chatbot

With numerous military spouse employment services from several nonprofits and agencies, it can be challenging and exhausting for spouses to research which program would be best suited for their needs. This, thus, results in a common feeling of burn out. Preliminary research shows that searching for a job, especially when prolonged, is correlated with burnout (Nonnis et al., 2023). This feeling was often remarked in conversations with involved stakeholders and military spouses. There needs to be a way for military spouses to conveniently understand which programs are best suited for their needs, and an AI chatbot may be how MFAN filters the existing information.

Chatbots are commonplace on most commercial websites, as customers may use them for quick and convenient answers. No service like this exists on the military spouse employment front. Using natural language processing, a chatbot may quickly receive information about what a military spouse is looking for in a career and return with potential options of programs that are already in place in the military family support realm. Chatbots can also ask targeted questions that may help guide the research that the military spouse ensues. MFAN will utilize its MFANetwork page to integrate a chatbot feature for military spouses seeking career consultation. The chatbot can meet the spouse where he/she is, considering characteristics such as parental status, certification needs, education attainment, etc.

MFAN must partner with or hire a firm who is capable of AI chatbot and natural language processing technology integration, to ensure the vision is well-executed. Several technology firms have the engineering and computer expertise needed to implement a program as such. The technology firm would then work with MFAN to compile and organize each program that exists, spanning several organizations, and determine which spousal qualities, characteristics, and needs best suit each service. This way, a spouse may include what

he/she is looking for, in addition to the current qualifications he/she holds. As previously mentioned, this chatbot would have a home on the MFAN website, either under “MFANetwork” or “Find information on...Employment, Education, & Entrepreneurship.” Rather than becoming overwhelmed and looking through each webpage, the chatbot could give a curated list of programs that would best fit the specific spouse. Funding for this enterprise could either come in the form of a partnership with the technology firm, a sponsorship from another firm, or through undirected funds.

Partnership with VMock

It would be beneficial for MFAN to partner with a career-focused organization. Firms that give holistic feedback and guidance on different steps of the job application process already exist. These organizations are flexible and available on a needs-basis, due to the often integrated AI technology.

VMock is a satisfactory partner³, given its already-developed vast educational partnership network, and its openness to partnerships (as expressed in its “Partnership” website page). On this page, VMock explicitly lists Government and NGO groups for partnership details. VMock’s mission is to “Accelerate every... professional’s career journey to maximize their success” (VMock, n.d.). To this end, the service provides instant assistance with and feedback on resumes, LinkedIn profiles, interviews, and more. Once a military spouse discovers which program he/she may want to become involved with on his/her career search, the jobseeker is often already drained and frustrated by the long-winded process it took to arrive at this point (Nonnis et al., 2023). With an already busy life, the spouse must now take the necessary steps to ensure that his/her application materials best advocate for the skills and experiences that he/she holds.

VMock is well suited for military spouses, as they often face an uncontrollable inflexibility that others in the labor market do not encounter. As informed by stakeholder conversations, military spouses must often be available at the orders of their military partner. There is little to no control over how long the active duty member will be deployed, when he/she returns

home, or when the family may receive PCS orders. Career services in this digital platform allow for the spouse to take the necessary steps on his/her own accord. There are no meetings to schedule and no locations to be.

MFAN may partner with VMock to provide military spouses with an initial three month premium membership, to be used during job application cycles. On a need's basis, the spouse may extend membership month-by-month.

PCS Pantry Box Addition

Very recently, MFAN launched a pilot program in Ft. Cavazos, TX called the PCS Pantry Box. This new program is part of their MFANetwork initiative that targets four key pillars of military family well-being: Healthy Bodies, Healthy Families, Healthy Homes, and Healthy Futures. Currently, the PCS Pantry Box (mostly) targets the Healthy Body pillar. They provide over \$150 in supplies and food to families who relocated to the Ft. Cavazos area within the last three months.

Through their 2021 Active Duty Spouse Survey, DOD's Office of People Analytics found that moving within the past 12 months had the greatest effect on military spouse unemployment (2023 findings release date). This finding makes it valuable to target recently relocated military spouses. MFAN can accomplish this targeting effort through an addition to their recently implemented PCS Pantry Box program.

MFAN would need to create a small booklet that clearly denotes the currently existing programs, with descriptions of each program and of who would be best fit for each program. This booklet places resources directly into the hands of military spouses, rather than assuming that they have the time and capacity to research every existing program. Creating and placing a career option booklet in the homes of military families, via a PCS box, could effectively advertise available opportunities, with a lasting impact.

Outcomes Matrix

	Program-Matching Chatbot	Partnership with VMock	PCS Pantry Box Addition
Cost*	\$322,832	\$222,078 - \$577,356	\$603,845
Effectiveness**	3,200 – 8,001	204 – 1,936	2,773 – 13,790
Feasibility	High	Low	Very Low
Sustainability	High	Medium	Low

* 7 years; assumed 3% discount rate; 2024 U.S. Dollars

** estimated number of military spouses who obtain employment; 7 year estimates

Please refer to [Appendix B](#) for effectiveness annual trends graphics

Findings and Outcome Analysis

Cost: Program-Matching Chatbot

As with many technology services, the cost of an AI chatbot website integration ranges depending on the desired capabilities. However, an estimated price ranges from \$10,000 to \$30,000 for implementation, and then \$12,000 to \$60,000 per year for upkeep (Khlystova, 2024; Stefanowicz, 2024). For consistency, the median for price estimation was considered (\$20,000 implementation; \$36,000/year upkeep). Since MFAN would need to hire/partner with an AI chatbot technology service, the price was derived by referring to the cost of an outsourced agency. MFAN will also incur internal costs, as employees assigned to this project need compensation. To begin, two employees with 1/3 time allocation on this endeavor would take about two months to research and finalize a partnership, making the internal cost around \$8,333 for that time. Following, one employee would be staffed for about 5 hours a week for communication with the chatbot agency and feedback intake (13% time allocated to general upkeep). The price would increase if MFAN decided to allocate more time to the endeavor, which can be carried out in a model. Therefore, the final estimated cost of an AI Chatbot integration for 7 years in 2024 dollars is about \$322,832.

Effectiveness: Program-Matching Chatbot

Current literature on career counseling AI chatbots shows it to be effective in serving its purpose. Most often, the “purpose” is guiding students toward selecting a career path to follow. Since research in this specific field is still in its early stages, authors simply denote qualitatively that students relatively enjoyed using the service and found it helpful (Lee et al. (2019); Suresh et al. (2021); Akkök, Hughes, and U.K. Careersnet (2021); Dongre et al. (2021)). Keeping this in mind, the general AI Chatbot effectiveness findings were applied onto the supposed effectiveness of career-oriented chatbot. Current literature shows there to be a 66% success rate in chatbots fulfilling its intended purpose (Santos et al., 2022; Okanović et al., 2020).

So, it can be applied, at the base, that 66%⁴ of users of an MFAN chatbot would find success in applicable responses. A lower and upper range of application and success rates for program admittance and employment were then modeled, thereafter. This allows for a greater range of potential outcomes and can be quickly adjusted to model different approximations⁵. The data on nonprofit website traffic is disparate, so the average number of sessions per month from two different data sources was taken. It was assumed that 10% of sessions are unique, unemployed military spouses⁶ (Hill, n.d.; Rudan, 2023). A reduction rate in program participation was also accounted for⁷. The model assumed that the chatbot would garner 20% less visitors than the year before, to capture initial excitement before an annual decline. These calculations estimate that 3,200 - 8,001 military spouses will obtain employment via a chatbot program over seven years of operation. Broken down, *in the first year of program operation*, it may be estimated that about 810 to 2,025 spouses will obtain employment, equating to a 1.09% - 2.74% reduction in the unemployment rate.

Administrative Feasibility: Program-Matching Chatbot

There is high administrative feasibility for this. It must first be noted that MFAN has partnered (in some capacity) with technology service-centered firms in the past (i.e., Oracle). While they may only be a financial-sponsor partner, it still goes that MFAN has successfully developed good relations with a corporation in this realm. Additionally, AI Chatbot fruition and implementation does not have a long timeline, once MFAN secures an outsourced agency. It typically takes about 6 to 14 weeks for this process (*How Long Does It Take to Build a Chatbot?*, 2023; *FAQ: How Long Does It Take to Implement a Chatbot ?*, n.d.). Like every program, it is necessary to make constant adjustments; however, this will be standard across all recommendations. So, the actual implementation time is the primary consideration.

Sustainability: Program-Matching Chatbot

There is a high chance of sustainability for an AI Chatbot. Once MFAN secures an agency to implement and upkeep the technology, there is low effort needed to sustain the program.

So long as the partnership/funding maintains, the program will continue. MFAN just needs to ensure that online presence and marketing remains consistent, so that involved parties do not waste funding and efforts.

Cost: Partnership with VMock

It is about \$20 per month for a premium membership, making it about \$60 for a three month plan. About 3,784 military spouses participated in the 2021 MFAN survey, and about 13% of all military spouses are unemployed (74,000/540,000). Using this metric to represent market reach (it is the most highly marketed/advertised program by MFAN), it was estimated that about 492 participants represents a number of spouses who would participate in this program on a lower end, with 2,000 on the upper end⁸. A reduction in participation rate of 10% per year is also assumed, which can be adjusted in the model⁹. Again, MFAN must incur internal costs for time taken toward partnership development and program implementation, which is estimated to take about three months, with 2 employees on 33% time allocation (about \$12,500). Following initial development and implementation, MFAN will assign 1 employee with 20% time allocation, for partnership maintenance. Thus, the final cost for 7 years is about \$222,078 - \$557,356 in 2024 dollars, depending on estimated uptake.

Effectiveness: Partnership with VMock

Limited data surrounding VMock shows that about 35% of participants found the service to be effective in its purpose (Moran & Ackerman, 2023). These researchers aggregated effectiveness across all VMock services, meaning that about 35% of resume feedback, LinkedIn assistance, etc. services users found success in its output. So, it is estimated that 35% of military spouses who use VMock would experience the same result. To calculate how many spouses would obtain employment after seven years, a range from a smaller number of participants × lower success rate of employment to an increased number of participants × higher success rate of employment¹⁰ was set to capture worst and best case predicted scenarios. The final estimation is 204 - 1,936 military spouses who may obtain employment from VMock assistance. Broken down, *in the first year of program operation*, it may be

estimated that about 204 to 1,936 spouses will obtain employment, equating to a 0.07% - 0.66% reduction in the unemployment rate.

Administrative Feasibility: Partnership with VMock

This program has low administrative feasibility. It would likely take several months to develop a program in this capacity and for this specific subgroup. MFAN does not have a current partnership in place with VMock, so the program would truly start from the point of an introduction to the VMock point of contact. MFAN does currently have a partnership with Instacart, offering eligible families a stipend for grocery shopping. It is also worth noting that VMock lists the option for developing partnerships. On this page, the website mentions NGOs and government groups as a potential client. That said, there is a reasonable possibility for this partnership, but it would take much effort.

Sustainability: Partnership with VMock

There is a medium chance of sustainability. With consistent communication and relationship upkeep, the program could maintain for a long period of time. Research shows that strong nonprofit-corporate partnerships remain committed to long-term sustainability. The same literature also suggests that trust, reciprocity, and achievement of social objectives stem from these partnerships (Lefroy & Tsarenko, 2013).

Cost: PCS Pantry Box Addition

Costs for the creation of a booklet vary greatly depending on several factors, such as size, number of booklets, etc. One online price calculator shows that it would cost around \$220 for 500 16-page 5.5 x 8.5" booklets. About 500 booklets would initially be printed, so a pilot program could be run and integrated with current PCS Pantry box efforts. Then, once initial feedback is provided by recipients, MFAN can target many recent PCS families, by printing about 100,000 booklets per year from that period forward. A program as such is an incredible undertaking, and this must be captured by calculating MFAN internal costs. For the entirety of the program (fruition to the end of the 7 year prediction model), there would be one

dedicated staff member on this project. Additionally, for the first six months, a second employee would assist with the creation and implementation, working at a half time rate. Thus, after combining internal expenditures with the price of printing the booklets, final projected costs to land around \$603,821 in 2024 USD for the seven year projected costs.

Effectiveness: PCS Pantry Box Addition

Research finds that 66% of respondents stated that they frequently and occasionally use marketing mail as a prompt to go online (U.S. Postal Service, 2020). This metric is valuable, as it indicates how often people use a paper form of communication to prompt further investigation online. To calculate a range of effectiveness, the 66% was applied as the lower end of the spectrum as a gauge for who will be prompted to examine the existing programs, along with lower rates of admittance/acceptance into programs and jobs. However, since this program is more targeted than a typical mass produced traditional advertisement campaign, the higher end of the estimation range was modeled to an assumption that 75% of booklet recipients will be prompted to go online, with higher levels of acceptance and admittance¹¹. This range was then applied to about 16,78312 spouses, which results in about 2,774 - 13,790 spouses obtaining employment, by targeting those who recently PCS'd. Broken down, *in the first year of program operation*, it may be estimated that about 532 to 2,643 spouses will obtain employment, equating to a 0.72% - 3.57% reduction in the unemployment rate.

Administrative Feasibility: PCS Pantry Box Addition

An addition to the PCS Pantry Box presents a very low level administrative feasibility. MFAN has already begun a PCS program, though it is in the early stages of the pilot phase in a singular location. While simple on face value (adding a booklet into an already in-progress program), this effort is not so straightforward. MFAN would need to work with great determination to find an appropriate point of contact at each military base. Once the point of contact is made, it is an added challenge to disseminate the information to each location. As accounted in the cost evaluation, this would likely require a full time employed staffed to

this program, in addition to further assistance in the beginning stages. Furthermore, much time, effort, and research would go into the creation of a clear and accessible booklet. With the numerous programs in place to support military spouses, MFAN would need to discover the best way to communicate this information in paper form, presenting challenges to feasibility. Scoped on the national level, this alternative is highly infeasible.

Sustainability: PCS Pantry Box Addition

There is a low rating of sustainability for the PCS Pantry Box addition. The reason for this is that information cannot update as seamlessly and quickly in paper form as it can in a digital space. If committed to a booklet (since paper marketing resonates more than with digital marketing), MFAN would need to make appropriate changes to the booklet to print out new additions as time passed. It would also require continuous research efforts in place for this booklet. This alternative would be simple to sustain if it merely required continuously printing one addition of the booklet, but available programs change frequently, presenting an issue for simple maintenance.

Recommendation

Given the findings presented in this memo, it is recommended that MFAN proceeds with the chatbot alternative. It is projected to have the highest feasibility, effect, and sustainability. The price is certainly high, but in the nonprofit space, there is the possibility of a sponsor who could fund this program. It is also impactful to note that the literature generally tends to point toward the ease of use, flexibility, and helpfulness that comes with a career-oriented chatbot. Military spouses require a level of flexibility that their civilian counterparts do not necessitate. Having a well-equipped, fully functioning AI chatbot on MFAN's website would present an innovation to the military spouse employment space.

No other military spouse organization has a clear and accessible manner by which military spouses can easily sift through every program that is available to them. Removing this barrier is a real way by which MFAN can reduce the unemployment rate. A commonly heard narrative throughout interviews is the burn out felt, simply from discovering the expansive programs available. Without knowing where to start, spouses spread themselves thin and apply everywhere. A chatbot would point them in a clearer direction, allowing them to submit higher quality applications to fewer places.

This solution also fits well with MFAN's data-driven, educational approach. The organization takes pride in connecting military families to existing programs, and a chatbot does just that. By not progressing with the other alternatives, VMock partnership and PCS Pantry Box booklet add-on, there are a few tradeoffs to consider. The partnership provided a flexible way for military spouses to properly bolster the skills that they already have. It is more difficult to earn a job offer with weaker application materials. Secondly, the PCS booklet offered a tool to market the available resources, as it is difficult to avoid in a box of necessary home items.

Implementation

Stakeholders

Please refer to [Appendix C](#) for a framework that delineates specific roles for different stakeholders.

Chatbot Agency

An important early step for MFAN is finding and signing with a development agency. Without computer engineer employees within the nonprofit, it is critical for MFAN to research, develop a relationship with, and sign a contract with an AI Chatbot team. It is imperative to have an expert developer tasked with this undertaking, as the experts can coordinate tasks and utilize information that is hard to access (Cerezo et al., 2019). By hiring a team of developers, MFAN will know that the expertise is localized in one firm, rather than looking toward uncertified developers for assistance. A potential starting place for MFAN's research into the selected chatbot agency would be the academic literature. For instance, Jain et al. (2018) found that Pandorabots created the best quality chatbot systems, as participants rated interfaces from this firm with the highest regards, across several metrics. It is also important that MFAN maintains consistent communication with the agency to ensure that they well-execute their vision. This would be an ongoing process, but the chatbot agency stands in the center of this recommendation.

MFAN

Unsurprisingly, the MFAN employees are within another group of stakeholders in this endeavor. Specifically, the Programs Team would be the one steering the progression of this project. Their role would be to remain hands-on with the developers of the chatbot, through researching and selecting one (with MFAN executive approval) and maintaining conversation with the selected firm. While the Programs Team would be at the forefront of this effort, MFAN's Public Relations team would be responsible for the marketing and advertisement of this project. They would be imperative to letting the military community know about this new tool.

Military Spouses

This group encompasses the main selection of individuals who would utilize the chatbot. Spouses play a critical role in the development of this program because they can notify MFAN on what would be most helpful in this service. Additionally, they can inform the developers on the existing programs and which characteristics (of spouses) are most suitable for each program. The literature for AI Chatbot implementation mentions that natural language processing (NLP) is critical for an effective chatbot (Lalwani et al., 2018). This means that the AI technology can learn the language of the military spouse employment space and answer closely human-like answers. By including military spouses closely in this process, the chatbot may more effectively learn the “language” in this population.

Necessary Preliminary Steps to Move the Chatbot Forward

Please refer to [Appendix D](#) for a timeline graphic.

1. Determine the budget. Like any business endeavor, a nonprofit must also decide the funding permitted for an endeavor. While this report estimates a median price for the chatbot over 7 years, there is a general range of prices since different features and optimizations are available. So, MFAN must set its budget and decide, within that, what is feasible for this service. Tzenios conducted a case study (2022) that highlighted the vast importance of budgeting for nonprofit organizations. The authors note the critical nature of effective financial management that advantages the population in need. They further write that resources must be allocated so the benefits of the program outweigh the cost. This information accentuates that MFAN’s first step will be to sit down and decide the budget and funding plan.
2. Research chatbot agency. Once MFAN decides on a budget, they must select an agency that ensures the funds are well-spent. With expenditure limitations, it is essential that MFAN decides on a partner that will deliver on its vision. MFAN is currently pursuing an initiative called the MFANetwork, focused on Healthy: Bodies, Families, Homes, and Futures for military families. To expand on this mission, the

right agency is integral for success within this framework. MFAN needs to understand AI chatbot technology and capabilities, in addition to the current leaders in this field.

3. Speak with military spouses on what they would like to see in a chat bot. (note: in the timeline optic, this would be with chatbot development). Given the importance of maximizing benefits, it would be in MFAN's best interest to include them throughout the development process by connecting them with the chatbot developers. Through a human-centered approach, MFAN can support spouses in a meaningful way. The developer may discover which spouses are best suited for each program, while learning how spouses speak about employment. With about 3784 military spouse respondents in their 2021 survey, it is evident that MFAN can reach spouses and ask the necessary questions.

Potential Challenges

Development Team Does Not Follow Through with MFAN Vision

Since MFAN must rely on and trust in a third party agency, there is the space for the selected agency to not match MFAN's vision. The agency may sell a product without following through on the product. Even if the agency develops a well-executed chatbot, it may not fulfill the needs and expectations that MFAN has. The expected risk of this issue is low, since according to Lefroy and Tsarenko (2013), nonprofits experience successful partnerships with private firms, so long as there is strong communication and alignment at commencement. While this may not be a partnership relationship (in the traditional nonprofit sense), these findings can be applied to a chatbot agency because it too will be a partnership in a different way. This issue must be tackled preventatively, rather than in an intervention manner. MFAN must maintain consistent and stable communication with the outsourced agency and be frank with their expectations of this firm. So long as MFAN properly compensates the agency, the agency must follow through with its commitments.

Even if the chatbot agency were to follow through with MFAN's vision, there is the possibility that the development team draws out the creation and implementation process. While the

average timing was calculated using online references (noted in previous sections), there is the chance that timing is prolonged, with contractors extending the timeline. MFAN may mitigate this potential roadblock by adhering to the RACI framework in [Appendix C](#). The programs director must consistently receive reports from the chatbot agency to ensure the process is advancing as scheduled. Additionally, in their research of chatbot agencies, MFAN should look toward the reviews of the firms and contact other companies that already have appealing and relevant chatbots on their websites (and ask who integrated the service).

Overload to Other Programs and Organizations

Since there are many existing programs that MFAN takes pride in pointing spouses toward, the chatbot would more efficiently take this action. Rather than clicking on several links and reading through several webpages, spouses may quickly interact with a chatbot that would respond with suitable programs. It is also worth noting that these organizations help spouses to advocate for themselves, so they do not end in a position of underemployment. If the chatbot is highly successful with connecting spouses to the most appropriate programs, the other military family support groups may feel an influx that they are not properly suited to handle. While this displays a job well done on MFAN's and the agency's ends, it could pose unintended consequences. Military spouses may be met with further and increased disappointment after they find a program that is well suited for them and being met with rejection and/or unresponsiveness. The chances of this outcome seem higher than that of the other potential negative outcome since a chatbot is new in the military employment space. The information is currently difficult to navigate because there is so much on several web platforms, and this tool may solve this issue. MFAN can avoid this by giving other organizations a notification before the launch. This way, the other agencies can be ready to receive new customers that they may not have received before.

Conclusion

Military spouses deserve to be well-supported in all facets of life. One preeminent aspect of the military spouse journey is employment struggle that stems from the unique lived experiences of this subset. While the resources to assist military spouses generally exist, they exist through different organizations and programs and on different websites and webpages. Additionally, a PCS relocation triggers a separation from previously accessed physical networks and resources.

MFAN prides itself on using data-driven indicators to connect military families to existing programs and resources. Successful and well thought out implementation has the power to make an innovative idea have a true impact on the military spouse community. MFAN may implement a program-matching chatbot onto its website, so spouses may access resources more efficiently and with less effort. It is valuable to connect spouses to military advocacy programs because they will assist these jobseekers in finding a line of work that reflects their true capabilities.

Chatbots are commonplace on many websites and with many firms. The military spouse employment space would benefit from this same innovation. There is no reason, with the programs available, that a spouse must stretch his/herself thin digging through the available resources.

While there are other potential solutions, an AI powered program-matching chatbot performs the best across the evaluative criteria. Further consideration and research will clarify the implications of a chatbot in the military spouse employment space.

References

Akkök, F., Hughes, D., & CareersNet, U. K. (2021). Career chat: the art of AI and the human interface in career development. *The European Centre for the Development of Vocational Training (Cedefop)*, 89.

Cerezo, J., Kubelka, J., Robbes, R., & Bergel, A. (2019, May). Building an expert recommender chatbot. In 2019 *IEEE/ACM 1st International Workshop on Bots in Software Engineering (BotSE)* (pp. 59-63). IEEE.
<https://doi.org/10.1109/BotSE.2019.00022>

Dongre, G., Vadraiwala, F., Upadhyaya, J., & Ghosal, D. (2021). Web-Based Career Counselling System With Chatbot. *International Research Journal of Modernization in Engineering Technology and Science*, 3, 571-579.

ET Special. (2023, July 28). Digital Marketing vs Traditional Marketing: What's The Difference? The Economic Times. <https://economictimes.indiatimes.com/jobs/mid-career/digital-marketing-vs-traditional-marketing-whats-the-difference/articleshow/102196585.cms?from=mdr>

FAQ: How long does it take to implement a chatbot? (n.d.). Dydu. <https://www.dydu.ai/en/questions/deployment/how-long-does-it-take-to-implement-a-chatbot/>

Get Instant Printing Quotes with Our Online Quote Calculator. (2024). QinPrinting.
<https://www.qinprinting.com/quote/>

Government Accountability Office. (2024). Military Spouse Employment: Part-Time Workforce Characteristics and Perspectives. (GAO Publication No. 24-106263).
<https://www.gao.gov/assets/d24106263.pdf>

Grossman, A. S. (1981). The employment situation for military wives. *Monthly Lab. Rev.*, 104, 60.

Hill, N. (n.d.). *3 Lessons from Analyzing 155 Nonprofits' Online Fundraising Metrics* | NextAfter.com. NextAfter. <https://www.nextafter.com/blog/3-lessons-from-analyzing-the-key-metrics-of-155-nonprofits/>

Hiring Our Heroes. (2017). *Military Spouses in the Workplace: Understanding the Impacts of Spouse Unemployment on Military Recruitment, Retention, and Readiness*. U.S. Chamber of Commerce. <https://online.fliphtml5.com/ugwgi/jiav/>

How Long Does it Take to Build a Chatbot? (2023, December 21). ProCoders. <https://procoders.tech/blog/how-long-does-it-take-to-build-a-chatbot/>

Jain, M., Kumar, P., Kota, R., & Patel, S. N. (2018, June). Evaluating and informing the design of chatbots. In *Proceedings of the 2018 designing interactive systems conference* (pp. 895-906). <https://doi.org/10.1145/3196709.3196735>

Khlystova, A. (2024, January 2). *Chatbot Pricing: How Much Does a Chatbot Cost in 2024?* The HelpCrunch. <https://helpcrunch.com/blog/chatbot-pricing/>

Lalwani, T., Bhalotia, S., Pal, A., Rathod, V., & Bisen, S. (2018). Implementation of a Chatbot System using AI and NLP. *International Journal of Innovative Research in Computer Science & Technology (IJIRCST) Volume-6, Issue-3*.

Lee, T., Jagannath, K., Aggarwal, N., Sridar, R., Wilde, S., Hill, T., & Chen, Y. (2019). Intelligent career advisers in your pocket? A need assessment study of chatbots for student career advising. *AMCIS 2019 Proceedings*. 14.

Lefroy, K., & Tsarenko, Y. (2013). From receiving to achieving: The role of relationship and dependence for nonprofit organisations in corporate partnerships. *European Journal of Marketing*, 47(10), 1641-1666. <https://doi.org/10.1108/EJM-06-2011-0338>

Military Community and Family Policy. (2021). *The Military Spouse at a Glance: 2021 DOD Survey of Active Duty Spouses*. Department of Defense. <https://download>.

militaryonesource.mil/12038/MOS/Infographic/2021-survey-of-active-duty-spouses.pdf

Military Family Advisory Network (MFAN). (2022). *Military Family Support Programming Survey 2021 Results*. MFAN & Oracle Cerner. <https://www.mfan.org/wp-content/uploads/2022/07/MFAN-Programming-Survey-Results.pdf>

Military Family Advisory Network (MFAN). (2022). Year Ended December 31, 2022: with Summarized Comparative Information as of December 31, 2021.

Military OneSource. (2017). *Spouse Employment & Education: 2017 Survey Of Active Duty Spouses*. Department of Defense. <https://download.militaryonesource.mil/12038/MOS/Infographic/OPA-Military-Families-Spouse-Employment-and-Education-2017-Survey-of-Active-Duty-Spouses.pdf>

Miranda, D., & Watts, R. (2022, December 14). *What Is A RACI Chart? Everything You Need To Know About This Project Management Tool*. Forbes Advisor. <https://www.forbes.com/advisor/business/raci-chart/>

Moran, N., & Ackerman, D. (2023). "Can AI really help me land a job?" Student reactions to the use of artificial intelligence in career preparation. *Journal of Education for Business*, 1-10. <https://doi.org/10.1080/08832323.2023.2275205>

Nonnis, M., Frau, G., Agus, M., Urban, A., & Cortese, C. G. (2023). Burnout without a job: An explorative study on a sample of Italian unemployed jobseekers. *Journal of Public Health Research*, 12(1), 22799036221149260. <https://doi.org/10.1177/22799036221149260>

Office of People Analytics (OPA). (2023). Results From the 2021 Active Duty Spouse Survey. (OPA Report # 2023-045)

- Okanović, D., Beck, S., Merz, L., Zorn, C., Merino, L., van Hoorn, A., & Beck, F. (2020, April). Can a chatbot support software engineers with load testing? approach and experiences. In *Proceedings of the ACM/SPEC international conference on performance engineering* (pp. 120-129). <https://doi.org/10.1145/3358960.3375792>
- Rudan, N. (2023, May 18). *Website Traffic Benchmarks by Industry* | Databox Blog. Databox. <https://databox.com/website-traffic-benchmarks-by-industry>
- Santos, G. A., de Andrade, G. G., Silva, G. R. S., Duarte, F. C. M., Da Costa, J. P. J., & de Sousa, R. T. (2022). A conversation-driven approach for chatbot management. *IEEE Access*, 10, 8474-8486. <https://doi.org/10.1109/ACCESS.2022.3143323>
- Stefanowicz, B. (2024, February 19). *Chatbot Pricing: How Much Does a Chatbot Cost?* (2024). Tidio. <https://www.tidio.com/blog/chatbot-pricing/>
- Suresh, N., Mukabe, N., Hashiyana, V., Limbo, A., & Hauwanga, A. (2021, August). Career Counseling Chatbot on Facebook Messenger using AI. In *Proceedings of the International Conference on Data Science, Machine Learning and Artificial Intelligence* (pp. 65-73). <https://doi.org/10.1145/3484824.3484875>
- Tzenios, N., Frsph, F., & FWAMS, F. (2022). Budget management for the non-profit organization. *International Journal of Global Economic Light*, 8(6), 9-13. <https://doi.org/10.36713/epra0003>
- U.S. Department of Labor. (2023). Civilian unemployment rate. U.S. Bureau of Labor Statistics. <https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm>
- U.S. Postal Service. (2020). *Millennials and Direct Mail Statistics*. USPS Delivers. <https://www.uspsdelivers.com/still-relevant-a-look-at-how-millennials-respond-to-direct-mail/?sgf=1>

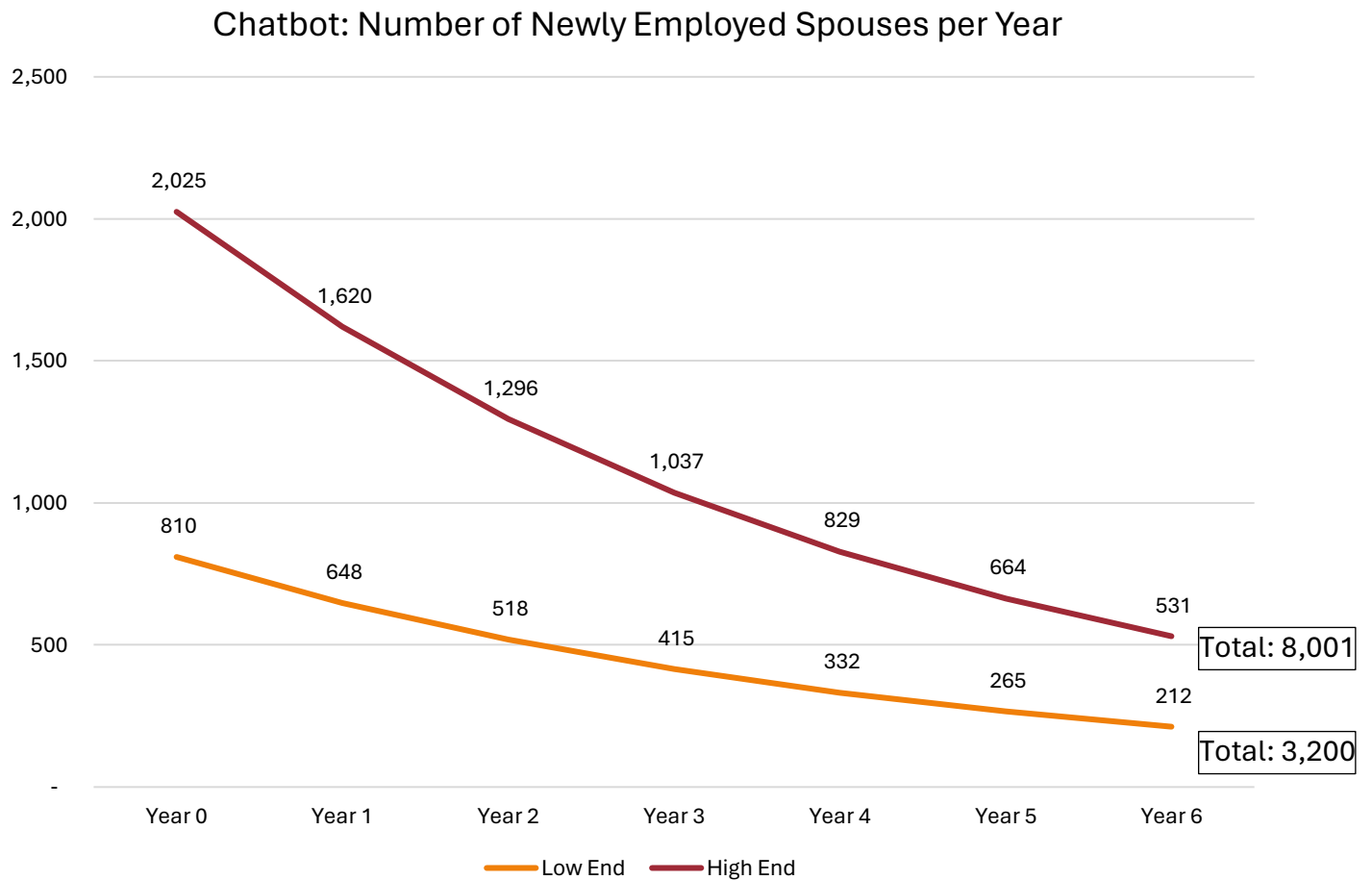
U.S. Postal Service Office of Inspector General. (2019). *Advertising Effectiveness and Age*.
Report Number RARC-WP-19-001

VMock. (n.d.). *About Us*. <https://www.vmock.com/about>

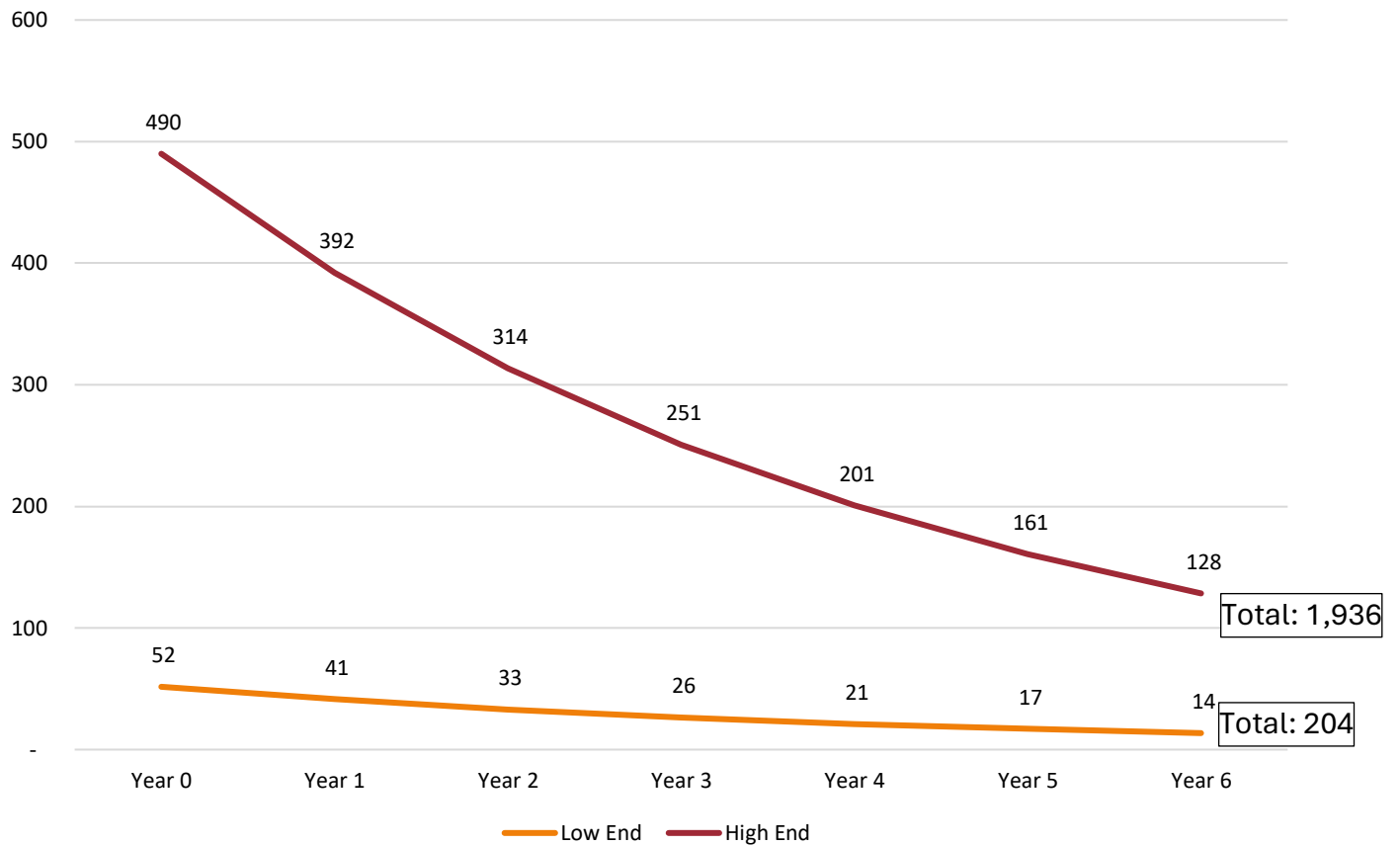
Appendix A: Assumptions Table

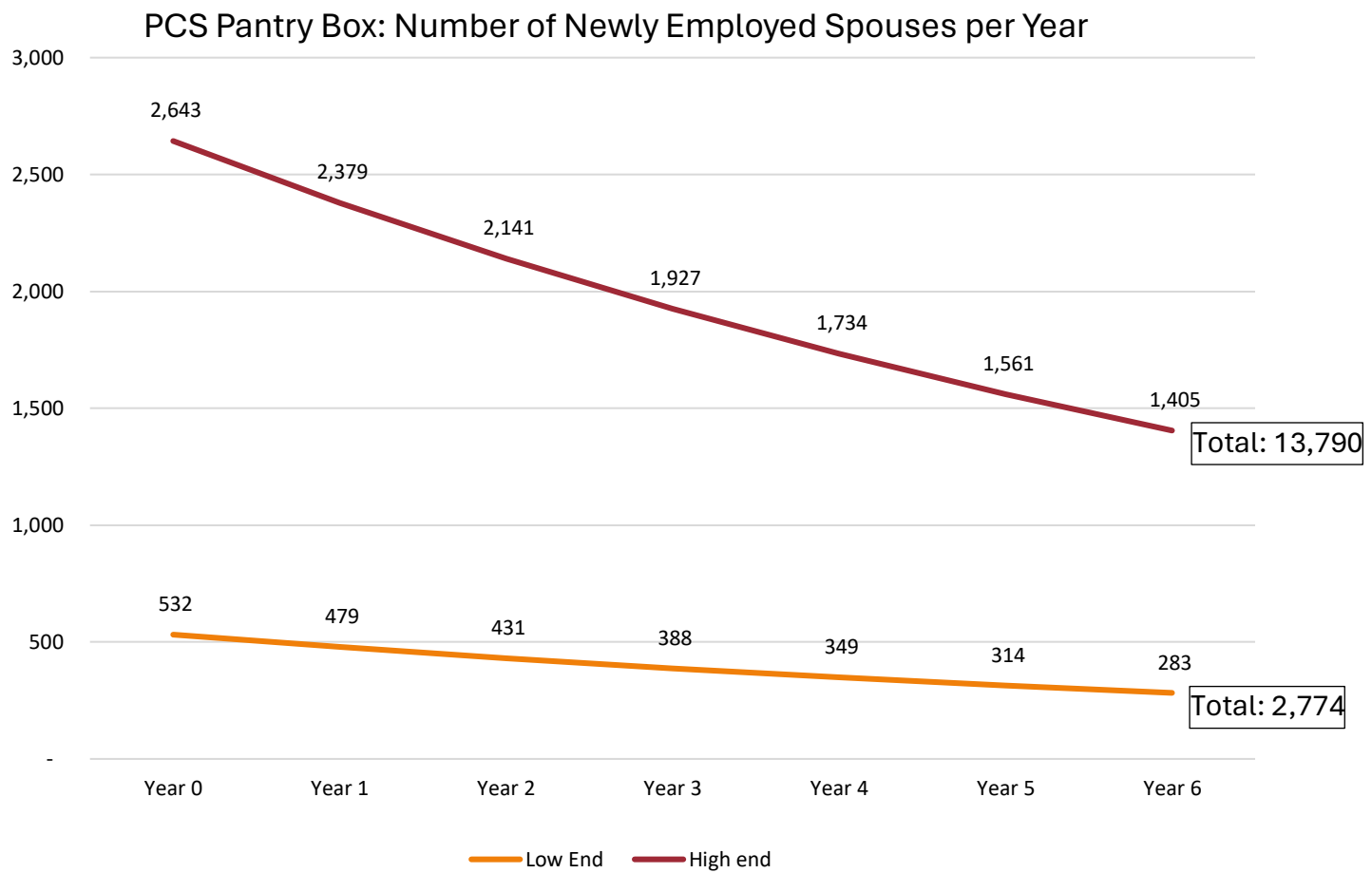
1	General concerns about traditional advertising (mail, newspaper, TV commercials, etc.) is that they cannot be easily targeted, leading to digital methods having higher ROIs (cheaper to produce + more targeted); since paper “advertisement” (program booklets) would be targeted toward recently relocated military families, it is assumed this concern can be lessened
2	Discount rate assumed at 3%
3	VMock is a suitable partner for a technology intervention (it has widespread use across 250+ universities internationally; assumed openness to nonprofit partnership with NGO/Government partnership offering)
4	66% of chatbot users will receive applicable responses
5	Lower end: 30% will be admitted to program & 40% in programs will receive jobs; Upper: 60% will be admitted to program & 50% in programs will receive jobs
6	10% of MFAN website visitors are unemployed military spouses (540,000 military spouses & 74,000 are unemployed... 13% of all spouses are unemployed; assumed slight reduction to make estimates more conservative)
7	Chatbot would garner 20% less visitors than the year before (initial excitement around program before annual decline); model may be adjusted for more liberal/conservative assumptions
8	3,784 military spouses participated in MFAN’s 2021 survey; 13% (74,000 unemployed / 540,000 spouses) of the participants is about 492 spouses; since this is a free service, I estimate this to be on the lower end, with 2,000 on the upper end
9	10% reduction rate per year; lower reduction rate than the chatbot, since people are more inclined to take up a free service than to go through a chatbot; model may be adjusted for more liberal/conservative assumptions
10	Assumed that of the spouses that use VMock, 35% will proceed with their adjusted application materials; Lower end- 30% will obtain employment from amplified materials; Upper- 70% will obtain employment from amplified materials; model may be adjusted for more liberal/conservative assumptions
11	Base: 66% will be prompted to look at certain programs (low end) & 75% will be prompted to look at certain programs (high end); Those who apply to programs: low-end 40% & high-end 70%; Those who use programs: low-end 30% & high-end 60%); Finally, those who receive jobs: low-end 40% & high-end 50%; model may be adjusted for more liberal/conservative assumptions

Appendix B: Program Effectiveness Trends



VMock Partnership: Number of Newly Employed Spouses per Year





Appendix C: RACI Framework, Implementation

To clarify the roles of the different stakeholders, they are divided in a RACI framework (explanation derived from Miranda & Watts in *Forbes Advisor*, 2022). Responsible delineates who performs the work to complete the task. Accountable should only be designated to one person who ensures the responsible team knows the expectations and works accordingly. Consulted includes the individuals who will be affected by the outcomes of the project. Informed outlines those who must remain aware of the progress but not overwhelmed with each detail.

Responsible	Accountable	Consulted	Informed
<ul style="list-style-type: none">- AI Chatbot agency- MFAN Programs team	<ul style="list-style-type: none">- MFAN Programs Director	<ul style="list-style-type: none">- Military spouses	<ul style="list-style-type: none">- President and Executive Director of MFAN- Vice President of Operations

Appendix D: Preliminary Timeline

