Reducing Veteran Suicide Risk in the USA

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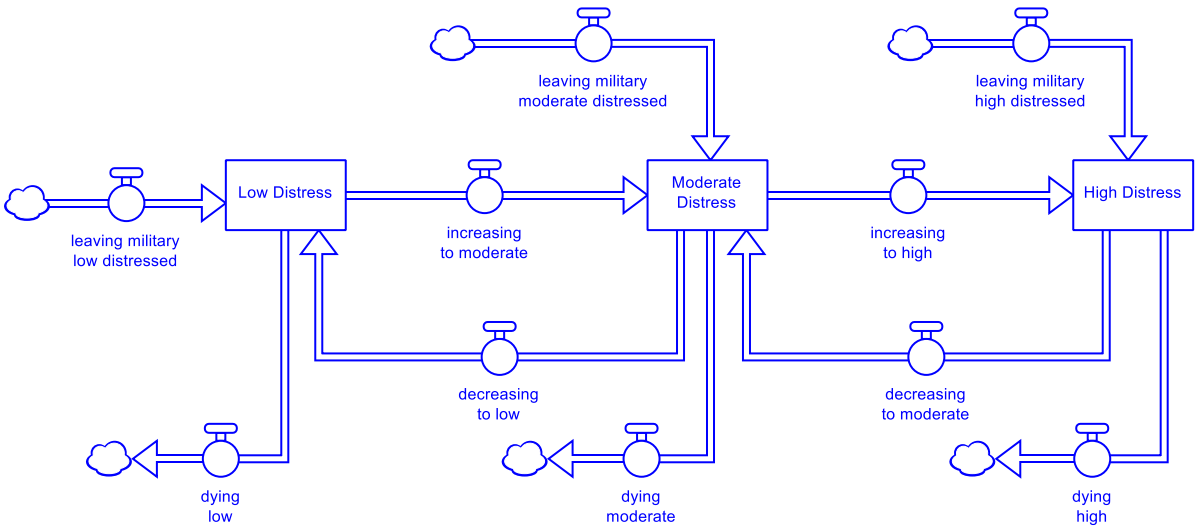
Veteran suicide is a public health crisis within the United States and a top priority of the Department of Defense and US Department of Veterans Affairs (VA). The 2023 National Veteran Suicide Prevention Annual Report highlighted a troubling increase in overall suicide deaths among veterans compared to the previous year. The report also underscored several critical aspects of veteran suicide: the veteran suicide rate is over 71% higher than the national average, and since 2001, over 125,000 veterans have died by suicide.

Face the Fight™ is an eight-year initiative founded by USAA[3] in 2022 with aspirational goals to reduce the veteran suicide rate to no higher than that of the general population by funding grantees that deploy evidence-based interventions targeting suicide to veterans in need. Programming and funding are invested in clinical programs, community programs, and safe firearms storage. Funding cycles occur annually and grantees submit annual reports of what they achieved with the grant money.

A system dynamics model is used to determine the best set of interventions to invest in to meet Face the Fight's goal. The model uses psychological distress to determine the likelihood of individuals attempting suicide. The population is divided into three categories, as shown below.



The distress level is based on a person's risk factors vs. their protective factors. The more risk factors someone has and the few protective factors, the higher their distress. While some people in every distress category will attempt suicide, the higher their distress, the more likely they will attempt suicide. Rick factors include, for example, unemployment, divorce, addiction, and homelessness. Social connections and stable housing are examples of protective factors.

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The model supports several interventions, in both clinical and community settings. Each intervention has an effectiveness in reducing suicide attempts. In addition, each intervention can be either permanent or can fade away over time. The specific values used initially came from the research literature but were modified by subject matter experts (SMEs) to better reflect what they have experienced. Example interventions include clinical CRP (crisis response plan), clinical bCBT (brief cognitive behavior therapy), community CRP, community peer support and caring contacts, and several strategic firearms storage options.

Veterans who have not been treated with a permanent treatment are selected to go through different treatments based on the capacity available for those treatments. They are taken from different distress levels based on the expected distribution for that specific treatment. These distributions are tied to both what treatment is appropriate for each distress level and who is being targeted for that treatment. Individuals can get multiple treatments. However, only the most efficacious treatment is used for the purposes of determining the risk of attempting suicide.

To determine lives saved from a given set of interventions, we start with the expected number of suicide attempts each year. This is reported by the VA each year and an unreported fraction determined by SMEs and best available data is added to this. We divide this by the death probability to get the overall attempt rate. We then distribute these attempts by distress category using input from SMEs. At this point, that distribution is 4% low distress, 15% moderate distress, and 81% high distress. Not surprisingly, the model is sensitive to this distribution.

Using the attempt rate and the effectiveness of each intervention, we get the attempt rate for each intervention and use that instead of the general attempt rate for anyone who has been treated. Every attempt is multiplied by the probability of death (also from SMEs) to get the number of deaths by suicide. The sum of all the deaths by suicide with interventions is subtracted from the deaths by suicide with no interventions to get the number of lives saved, the main metric used to determine the efficacy of a set of interventions.

As an example, the following figure shows two paths for lives saved, one with only clinical programs (solid blue line) and one with slightly more clinical programs, a number of community programs, and strategic firearm storage (dashed red line). The larger program saves more than three times as many lives over 10 years.