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PREDICTIVE COST- EFFECTIVENESS ANALYSIS

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Disclaimer: Samuel Dupret volunteered his time to develop the analysis. While Samuel is a current member of the research team of the [Happier Lives Institute](#) (HLI), this analysis is an independent project which is not part of HLI’s body of research. Joy Bittner, as the founder of Vida Plena, contributed to the report and was previously the Operations Manager at HLI. This is not a recommendation by HLI.

Summary

Multiple experts have stated that mental health is one of the most neglected health issues and should urgently receive more global investment ([Walker et al., 2021](#); [WHO, 2022](#)). According to the Global Burden of Disease¹ ([Ferrari et al., 2022](#)), mental disorders are “the seventh leading cause” (p. 144) of health burden in the world in 2019. Of the mental health disorders, depression is the one with the highest health burden ([Ferrari et al., 2022](#)).

Vida Plena will address the lack of treatment for depression by empowering local people to deliver a cost-effective model of psychotherapy. Community members are trained to treat depression through Group Interpersonal Therapy (g-IPT), which is recommended by the World Health Organization as a first-line treatment for depression in low-income settings ([WHO, 2020](#)). The aim of Vida Plena is to replicate in Ecuador the success of [StrongMinds](#) (which uses g-IPT in Uganda and Zambia). StrongMinds is recommended by Founders Pledge ([Halstead, 2019](#)) and is the Happier Lives Institute’s top recommendation ([HLI, 2022](#)).

Potential funders of Vida Plena are interested in how much good it can accomplish. Whilst data collection and a pilot study are planned, Vida Plena has only just started so it does not have its own cost-effectiveness data. However, we can give a predictive value by using previous cost-effectiveness analyses (CEA) of StrongMinds ([Halstead et al., 2019](#); [McGuire & Plant, 2021b](#); [McGuire et al., 2022a](#)) and converting their results to Vida Plena’s context. We use Vida Plena’s predicted costs, the Ecuadorian average household size for spillovers, and we apply two adjustments (one for the counterfactual treatment gap and one for the probability of success). Once data from Vida Plena itself is collected, we will update the CEA.

We estimate it will cost \$17 to improve a recipient’s wellbeing by one wellbeing-adjusted life year (WELLBY). For a comparison, this is **8 times more cost-effective than GiveDirectly²** (a gold standard charity which delivers cash transfers in low- and middle-income countries).

Additionally, to allow for comparisons with other health programs, we also produce a disability-adjusted life year (DALY) prediction. It is, however, our opinion that our WELLBY analysis is more robust because it includes a comprehensive evaluation beyond just physical health as well as the impact of household spillovers. Nevertheless, **we estimate that it will cost Vida Plena \$462 to avert one DALY.**

¹ The Global Burden of Disease ([2019](#)) is a survey of health burdens and relevant statistics (prevalence, DALYs, population size, etc.) across a range of countries, conducted by the Institute for Health Metrics and Evaluation (IHME). Specific data can be found with [their online tool](#).

² Note: this is lower than HLI’s 9x estimation for Strong Minds because in this CEA we have taken a more conservative approach in which we reduce our estimates based on the counterfactual access to other treatment and the probability of success.

While we are not arguing that Vida Plena will be the most cost-effective endeavour, we do expect that it is potentially a very cost-effective charity that will improve human wellbeing in an neglected region - Ecuador and Latin America. No mental health organisations currently operate at scale in Latin America; hence, an important treatment gap exists ([PAHO, 2018](#)). This provides a counterfactual argument for creating a new mental health organisation specifically reaching people in the region.

What's the problem and what's Vida Plena's plan to address it?

1.1 Mental illness results in reduced quality of life

Beyond any other metric used to describe it, the core badness of mental health problems, such as depression, is that the actual lived experience is exceptionally bad. Mental health is one of the larger factors affecting one's life satisfaction ([Clark et al., 2018](#)). Additionally, poor mental health is associated with a host of other issues: chronic medical conditions, drug abuse, lower educational achievement, lower life expectancy, and exclusion from social and professional arenas ([World Bank, 2018](#)). As a result, it's not surprising that health problems are related to economic factors such as loss of productivity, absenteeism (both for the patients and caregivers), and financial strain due to the cost of care ([Bloom et al., 2011](#); [Chisholm et al., 2016](#); [World Bank, 2018](#)).

Furthermore, the negative effects of depression and mental health spillover to others by affecting household members and close connections of the affected individuals ([Das et al., 2008](#); [Rosenquist et al., 2011](#)). This is a formal way to say that if your partner or parent or kid is suffering, you suffer with them. The long term impact of poor mental health is also felt on future generations as parents with untreated mental health conditions are often not able to best support the education of their children ([WHO, 2014](#)).

1.2 Mental health rates in Ecuador

According to the GBD ([2019](#)), about 576,078 people in Ecuador suffered from depressive disorders (3.46% of its ~17.6 million population), with a burden of 102,198 DALYs. This is likely to have gotten worse since the COVID-19 pandemic, as a recent meta-analysis of twelve studies estimates that the worldwide prevalence of depression has increased sevenfold from 3.44% in 2017 to 25% in 2021 ([Bueno-Notivol, 2021](#)).

Mental disorders are vastly neglected in Ecuador and, despite efforts made by the national government, there are still important treatment gaps ([Baena, 2018](#)). Mental health makes up less than 2% of the national health budget according to a 2018 estimate by the Pan American

Health Organization ([PAHO](#)), or only 0.04% according to the Ecuadorian national newspaper Plan V's ([2021](#)) analysis. As a result, only a small percentage of people in Ecuador suffering from mental disorders will seek and receive treatment. This is in line with a study published by the PAHO (Kohn et al. [2018](#)), which found that 3 out of 4 of people with mental disorders do not receive treatment in Latin America. Whilst this estimate was not based on surveys in Ecuador, we think it is very likely to generalise to Ecuador.

For Ecuadorians, like the majority of people in low- and middle-income countries (LMICs), the problems is made even worse because of a range of factors: lack of government health funding for public clinics, no care in rural areas, not enough free non-profit mental health services, high costs, and months-long wait times ([Baena, 2018](#); [Orozco et al., 2022](#)). High cost is a particularly big issue in Ecuador as [78% of the population](#) works informally or earns a salary below the minimum wage, meaning that private mental health care is not affordable for the majority of the population.

1.3 Task-shifted g-IPT: A cost-effective solution

Thankfully, there exist effective treatments that can be implemented at reasonable costs and are easily scalable ([Raviola et al., 2019](#); [Singla et al., 2017](#)). One of these, developed and recommended by the WHO, is [group interpersonal therapy \(g-IPT\)](#), specifically targeted at treating depression. An important step in making g-IPT affordable and scalable is a strategy known as '*task-shifting*' ([WHO, 2008](#)), in which certain parts of mental health services are shifted to trained community members.

The goals of g-IPT are rapid depression symptom reduction and improved relationships within the patient's family and social networks. It is considered by experts as an effective therapy for depression (see the meta-analysis by [Cuijpers et al., 2011](#)).

Task-shifted g-IPT has been successfully implemented in a variety of LMICs. In Uganda, Bolton et al. ([2003](#); [Bass et al., 2006](#)) found that it significantly reduced depression compared to a control group, with an absolute reduction of depression symptoms in 75% of participants six months following the conclusion of treatment. A shining example of implementing task-shifted g-IPT is the work by the charity [StrongMinds](#), which operates in Uganda and Zambia. They have provided treatment to [more than 100,000 women](#) and successfully [reduced depression symptoms](#) of the people to whom they provide therapy. For this reason, StrongMinds has been recommended as a high-impact, cost-effective charity to donate to ([Halstead et al., 2019](#); [McGuire & Plant, 2021b](#); [McGuire et al., 2022a](#)).

Cost-effectiveness analysis

Vida Plena needs funding in order to implement its program in Latin America. Whilst Vida Plena has only just started its program (thereby there is no data about its outputs yet - the results for a pilot study are not expected until late 2023), funders do want a prediction about how much good Vida Plena might do. Hence, we produce a *predictive* cost-effectiveness analysis of Vida Plena.

We predict that the cost-effectiveness of Vida Plena will be similar to that of [StrongMinds](#), another mental health charity which uses the same therapeutic model and is being trained by the same team of global mental health experts from Columbia University.

In order to predict the cost-effectiveness of the Vida Plena programme, we have conducted two types of analysis: one in wellbeing adjusted life-years (WELLBYs) based on previous work by HLI ([McGuire et al., 2022a](#)), and one in disability adjusted life-years (DALYs) based on previous work by Founders Pledge ([Halstead et al., 2019](#)). We take the same values from these previous analyses except for:

- Using the predicted costs for Vida Plena instead of the StrongMinds costs.
- Adjusting the effect by for the counterfactual of treating people that could have had treatment otherwise.
- Adjusting the effect based on a probability of Vida Plena's success.
- Using the average household size in Ecuador (where Vida Plena operates) rather than Uganda and Zambia (where StrongMinds operates) to calculate the household spillovers (for the WELLBY analysis).

Details of our calculations can be found in this [spreadsheet](#)³.

Costs and people treated

Vida Plena launched with a pilot in Quito during the fall of 2022, and plans to expand its reach nationally throughout 2023. Starting in 2024 and onward, Vida Plena will begin important efforts to offer treatment at scale throughout Ecuador and the region. Based on Via Plena's estimates, our analysis assumes that 6000 people will receive treatment in 2024.

In 2024, we predict \$211,815 of fixed, organisational costs and \$42 variable/treatment costs to treat each person. This results in a total of \$463,815 (which comes to \$77 dollars total to treat each person when including fixed costs). The costs also include a 10% contingency.

³ In the spreadsheet you can see worse case and best case scenarios, but here we focus on our best guess estimate.

Adjustments for counterfactuals and success

There are potential differences in available treatment in Ecuador and Uganda. From our understanding, without charities like StrongMinds, there would be almost no available mental health services in Uganda. The situation, whilst not good, is likely better in Ecuador. As mentioned before, according to Kohn et al. ([2018](#)), 75% of people with mental disorders do not receive treatment in Latin America (i.e., 25% do receive treatment). Taking this number at face-value for depression in Ecuador, and assuming that the currently available treatment is as good as Vida Plena's (it likely isn't), we adjust our figures for Vida Plena to account for this counterfactual.

Additionally, it is possible that Vida Plena might not succeed. We use a shallow adjustment for this possibility. Out of 18 charities in the Charity Entrepreneurship incubator program, 15 (83%) are still funded and functioning today. So we adjust our figures for Vida Plena based on this rate of success.

Subjective wellbeing analysis

Subjective wellbeing is “good mental states, including all of the various evaluations, positive and negative, that people make of their lives, and the affective reactions of people to their experiences” ([OECD, 2013](#)). In essence, how happy or how satisfied people are with their lives. We base this analysis on previous work from the Happier Lives Institute ([McGuire et al., 2022a](#); [McGuire & Plant, 2021b](#))⁴. See our [external appendix](#) for more details about the methodology.

We present the results in WELLBYs⁵. One WELLBY is one year with an increase in life satisfaction of one point on a 0-10 scale. Or any appropriate combination of time and increase (e.g., 2 years with a 0.5 point increase). For more on the strengths of WELLBYs for cost-effective analyses see McGuire et al. ([2022b](#)). The strengths of using a subjective wellbeing analysis, and why we think this is a better analysis than a DALY analysis, are presented in the [Appendix](#) for this CEA.

⁴ The Happier Lives analysis are based on affective mental health measures, such as depression measures because they usually involve affective components (e.g., the [PHQ9](#) asks how often the respondent has been bothered by “Feeling down, depressed, or hopeless?”). Negative affect is a subjective wellbeing mental state, so these are appropriate measures in the absence of more typical subjective wellbeing measures such as life satisfaction or happiness.

⁵ Initial results by the Happier lives Institute are in standard-deviation-years. We convert these to life satisfaction points per year, namely, WELLBYs, by multiplying the results by the typical standard deviation of life satisfaction surveys. The standard deviation in the World Happiness Reports is ~2. So we multiply the standard-deviation-years by 2.

According to the meta-analysis by McGuire and colleagues, StrongMinds improves the wellbeing of an individual treated by 3.38 WELLBYs (95% CI: 1.34, 5.66), then 53% of this effect will spillover to the 4.85 other members in the household, resulting in an overall benefit for the household of 12.12 (95% CI: 2.98, 30.9) WELLBYs per person treated⁶.

We use the same effect on the individual for Vida Plena. However, we use a different household size for the household spillovers. Based on Ecuadorian population data of average household size we find that the average household size (not including the recipient of the psychotherapy) is 2.17 (see our [external appendix](#) for our calculation of this number). This is much lower than for StrongMinds and leads to a smaller overall effect for a household of 7.18 (95% CI: 1.37, 43.56)⁷ WELLBYs per person treated. Once we adjust it for the counterfactual treatment and the probability of success, we predict that Vida Plena’s overall effect for a household is $7.18 \times 0.75 \times 0.83 = 4.49$ (95% CI: 0.77, 31.04) WELLBYs per person treated.

In McGuire et al.’s ([2022a](#)) analysis, StrongMinds can treat one person for \$170 (this number might have gone down since), whereas we predict that Vida Plena can treat one person for \$77. This means that the program will produce 33,161 WELLBYs in 2024. **This means the cost per WELLBY produced is \$17. This means that a \$1000 donation to Vida Plena would produce 58 WELLBYs, which is 8 times more cost-effective than GiveDirectly** (a charity that excels in delivering cash transfers - simply giving people money - and a gold standard in effective altruism) but less cost-effective than StrongMinds.

We summarise the results in the table below:

Charity	Overall benefit in WELLBYs	Cost per person treated	WELLBYs per \$1000	x times more cost-effective than GiveDirectly
Vida Plena (prediction)	4.49	\$77	58.0	7.70
StrongMinds	12.12	\$170	71.3	9.46
GiveDirectly	9.22	\$1,221	7.5	1.00

DALY analysis

Whilst we believe the wellbeing analysis is the most appropriate one, some funders might want cost-effectiveness numbers in DALYs⁸. We use Founders Pledge’s analysis of the effect

⁶ These figures are from HLI’s analysis ([McGuire et al., 2022a](#)), but converted to WELLBYs.

⁷ A percentile 95% confidence interval, obtained by using the 95% confidence interval value from McGuire et al. ([2022a](#)) and our 95% from our calculation of the household size.

⁸ [Disability Adjusted Life Years \(DALYs\)](#) is a societal measure of the burden of diseases. One DALY represents the loss of one year of full health. By causing deaths or impeding one’s health, a disease takes away from the life

of StrongMinds ([Halstead et al., 2019](#)). Specifically, [Founders Pledge calculated](#) the effect of StrongMinds' g-IPT in DALYs by stretching the disability weight for severe depression across the 27-point [PHQ-9 scale](#) (the depression scale which was used by StrongMinds to measure their impact on depression; [StrongMinds, 2015](#)). This method represents a 1-point decrease on the PHQ-9 as a 0.024 decrease in DALYs. Founders Pledge estimated that g-IPT reduces the depression of a recipient by 3.13 PHQ-9 scores and that each year 75% this effect is retained, resulting in a total of 0.27 DALYs averted per recipient of StrongMinds' g-IPT.

We adjust the effect in DALYs with the counterfactual and success adjustments, which predicts that Vida Plena will prevent $0.27 \times 0.75 \times 0.83 = 0.17$ DALYs per recipient. At a cost of \$77 per recipient, Vida Plena will prevent 1,236 DALYs in 2024. **This means Vida Plena will avert one DALY for \$462 in 2024.**

Discussion of CEA

We have shown that Vida Plena will likely be a cost-effective charity that will tackle the burden of mental health in Ecuador. We want to discuss some aspects of this analysis.

First, we want to remind the reader that this is only a *prediction* of Vida Plena's potential cost-effectiveness when it will be implemented. It is based on previous data and analyses of StrongMinds ([Halstead et al., 2019](#); [McGuire et al., 2022a](#)), not directly on data from Vida Plena. Hence, there is considerable uncertainty about the true cost-effectiveness once Vida Plena is established. Once the pilot is conducted, a new and improved version of this cost-effectiveness analysis will be produced.

Second, we want to make it clear that the aim is not for Vida Plena to compete with StrongMinds, but to show that such mental health interventions are cost-effective and can be deployed in new areas, like Ecuador, where mental health support is needed. We are not claiming that Vida Plena is a better alternative cost-effective endeavour than StrongMinds. StrongMinds is established and operates in very deprived areas (e.g., rural Uganda). Only that Vida Plena is likely to provide a similarly cost-effective intervention in a different part of the world - Ecuador and Latin America - which also need mental health support.

one could have lived. [DALYs for a disease are calculated](#) by adding together years of life lost due to premature mortality (YLLs) and years of healthy life lost due to disability (YLDs; less than full health). The sum of all this impact is the number of DALYs, and thereby, the number of years of full health lost due to the disease. The higher the number, the worse the burden of disease; hence, DALYs are to be averted/reduced. Depression disorders include major depressive disorder and dysthymia. According to this system, they only produce DALYs via YLDs because they do not cause death (which is a problem because it fails to account for the relationship between suicide and mental health). YLDs are calculated with a [disability weight](#): A measure of how disabling this disease is between 0 (full health) and 1 (death). The disability weight for severe major depressive disorder is 0.658.

Third, we could only compare to cash transfers because this is common practice in effective altruism. Making comparisons to life-saving interventions (e.g., anti-malaria nets) is complicated by philosophical factors ([Plant et al. 2022](#)).

Fourth, we are not arguing that Vida Plena is the *most* cost-effective endeavour, but that it has the potential to be a *very* cost-effective charity that will improve human wellbeing in an area - Ecuador and Latin America - which needs support. Additionally, Vida Plena will be an extra source of research and information about cost-effectively implementing mental health solutions in LMICs.

Finally, we presented a DALY analysis for the interested reader, and we are glad Halstead et al.'s ([2019](#)) analysis exists so we can do so. However, we believe that the DALY analysis is only a lower bound estimate of Vida Plena's impact. The subjective wellbeing analysis is more accurate for three reasons (see the Appendix below).

Conclusion and Next Steps

In summary, Vida Plena is a promising programme that will tackle the burden of mental health disorders in Ecuador. **Furthermore, we predict that it will do so cost-effectively. Our CEA predicts that it will be 8 times more cost-effective than GiveDirectly.**

Depression has important impacts on a person's wellbeing. These impacts reach beyond just the individual but also extend to their households. These negative effects are magnified in low and middle-income countries, such as Ecuador, which do not have sufficient mental health professionals or the financial resources available to provide treatment to those most in need.

Vida Plena will apply a multifaceted strategy to not only address the negative impacts of depression, but also to provide participants with the tools for a flourishing life. By using evidence-based treatment methods and a cost-effective delivery model, mental health services can quickly and efficiently be expanded.

Future steps for Vida Plena will involve a pilot study of its program. This will update us about the feasibility and cost-effectiveness of Vida Plena. Vida Plena will continue to collect data and be an interesting source of data on the cost-effectiveness of this mental health intervention. This will be an important test of whether the model StrongMinds uses in sub-Saharan Africa can be exported to other low and middle-income countries.

Appendix: Why the subjective wellbeing analysis is better than the DALY analysis.

We believe that the DALY analysis is only a lower bound estimate of Vida Plena's impact and that the subjective wellbeing analysis is more accurate for four reasons. These points have been made before (see [Plant, 2021](#), and [McGuire et al., 2022b](#)).

(1) Subjective wellbeing is what ultimately matters for people (i.e., how good their life is going) and will capture all the bad of depression and the good of psychotherapy. Factors like health (or income) are instrumentally good in what they do for people (i.e., how they improve their wellbeing) rather than intrinsically good. DALYs are an indirect measure of the impact of mental health disorders like depression (and treating depression with psychotherapy) because it is focused on health and doesn't capture all the ways depression can impact people's wellbeing⁹. Depression can have health, social, economic, and other impacts, and treating depression likely helps with these¹⁰. Hence, subjective wellbeing will capture all these effects insofar as they affect wellbeing whilst DALYs will be limited to health. This also allows us to compare Vida Plena to non-health interventions.

(2) The disability weights in DALYs are based on - likely biased - estimates that will underestimate how bad depression is. The GBD's ([2022, p. 140](#)) disability weights are based on community-based surveys across the world where participants were asked to make pairwise comparisons: They are given two health states and asked to indicate which one they think is the healthiest. This involves respondents conceptualising "health" and applying it to an theoretical situation they are not currently experiencing, potentially by predicting how they would feel with the disorder. However, there is evidence that humans make errors when predicting how one would feel (affective forecasting) in the future or a different situation ([Coleman, 2022](#))¹¹. Hence, it is better to directly ask people with the disease how they feel, as subjective wellbeing measures would. Furthermore, by asking participants about their lives, we avoid evaluators (like us) having to make potentially flawed predictions about what is good for a person's life.

(3) Our subjective wellbeing analysis includes the effect on household members by incorporating household spillovers ([McGuire et al., 2022a](#)). Our DALY analysis does not.

⁹ Even when it comes to health, DALYs for mental disorders miss the mark by not including suicide or self-harm, despite these being related to mental disorders ([Bachmann, 2018](#); [Vigo et al., 2016](#)).

¹⁰ For example, there is a bidirectionality between mental health and poverty - poverty contributes to low mental health, but low mental health also contributes to poverty - so helping individuals with depression could help with their economic condition ([Lund al., 2019](#); [Ridley et al., 2020](#)). Additionally, StrongMinds ([2015](#)) found that their programme improved other areas of the life of the recipients.

¹¹ Concerning QALYs, Dolan and Metcalfe ([2012](#)) found that participants' time-tradeoffs about depression and anxiety underestimate how bad these disorders would feel compared to subjective wellbeing measures.

(4) Finally, our DALY analysis is also likely less accurate than the subjective wellbeing analysis because it is based on one small study ([StrongMinds, 2015](#)) instead of a meta-analysis of studies ([McGuire & Plant, 2021b](#)).