FIXING STOCK-OUTS OF CONTRACEPTIVES AND OTHER ESSENTIAL MEDICINES

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Research Report:

Fixing stock-outs of contraceptives and other essential medicines

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Executive summary

In 2019, about 218 million women of reproductive age were not using any method of modern contraception, despite wanting to avoid pregnancy. This resulted in 111 million unwanted pregnancies (Sully et al., 2020). Fulfilling all currently unmet needs for modern contraception would result in 70,000 fewer maternal deaths each year (Sully et al., 2020). It is estimated that reproductive and sexual health issues cause approximately 18% of the global burden of disease (Blackstone et al., 2017).

Many factors combine to hinder the voluntary uptake of contraception in low- and middle-income countries (LMICs), and the low quality of available data makes it difficult to disentangle the various barriers women face when taking control of their sexual and reproductive health.

One of these key factors is the lack of availability of commodities in many countries. This is due to inefficient distribution systems and weak supply chains, which affect the last mile in particular. Making contraceptive commodities available in the vicinity of women seeking to access them is crucial for reducing the unmet need for contraception. There is some evidence that eliminating stock-outs of contraceptives leads to a sharp increase in uptake.

Another key factor is the discontinuation of use as a result of stock-outs. Stock-outs occur in an average of 25% of clinics in Sub-Saharan Africa, but this percentage can sometimes be over 80, depending on the contraceptive method and country. We also see frequent stock-outs of other important health commodities, from diagnostics and tests, to treatments and medicines.

Making a wide range of contraceptive options available, as well as ensuring continuous and reliable supplies, is an essential part of increasing the use of modern contraceptives. Moreover, better inventory management and distribution through improved logistics management information systems could improve coverage of lifesaving health commodities beyond contraception, using the same pathways, allowing access to lifesaving medicine and health for all.

By changing either the ordering and delivery system, or the information system underlying delivery, health facilities across the country would get a reliable supply of contraceptives and other essential medicines, adjusted to the needs of the community they serve, at lower cost and with lower effort. Shifting the tasks of managing
inventory and supply from pharmacists and health workers to dedicated, trained personnel could not only improve logistics outcomes, but also increase the time health workers can dedicate to providing services. Moreover, ensuring the supply of diagnostics, for example, could reduce the transmission of diseases, and then ensuring the supply of medications for the treatment of these diseases would ultimately decrease disease burden and mortality for a large number of people across a wide range of diseases and disabilities.

In 2012, Senegal switched to the Informed Push Model (IPM) supply system, which shifts the management of stock and deliveries from the health facilities to professional logisticians. This reduced stock-outs of contraceptive methods in health facilities to below 2%. The modern contraceptive prevalence rate (mCPR) among married women of reproductive age increased from 12% in 2011, to 26% in 2017 (Krug et al., 2020). However, we do note that many other projects occurred in Senegal around the same time which may have contributed to this increase.

Experts are generally in favor of this intervention, but cautious about relying on the government for the success of this intervention. The reliance on collaborating with various institutions of the government can be mitigated to some extent, but bypassing it entirely would require setting up an entire parallel distribution system, which we do not recommend. We do not expect government buy-in to be the main bottleneck, as we are only targeting countries which have publicly committed to solving this problem, but we expect some difficulties in getting the government to follow through on inputs required from their side.

There are also some concerns about the real impact this intervention will have on the mCPR. There are other socio-economic and religious factors that could prevent the voluntary uptake of contraception, even when availability is no longer a barrier, which are hard to accurately measure. This would be a crucial consideration when selecting the country to operate in.

Overall, our view is that a new charity addressing the stock-outs of contraceptives and other essential medicines by improving the supply chains and information monitoring systems is an idea worth recommending to future charity founders.
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1 Introduction

This report has been produced by Charity Entrepreneurship (CE). CE’s mission is to cause more effective charities to exist in the world by connecting talented individuals with high-impact intervention opportunities. We achieve this goal through an extensive research process and our Incubation Program. As part of a Research Fellowship run by Charity Entrepreneurship, we revisited Family Planning as a cause area by evaluating the top 5–10 most promising interventions in the space, as recommended by experts and based on our prior research.

Fixing stock–outs of contraceptives and other essential medicines was chosen by CE research staff as the most promising of these top ideas, and so was the intervention that we wrote a Stage 5 deep–dive report on. Note that as this started as a Family Planning intervention, most of this report evaluates the promise of this intervention from a Family Planning lens. It is only after hearing stock–outs mentioned as a key bottleneck for other health commodities in our Large–Scale Global Health research (which ran parallel to this Research Fellowship) that we considered broadening the scope to include other essential medicines. Therefore, this report doesn’t focus much on other health commodities, and instead we will do more research on this for our Implementation Report that will be given to the founders of this new charity.

In order to assess how promising interventions would be for future charity entrepreneurs, we use a variety of different decision–making tools such as group consensus decision–making, weighted–factor models, cost–effectiveness analyses, quality of evidence assessments, case study analyses, and expert interviews.
2 Background

This report explores interventions to improve the last-mile delivery of contraceptives in low- and middle-income countries (LMICs). It is estimated that in 2019, about 218 million women of reproductive age (15-49) wanted to avoid pregnancy, but were not using any method of modern contraception, resulting in 111 million unwanted pregnancies (Sully et al., 2020). Increased access to modern contraception helps prevent unwanted pregnancies, which can help to reduce abortions, miscarriages, stillbirths, and maternal and child mortality rates, as well as the need for pregnancy-related and newborn care. Currently, women in LMICs have a 1 in 26 risk of dying from pregnancy-related complications, compared to 1 in 7,300 in high-income countries. Fulfilling all currently unmet needs for modern contraception would result in 70,000 fewer maternal deaths each year (Sully et al., 2020). It is estimated that reproductive and sexual health issues cause approximately 18% of the global burden of disease (Blackstone et al., 2017).

There are many barriers to fulfilling the unmet need for modern contraception in LMICs, such as lack of awareness, misinformation, lack of access, cultural and religious barriers, affordability, contraceptive failure, concerns about side effects, lack of female empowerment, and provider bias (such as unwillingness to supply contraceptives to unmarried or childless women).

Additionally, the last-mile delivery remains a challenge due to longer distance to delivery points, a lower population density that makes it harder to sustain service points, lack of reliable electricity, and less access to mass media which makes it harder to promote products and services. The public sector struggles with reliance on underqualified and overworked staff to track inventory and reorder products, challenges of recruiting and M&E in isolated posts, and lower literacy among customers. The commercial sector struggles with ability to sell restricted or regulated items, and retailers and clients having less access to credit and cash flow.

Making a wide range of options available, as well as ensuring continuous and reliable supplies, is an essential part in increasing the use of modern contraceptives. Issues at any point of the supply chain of contraceptive commodities can lead to stock-outs and
bottlenecks, leaving women and girls without a reliable source of their preferred contraceptive method.

Improving logistics systems, procurement and inventory management, working with pharmacies and shops to expand contraceptive access beyond public health facilities, and lobbying governments to expand and update the regulatory framework can significantly increase the uptake of modern contraception.

There are many social and religious factors constraining the uptake of modern contraception as a way to fulfill family planning goals, and improving access is unlikely to be sufficient to address all of them on its own. However, improving the last-mile availability of contraceptive commodities can also increase the access to information, combating misinformation and the fear of side effects or long term externalities. Reliable supplies of contraception are often a prerequisite for many demand-side interventions expanding into new areas.
3 Theories of change

For an improved last-mile delivery of contraception, several steps would need to take place: the legislative framework needs to allow the desired outcome, partnerships must be established with the government and relevant actors, the relevant improvements must be carried out, and continuous monitoring and evaluation systems must be implemented to ensure the sustainability of the implemented model.

The countries we recommend for implementation already have a favorable view, and stated commitment to advance rights-based family planning. We expect the difficulty of this intervention to lie in convincing governments to allocate the necessary attention and resources towards expanding the accessibility of family planning services, and to follow through on their commitments.

This intervention assumes that the necessary contraceptives can be procured at national level to fulfill the actual demand in a timely manner. It is often the case that commodities are available at the national level, and various inefficiencies along the supply chain prevent these from being allocated optimally. An important consideration before implementation is making sure that national procurement chains have the capacity to deliver supplies, and could handle the expected increase in demand. The procurement of contraception does not seem to have been a significant issue in the past, as issues arising seem to have been temporary rather than systematic (for example, the transition when changing suppliers or short-term production problems affecting the supply worldwide). Both theories of change that we consider for this intervention can directly help prevent and mitigate these issues; better information collection can increase the accuracy of forecasting and provide a longer runway for adjustments to the required quantity of supplies, as well as provide the basis for creating joint procurement agreements. Ultimately, we do not expect solving global supply issues to be within the scope of this intervention.

Which of the theories of change (TOC) we consider to be the best one to implement will heavily depend on the local context, the specific difficulties of the existing supply chains, and the openness of the government and relevant health sector stakeholders towards either of the two identified options. Existing private sector partners could also
influence the decision of which TOC would achieve the best outcomes with the lowest risk of failure.

In countries where a push model is currently being practiced, the Informed Push Model (IPM) would provide a significant improvement in access to the necessary amount of commodities, with a minimal overhaul of the existing system.

In countries where a pull model is the default, the second theory of change – improving information systems and processes across the supply chain – is a good enhancement. It requires a much smaller overhaul of the commodities’ delivery practices than the IPM model, as long as current barriers to prioritizing contraceptive methods are addressed. There are also advantages to implementing (or sticking to) a pull delivery model, where facilities have additional flexibility to control supply delivery based on specific local needs and priorities.

Both TOCs have the advantage of implementing information systems accessible to health facilities at every level, which would facilitate better management of orders and fulfillment, optimizing procurement and storage by allowing accurate tracking of supplies and forecasting needs. There are different levels of implementation that are possible, and we expect that a charity will start from the smallest intervention before expanding it – for example, piloting a new information and ordering system in a small number of health facilities, or testing the impact of a vendor-managed inventory system (VMI) alongside existing distribution infrastructure before scaling it up; for example, USAID has tested various distribution models (USAID | DELIVER PROJECT, Task Orders 4 and 7, 2014; Watson and McCord, 2015).

Which TOC fits the context of a specific country best, and which is the minimum viable solution to address stock-outs and expand the last-mile access to contraception, shall be explored further in the implementation report.

3.1 Switching to an Informed Push Model

The public sector system of distribution used in many low-income countries is a lengthy “pull-based” system, which relies on midwives at service delivery points to
track consumption and order contraceptives. In this system, health facilities have to pick up supplies at warehouses at their own cost, a task which takes health care workers away from providing health services. The health facilities replenish supplies using their own limited working capital. This leads them to deprioritize contraceptives, as they generate lower profit margins. Many facilities maintain poor inventory and sales records (Daff et al., 2014). Failure to receive requested contraceptive commodities is often the most cited reason for service delivery points (Muhoza et al., 2021).

Some countries rely on a standard “push” system where predetermined kits are delivered at regular intervals, usually quarterly, regardless of facility-level consumption and needs. Contraceptive methods are often reported to be insufficient or entirely lacking from these kits. Information about demand and actual needs is absent and largely ignored. Additional order processes are often lengthy, requiring several forms, and rarely fulfilled.

The “informed push distribution model” (IPM) brings delivery trucks with supplies close to the source of demand in health facilities, and assigns logistics professionals to manage stocks and deliveries. An initial stock of contraceptives is provided to each facility for free, who pay only for the sold products, keeping the margins. Facilities are restocked and data on consumption is collected on a monthly basis (Daff et al., 2014). With IPM, the logistics management tasks are shifted from health providers to dedicated logistics professionals. The cost of the logistics is covered by the revenue from contraceptives sales (Daff et al., 2014).

In a 2012 pilot in Senegal, contraceptive consumption increased by 38% over the six months period, while stock-outs were reduced to the point where less than 2% of facilities experienced them (Hasselback et al., 2014). This was a reduction in the frequency of stockouts of roughly 75%.

Moreover, since stock-outs have been eliminated and women can be counseled on the full range of options, the method mix has evolved to a greater proportion of women opting for long-acting methods, which have a lower failure rate (Daff et al., 2014).
<table>
<thead>
<tr>
<th>Charity activities</th>
<th>Charity outputs</th>
<th>Government COM change</th>
<th>Government behavior change</th>
<th>Public COM change</th>
<th>Public behavior change</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocate for the switch to IPM</td>
<td>Advocacy for IPM at the national and subnational levels</td>
<td>Countries/states become engaged with IPM</td>
<td>IPM is introduced for all health facilities</td>
<td>Increased physical opportunity to access contraceptives</td>
<td>Voluntary modern contraception uptake increases</td>
<td>Unwanted pregnancies and abortions decrease, and birth spacing increases</td>
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<tr>
<td>Engage private sector and coordinate relevant stakeholders</td>
<td>Engage private sector and coordinate relevant stakeholders</td>
<td>Relevant stakeholders get involved to provide and access support</td>
<td>Govt. has a better understanding of the current status</td>
<td>There is a plan in place for IPM rollout</td>
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<tr>
<td>Conduct a needs and market assessment</td>
<td>Help design a strategy for IPM scale-up</td>
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</tbody>
</table>

The key assumptions, corresponding to each step (i.e., “→”) in this theory of change, are:

- Policy outputs are persuasive to decision-makers
- Private sector engagement is sufficient to enable the switch to IPM
- Necessary infrastructure is in place to enable distribution
- Outputs reach policy makers who have the opportunity to act, despite competing priorities
- Outputs reach policy makers who have the opportunity to act, despite competing priorities
- The strategy is executed correctly and IPM can be rolled out
- When modern contraception is in stock, more women are willing and able to access it
- Modern contraception is used effectively

Scale: key uncertainty, high uncertainty, some uncertainty, low uncertainty, unconcerning

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1 COM refers to the capability, motivation, and opportunity for change from the COM–B model for behavior change (The Decision Lab, 2021).
3.2 Improving the information systems and processes across the entire national supply chain

Weak logistics management is often identified as a main barrier contributing to weak supply chains, particularly in rural areas, and training on supply management and adherence to good storage practices are often inadequate in local health facilities (Wiedenmayer et al., 2015). Increasing the visibility of product flow and demand, and addressing inefficient operations along the supply chain can significantly improve logistics and distribution. Strategically located storage centers and adequate training of staff enable more effective distribution, as well as better data management (Ali, 2017).

Shifting the tasks of managing inventory and supply from pharmacists and health workers to dedicated, trained personnel could not only improve logistics outcomes, but also increase the time health personnel can dedicate to providing services.

The use of mobile technology has been successfully used to improve reporting between supply chain levels for other health commodities, stock-outs can be reduced substantially by mapping out stock-count data (Barrington et al., 2010).

Digitalized last-mile electronic logistics management information systems for better inventory management and distribution could improve coverage of lifesaving health commodities beyond contraception (Fritz et al., 2021).
<table>
<thead>
<tr>
<th>Charity activities</th>
<th>Charity outputs</th>
<th>Stakeholder COM change</th>
<th>Stakeholder behavior change</th>
<th>Public COM change</th>
<th>Public behavior change</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocate for addressing supply chain inefficiencies</td>
<td>Conduct a supply chain diagnostic and needs assessment</td>
<td>The supply chain issues are identified</td>
<td>Improved distribution</td>
<td>Increased physical opportunity to access contraceptives</td>
<td>Voluntary modern contraception uptake increases</td>
<td>Unwanted pregnancies and abortions decrease</td>
</tr>
<tr>
<td>Advocate for usage data collection</td>
<td>Engage the private sector in logistic support</td>
<td>Stock flow is mapped and optimized</td>
<td>Improved data collection on consumption and stock flow</td>
<td></td>
<td></td>
<td>Birth spacing increases</td>
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<tr>
<td></td>
<td>Coordinate relevant stakeholders to improve distribution</td>
<td>Last-mile distribution and demand are tracked</td>
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<td></td>
<td>Help design information flow</td>
<td>Government has a better understanding of demand and use</td>
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</tbody>
</table>

The key assumptions, corresponding to each step (i.e., “→”) in this theory of change, are:

- Policy outputs are persuasive to decision-makers
- Charity can access sufficient data on status quo
- Private sector engagement is sufficient to engage all relevant stakeholders
- Outputs reach policy makers who have the opportunity to act, despite competing priorities
- Outputs reach policy makers who have the capability to act
- Identified changes can be implemented at the last mile
- Compliance with new procedures is high
- When modern contraception is in stock, more women are willing and able to access it
- Modern contraception is used effectively

Scale: key uncertainty, high uncertainty, some uncertainty, low uncertainty, uncerning
4 Geographic assessment

To assess which country might be a good place to work in, we created a weighted-factor model including the following factors:

1. **Unmet needs for family planning** (women with unmet needs are: of reproductive age, sexually active, and who report wishing to delay the birth of the next child or not wanting any more children, but are not using any modern method of contraception). We considered this the most relevant factor, because it not only determines the need and potential for scale in the country, but also seems related to how effective the last-mile delivery of contraceptives is.

2. **Abortion rates.** This criterion is directly relevant to the main cause of death that this intervention would target, as a large percentage of the abortions performed are unsafe.

3. **Fertility rates.**

4. **Fragile States Index.** Implementation would be difficult in a country with a fragile political system or a lot of volatility and corruption, so we took this into consideration.

5. **The modern contraceptive prevalence rate.**

6. **The size of the population.** As this intervention will consist, in large part, of working with the government and establishing partnerships with private providers, reaching a larger number of people within a country significantly improves the cost-effectiveness of this intervention.

7. **Average contraceptive stock-out rates.** The highest impact this intervention can have is in countries that currently have high rates of stock-outs for several contraceptive methods, while still having a strong enabling policy environment.

Using all of this information, our geographic assessment suggests that the following countries could be particularly promising to work in: Cameroon, Madagascar and Côte d'Ivoire.

The specific type of intervention chosen from the two theories of change outlined above will most likely vary, depending on the main constraints and challenges in the country selected.
5 Quality of evidence

The evidence for this intervention is rather limited, as the few studies conducted have been limited to a few specific regions. There is even less evidence about the long-term impact of this intervention, and whether there is a backslide once charities reduce or withdraw their support and monitoring.

5.1 The need for better last-mile delivery of contraception

Many countries experience frequent contraceptives stock-outs, even where supplies are available centrally in the country, at a substantial percentage of their facilities.

Many studies cite the prevalence of stock-outs as a main impediment to contraceptive uptake and continuation. Not all methods are affected equally, and there are regional disparities in which methods are undersupplied.

A qualitative study in two districts in Uganda, which relies on a standard push model, found chronic stock-outs of oral contraceptives and frequent stock-outs of long-acting methods. Injectables and condoms were perceived as widely available. People in charge at the district level reported being unaware of stock-outs.

These stock-outs led women to travel much further to other health facilities, and to switch to less effective methods when they could not access the desired methods. Changing methods is particularly difficult for women who use contraception without their partner's knowledge. Women who could afford it would opt for private clinics at higher costs.

Women report significant stress and unwanted pregnancies as a result of stock-outs. Providers, who are often blamed for the unwanted pregnancies, reported emotional distress, less demand for their services, as well as a deterioration of skills and service delivery (Grindlay et al., 2016).
5.2 Evidence that higher and more reliable availability of contraceptives will lead to an increase in modern contraception uptake

The evidence on the increase of modern contraception uptake as a result of higher accessibility is very broad. There are large regional disparities in constraining factors which could constrain demand, even where supply bottlenecks have been addressed. Regional data on demand and consumption is often very limited or nonexistent, especially in facilities which are poorly supplied, so it can be hard to estimate the effects of addressing stock-outs before actually doing so.

The most convincing piece of evidence we have found to support the importance of supply–side interventions in increasing the use of contraception, is the regression decomposition performed by Feyisetan and Casterline (2000). This uses contraceptive prevalence data from 26 countries across Latin America, Asia, and Africa to determine how much of the change in contraceptive prevalence can be attributed to changes in fertility preferences (as a result of “demand–side” interventions), and how much is due to changes in rates of contraceptive use within preference categories (as a result of “supply–side” interventions). They found that the substantial increases in contraceptive prevalence in Latin America, Asia and Africa were less the result of increased demand for smaller families, due to “demand–side” interventions, and more the result of the satisfaction of existing demand, due to “supply–side” interventions. The satisfaction of existing demand dominated in all 26 countries. Only in Ghana and Ecuador did the “demand–side” component account for one-third or more of the increase in prevalence. Whereas changes in preferences due to “demand–side” interventions constituted less than 10% of the increase in prevalence in Colombia, Peru, Thailand, and Zambia (Feyisetan and Casterline, 2000). The breakdown of effects from “demand–side” interventions – referred to as “composition” in the study – and “supply–side” interventions – referred to as “rates” – for each country is illustrated in Table 3 on Page 7.

Karim (2005) evaluated the influence of family planning logistics systems’ performance on contraceptive use, using data from 24 countries obtained from Demographic and Health Surveys of 1995 and 1999. A country–level fixed–effects
regression model analysis was performed accounting for measurement error of the independent variables, where logistics systems performance was used as an independent variable. The analysis showed that in 1995 approximately 19% of the average mCPR is attributable to logistics systems’ performance, and in 1999 approximately 23% of the average mCPR is attributable to logistics systems’ performance. They also estimated that 42% of the increase in average mCPR is attributable to the improvement of the logistics system in the selected countries modeled (Karim, 2005).

Multivariate random-effects logistic regression analysis using data from Demographic and Health Surveys and Service Provision Assessment surveys conducted in Kenya, Rwanda, Uganda, and Tanzania over the period 2003–2010 is performed to examine the extent to which contraceptive use is associated with the regional family planning supply. This regression analysis finds that an average increase of one contraceptive method available increases women’s odds of using modern contraception by 50% if family planning facility density in the region and other individual-level variables are held constant. Moreover, the increased proportion of region-level variation of modern contraceptive used, explained by adding regional contraceptive supply variables to the model, is 18% (Wang et al., 2012).

The USAID DELIVER PROJECT supports the theory that the use of modern contraception will increase when health logistics systems are strengthened, and a choice of several contraceptive methods is readily available in health facilities. Although this correlation has intuitively been assumed in the past, this analysis provides evidence confirming the hypothesis: a strong relationship exists between product availability, logistics system performance, and mCPR. The analysis shows that as the performance of the health logistics system improves, product availability improves, thereby increasing family planning use (Karim, Bieze, and Chimnani, 2008).

From high levels of stock-outs, we can infer that real demand is much higher than current supply, but it is difficult to assess how much of the unmet needs for contraception would be met merely by improving access.
There is significant evidence that reliable availability of several modern means of contraception is positively correlated with the contraception prevalence across countries (Jain et al., 2013; Ross and Stover, 2013). Access to a larger number of methods allows more women to meet their preferences, and makes health workers more confident in recommending various methods.

A large contributor to the unmet need is the discontinuation of use, of short-acting methods in particular (Jain et al., 2013). This suggests a significant potential uptake once various modern contraception methods are reliably supplied to communities. Reducing the discontinuation rate is crucial to reduce unmet needs in the future. For example, Bruce (1990) found that, in Indonesia, of the women who had reported not receiving the contraceptive method that they wanted, 85% discontinued within a year. On the other hand, those who got the method that they wanted had a discontinuation rate of 25% (Bruce, 1990).

The use of short-acting methods of contraception is particularly vulnerable to stock-outs, as most users cannot afford to buy a large amount upfront and so rely on the continuous access to supplies. We can assume that barriers to access here are that health facilities are far away, hard to reach or very crowded. This impacts the use of short-term acting methods significantly, due to the number of visits required for continuous use.

Other issues that lead to discontinuation, such as side effects, can be mitigated substantially when a variety of alternative options are available.

Various types of contraceptives can address different needs; women who wish to space births require short acting methods; women who wish to delay the birth of their next child for longer, or do not wish to have any more children, will reach for long-acting methods.

Local informal networks of women sharing information and experience of different family planning methods are thought to be an important determinant of contraceptive uptake, and may be a mechanism through which improved contraceptive stock in
facilities would translate into increased contraceptive use (Entwisle et al., 1997; Rutenberg and Watkins, 1997).

High levels of stock-outs also point towards substantial demand at the given price points, as contraception is perceived to be cheaper than the consequences of unwanted pregnancies. While the quality of evidence varies, multiple studies have found contraceptives to have a low price elasticity (Korachais et al., 2016). However, this intervention is likely most impactful where the public health system subsidizes contraception. This makes it cheaper than accessing it through private health facilities, which seem to be less affected by stock-outs.

Various attempts to improve the last-mile delivery of contraception and eliminate stock-outs have seen a significant reduction in unmet need of contraception, even when not paired with any demand-generation interventions, such as in Nigeria (Afe et al., 2022), Malawi (Skiles et al., 2015) and Senegal (Hasselback et al., 2017). Even higher increases in uptake were recorded in Senegal in the regions that coupled the IPM model with demand-creation interventions (Daff et al., 2014).

A “Reducing Stockouts Impact Calculator” combines some of the findings outlined in this section (Wang et al., 2012; Karim, Bieze, and Chimnani, 2008; Ross and Stover, 2013) to model the effects of stock-outs on mCPR. They conclude that these analyses indicate that adding or removing one method results in a change in MCPR of 5-8 points. They use this finding in their “Impact Calculator” model by equating a partial stock-out with a partial loss of a method. The model sums to stock-out rates for five modern methods for both the current situation and the target. The difference is multiplied by 7 points to estimate the increase in MCPR resulting from achieving the target.

5.3 Can a charity make a positive change in this space?

We looked into several case studies in developing countries that can teach us lessons about implementing interventions like those proposed in both theories of change to increase access to health commodities. The main findings have been summarized here.
In general, these interventions had a positive impact, resulting in cost savings, reduced procurement time, increased product availability, and/or increased use of a medical product. The magnitude of the effects varied significantly depending on the intervention.

Providing capacity support to the government

The case studies we identified cover different ways in which an organization can provide capacity support to the government to increase access to health commodities. A few of these interventions are very comprehensive and focus on multiple aspects, including strategy development, coordination of multiple stakeholders, training and equipment of health care staff, distribution, and demand generation (for example, CHAI’s efforts to reduce neonatal and maternal mortality rates in Nigeria [Sloan et al., 2018] or to scale up oral rehydration salts and zinc [Lam et al., 2019], also in Nigeria). Other interventions focus on a more concrete aspect of support, for example, supporting the government to establish a public-private partnership to improve access to health commodities (Wiedenmayer et al., 2019), or supporting a needs assessment (USAID, 2015). The duration of these programs varies from 1 to 7 years, depending on the level of complexity and the scale.

A few general conclusions can be taken from these case studies:

- Various successful approaches can be used to increase access to health commodities
- It was difficult to find examples of failed interventions to improve access to health commodities, which might be due to:
  - Publication bias
  - The stage at which these interventions are most likely to fail is the initial step of getting government buy-in, and if they fail at that stage, nothing is written about them
  - These interventions are usually successful (although the comparative cost-effectiveness remains to be determined)
- The interventions related to providing capacity support to the government are usually more complex, and involve a multi-arm approach (needs assessment, coordination, demand, supply, etc.). Probably because of this, the interventions we found had been implemented by larger organizations and were costly, which
could be an argument against a new, small organization taking this approach. However, some comparatively positive aspects of this theory of change are that:

- Depending on the implementation country, the focus could be on one or two of the arms of the intervention (for example, a new organization might focus purely on strategy design and partner with another organization that would take care of the demand and/or supply side).
- The impact of these interventions seems quite large in many cases.
- The scale seems larger than for demand-side interventions.

- The interventions around increasing demand seem more involved, with the exception of mass media campaigns.
- Some of the interventions to improve supply could have positive spillovers to other health commodities.

**VillageReach**

VillageReach is an organization that was evaluated by GiveWell. It was GiveWell’s top-rated organization for 2009, 2010 and much of 2011, and it received over $2 million due to GiveWell's recommendation. In late 2011, GiveWell removed VillageReach from its top-rated list because it had limited room for more funding.

VillageReach works in Mozambique to improve health care access in remote, underserved places by improving medical supply delivery systems. It focuses on shifting the distribution of health commodities – vaccines, in particular – from a "pull" system (in which health clinics collect their own supplies) to a "push" system (in which dedicated teams deliver supplies to clinics directly), much like the model discussed in [Theory of Change 3.1 above](#).

GiveWell evaluated VillageReach’s five-year (2002–2007) pilot program in Cabo Delgado, Mozambique, and concluded that while the fall in stock-outs and rise in immunization rates observed in Cabo Delgado could be attributed to VillageReach’s activities, it is possible that the improvements were driven by another factor that they do not have full context on. Moreover, the fact that Niassa, a neighboring province, experienced a large rise in immunization rates (although not to the level seen in Cabo Delgado) over the same period raises the possibility that non-VillageReach factors contributed to the rise in immunization rates in Cabo Delgado. However, they also note...
that it is possible to speculate that Irish Aid/World Bank funds spent in Niassa increased coverage rates there while the VillageReach program in Cabo Delgado was responsible for the increases in that province.

Below we outline the impacts that VillageReach’s pilot program had on reducing vaccine stock-outs and on increasing immunization coverage, though we note that some of these changes could be from external factors, rather than VillageReach’s pilot.

Over the course of VillageReach’s pilot program, the number of health centers experiencing at least one stock-out fell substantially.

From the figure above, we can see that stock-out rates were, on the whole, higher before 2005 compared to after the start of 2005. This suggests that stock-outs were a common problem before VillageReach’s intervention and that VillageReach’s program may have influenced this reduction in stock-outs, though it also highlights that it took a couple of years after the start of the pilot program, in 2002, for VillageReach’s intervention to be effective.
We can also see an increase in the number of children receiving DTP-3 and a reduction in the number of children who “dropped out”\(^2\) of the DTP-3 immunization program over the course of VillageReach’s pilot project.

![Graph showing children receiving DTP-3 and CDG](image)

Increases in immunization coverage and reduction in DTP-3 “drop outs” in Cabo Delgado.

Source: GiveWell, 2013 and Kane, 2008

**IPM–3PL in Senegal case study**

In order to address the high stock-out rates of contraceptive commodities at public health facilities, the government of Senegal partnered with IntraHealth to scale up the Informed Push Model with third party logistics providers (IPM–3PL).

\(^2\) By “dropped out” we mean that the child received one, but not all, doses.
Through this model, third party logistics providers deliver contraceptive commodities directly to health facilities, performing forecasting, logistics and data management on behalf of the health facility staff. Stocking decisions are made in real time based on available inventory and actual consumption data. Previously, health facilities were responsible for ordering and picking up commodities at their own cost, but often lacked the resources to do so. This intervention put trained logisticians in charge of forecasting and supply management, freeing up more health workers time for providing their services.

The logistics staff record procurement and consumption data into an electronic system, centralizing the information from across all levels of the country. Previously, consumption data was not available at a facility level, due to paper based documentation prone to many errors.

Health facilities pay for the commodities after customers purchase them, rather than upfront, removing cash flow constraints to the purchase of commodities. Compared to a fully public IPM, the use of 3rd party logistics reduced the costs of contraceptives delivery by 36%.

After a pilot introduction in two states in 2012, the model was scaled nationally in 2015. It reduced contraceptive stock-outs to an average of 2% of all health facilities nationwide, creating electronic records of consumption data from almost 1,500 health facilities. This was a reduction in the frequency of stock-outs by approximately 75%. However, we do note that many other projects occurred in Senegal around the same time which may have contributed to this increase. By 2017, the model was expanded to include other health commodities, and the management of the IPM model was transferred to the government of Senegal (Hannoun & Williams, 2017).

In 2011, before the implementation of IPM-3PL, the mCPR among married women was 12%. In 2012, in addition to the IPM-3PL model, Senegal committed to doubling its yearly budget allocation to reproductive health (Hannoun & Williams, 2017). By 2017, the mCPR among married women had increased to 25.1%, and in 2022 it was 28.3% (Track20, 2022).
Zimbabwe Informed Push (ZIP)
Zimbabwe Informed Push (ZIP) led by USAID’s DELIVER PROJECT uses delivery teams to perform contraceptive stock inventories in health facilities, and top up stock levels to a predetermined quantity. Ordering and stock management is done by regional teams rather than the health facilities themselves. This intervention was piloted in 2003 in two provinces, and condom stock-outs were reduced from 20% of all facilities to 2% with >98% intervention coverage. In 2016, stock-outs of all condoms at health facilities remained below 5% (USAID, 2016a).

KEMSA case study
Kenya Medical Supplies Authority (KEMSA) is a state corporation which partners with County Governments, providing services in procurement, warehousing, and distribution of drugs and medical supplies. Initially it was set up as a nonprofit addressing the prolonged stock-outs in the pull-based distribution system for 20 commodities, in partnership with the Ministry of Health. Over the next decade they scaled up to over 250 commodities.

The Logistics Management Information System (LMIS), scaled up by KEMSA, has eased order management and reporting, ensuring forecasting and quantification based on data collected from all health facilities countrywide. By switching to monthly dispatches instead of quarterly, there have been improvements in availability of commodities, better storage utilization, and better documentation.

The KEMSA e-mobile service is a platform designed to be compatible with even the most basic mobile phones, used to automate processing orders and managing stocks at the warehouse. The platform enables accurate inventory management and consolidation of orders, reducing expired products and enabling the timely stocking of the right products in the right place.

All facilities, regardless of their level or location can use the platform to place paperless orders and receive information about their orders seamlessly, without requiring a computer. Staff report the state of the received goods through a mobile application.
This project is enabled through a public–private partnership with various companies that assist with logistics, transportation and information services.

After setting up a very efficient and successful supply chain across all counties in Kenya, KEMSA is looking into opportunities to expand to other countries, particularly by offering technical assistance and joint procurement to lower costs.

### 5.4 Summary of overall evidence

Many issues with supply chains for contraceptives are well documented across most low-income countries. The low availability of contraceptive methods could be a major driver of unmet need across countries in Sub-Saharan Africa, though the evidence is very limited. The relation between availability and use of contraceptives remains poorly understood (Muhoza et al., 2021).

Ensuring an adequate supply of a variety of methods is shown to lead to a significant spike in contraception uptake across several countries and contexts, but these interventions have been very limited geographically, and only tracked consumption during and immediately after the implementation, so we know even less about the long-term impact and persistence of such interventions.

Discontinuation of use has been shown to contribute a significant part of the current unmet needs for contraception, which can be adequately addressed with reliable supplies and a broad method mix availability.

While many studies have been conducted to evaluate demand generation for contraception, the supply side has been studied less often, primarily due to inadequate data availability (Muhoza et al., 2021). Improving the systematic collection of data at every level of supply could be very valuable on its own for improving the overall uptake of modern contraception.

### 6 Expert views

We spoke with three experts for this report: one expert from the World Bank who oversees one of their maternal health projects, and two experts from existing family
planning charities. Note that although the two family planning charities we spoke with work on demand generation rather than fixing stock-outs, they see stock-outs as a barrier to their scaling and so it was still helpful to speak with them to get a sense of the situation on the ground.

Overall, experts had very positive views about interventions improving the last-mile delivery of contraceptives, and were excited about a new actor getting involved in the space. Experts agreed on a number of gaps that remain to be filled in enabling widespread access to modern contraceptives, especially in poorer remote areas. There are some concerns about the impacts of improvement of last mile delivery, as cultural factors and price also heavily influence the uptake, and it is unclear whether availability is the main bottleneck.

Conditions vary significantly across various areas and regions, making the assessment of this intervention vary significantly depending on the context of implementation.

Anna Christina Thorsheim (Family Empowerment Media)

There are several problems with the way supply chains work, as well as with some governments not realizing budget commitments made to Sexual and Reproductive Health.

She thinks that a new organization in the space could fill the following gaps:

- Working with pharmaceutical companies could be a good way to get better data, if it could geo-track where contraceptives go.
- A change from a pull to push system is worth exploring. This seemed to work in northern Nigeria when they [New Incentives] worked with the government to improve access to vaccinations.

However, this does have some drawbacks. If there are too few stocks in the country as a whole, it could lead to worse allocated resources too. "Pull" is a good way to gauge actual demand, which helps efficiency, but only if people actually do "pull". Push, on the other hand, can solve the problem with last-mile distribution but might be more inefficient. A proper needs assessment for each region is needed to understand what is appropriate in different contexts.
There is a lot of change happening in this space in Nigeria now – before, states could not purchase family planning commodities themselves, and had to return them to the federal government if they made a purchase. The intention of this was to better allocate resources. The downside is that there are few incentives for states to do their own purchases.

She has concerns about the efficiency of any intervention that still involves the purchase of the contraceptive methods by the end users, as price could be a massive barrier.

7 Cost–effectiveness

The cost–effectiveness of this intervention will depend on: (1) the theory of change chosen, (2) the implementation country, and (3) what proportion of the costs is covered by the government.

Our cost–effectiveness analysis models the impact of an organization that advocates for the adoption of the Informed Push Model, and supports the implementation of the information system, the training of key logistics personnel, and the monitoring and evaluation of the program to continuously improve its delivery.

We assume that the scaling–up period, where the relevant partnerships are established and negotiated, lasts one year, and that the duration of the charity’s activity at scale is eight years.

By using the example of one of the countries we identified as promising, Cameroon, we model the costs and benefits across the entire implementation. We assume that through this intervention we can reach 30% of the women with a current unmet need for contraception, and enable them to take up a modern method to achieve their family planning goals. The total number of women we expect to reach in our model has been discounted by 20% to account for the incorrect or inconsistent use of short–acting contraceptive methods.

In our model, we estimated the cost per DALY averted to be $62, the cost per
unintended birth averted to be $26, and the cost per additional user of modern contraception to be $1.81.

Over the eight years of operation at scale, we expect the charity to reach about ~1.7M new users and to avert about 171,000 unwanted pregnancies.

8 Implementation

8.1 Talent

Addressing supply chain limitations and improving information systems are not unique concerns; there is a large pool of talent with expertise and experience available. The new nonprofit would need hires with local knowledge, and ideally with government experience.

8.2 Access

**Information**
There are significant gaps in the available information regarding the actual levels of contraception availability and use at the last mile. There are further concerns about the current demand for modern contraceptives in areas where there are frequent stock-outs and high barriers to access.

**Government**
The governments of many countries with low uptake of modern contraception seem very receptive to its use, and most of them are already signaling support for wider availability. Several governments have pledged to take specific actions to expand the access to voluntary contraception in their countries, but there are concerns about the implementation, due to the ability and willingness to allocate resources towards these commitments.

The willingness of the government to accept this intervention might vary substantially depending on the country in question and the theory of change chosen.
8.3 Funding

**EA Funding**
Improving the last-mile delivery of contraceptives seems like a cause that Effective Altruists interested in Global Health and Development would be open to funding. For example, Family Empowerment Media has received funding from Founders Pledge ([Founders Pledge, 2022](#)).

**Non-EA Funding**
There are many large funders committed to improve family planning access in low-income countries, and furthering the goal of universal access to sexual and reproductive rights, such as:

- The United Nations Population Fund
- The World Bank
- The US and the UK governments
- Germany's Federal Ministry of Economic Cooperation and Development
- The Bill and Melinda Gates foundation has committed US$280 million per year from 2021 to 2030
- The Children's Investment Fund Foundation intends to invest US$325 million between 2022–2026
- Preston-Werner Ventures have committed US$1 million per year between 2022–2025

It is not clear how easily a new, small charity would be able to access any of these funds.

There are financial challenges in many of the countries we have analyzed. Even in countries that have committed to prioritizing family planning, governments do not always follow through with investments on a national scale, and many of these countries are heavily dependent on foreign aid for family planning.

8.4 Scale of the problem

Our cost-effectiveness analysis currently assesses implementation in one country. However, as there are many countries with similar problems and difficulties in reaching the last mile when delivering modern contraceptives, there is room for
expansion in other countries with similar conditions. Depending on the theory of change chosen, expanding operations could benefit from economies of scale, potentially increasing the impact and the cost–effectiveness of this intervention.

Our current best estimate is that there are 5–10 top countries where this intervention looks promising.

Expanding to new countries would require setup efforts of establishing partnerships with the government and relevant local stakeholders. It seems likely that processes and best practices could be transferred between countries, with minimal adjustments to local contexts and partners.

The theory of change of improving information systems could potentially be implemented in collaboration with large information systems and logistics partners, which could scale to different countries without significantly increasing the fixed costs.

8.5 Neglectedness

Work in this space is very neglected. While there are many interventions targeting the supply of modern contraceptive methods, many of them target the broad system of a country, with diminished benefits for the last mile.

The last tier of the distribution system, as well as reaching remote areas, are identified as key bottlenecks in ensuring availability of health products for essential drugs (Vledder et al., 2018) and contraceptive commodities (Ali, 2017).

8.6 Externalities

Some moral externalities can be identified, depending on individual views of population ethics and the perceived value of additional human lives being brought into existence independent of circumstances. We are agnostic regarding these considerations, so we do not model these externalities in our analysis.

Positive externalities

Several positive externalities can be associated with a higher voluntary uptake of modern contraception, such as increased female empowerment, improved educational
outcomes, improved provision of government basic services, and reduced food insecurity (Starbird et al., 2016).

Depending on the method of contraception selected, further positive externalities can include a lower prevalence of sexually transmitted diseases, better period management, and reduced pain and discomfort during menstruation (Matsumoto et al., 2007). Hormonal contraceptives can also lighten periods, lowering the risk of iron-deficiency anemia, and lower the risk of an ectopic pregnancy, as well as lessen the risk of endometrial and ovarian cancers (Fraser, 2010).

Poor contraceptive availability and high stock-out rates are important barriers for any intervention targeting demand generation and improved access. Removing contraceptive availability barriers would clear the way for such interventions and incentivize their expansion, further increasing the uptake of contraception. Effective supply chains and good availability of commodities also strengthen community trust in the health system.

Improvements made in this space on better inventory management and last-mile distribution could also improve coverage of lifesaving health commodities beyond contraception (Fritz et al., 2021).

Higher rates of modern contraceptive use and fewer unwanted pregnancies are associated with lower abortion rates, but also with economic benefits for the family. A lower birth rate is also associated with fewer CO2 emissions and a gain of welfare points due to averted consumption of animal products.

**Negative externalities**
Hormonal contraceptives can cause side effects such as headaches, nausea, bloating, weight gain, breast tenderness, amenorrhea or intermenstrual bleeding (Bitzer & Simon, 2011). These side effects usually cease after two-three months.

There are some concerns about weakening the private domestic market for contraceptives, depending on the intervention chosen, which would leave the overall
level of access even more vulnerable to breakdowns in the public health delivery of modern contraceptives.

Some areas have reported an increase of intimate partner violence associated with the uptake of modern contraception.

While spacing births are associated with various health benefits for the mother and the infant, some studies indicate that the effect of long intervals (of 60 months or longer) could also pose concerns for mothers and newborns. However, the prevalence of births occurring five years or longer after the previous live birth is currently very low in the countries we have considered for our intervention, and we do not expect it to increase significantly due to better contraception availability.

8.7 Additional considerations

Complexity
Some of the interventions we are considering are complex and costly. They may be too complicated for a small organization, which is why we model our analysis on the assumption that a partnership with the local government needs to be established in the first stage of the implementation. Given the positive view that governments in the top countries we identified express towards increasing access to contraception, as well as the commitments made publicly, as for example the pledges made to FP2030, we estimate the chance of obtaining a partnership with the local government to be quite high (above 75%).

Depending on the existing supply chain systems in the country and the level of access granted by the government, the scope of improving national information systems can vary substantially. A charity could mitigate against this risk by obtaining an in-depth overview before launching the intervention, and by establishing clear parameters and obligations while negotiating the partnership with the government.

There are additional factors that could negatively impact the delivery of contraception which are beyond the control of the charity, for example, if there is a global shortage of commodities, as was the case in early 2020, when contraception based on the hormone estradiol was temporarily unavailable due to issues with manufacturing. While the
procurement of contraceptives at national level has very rarely been an issue, we believe there is a small probability that such shortages may occur again in the future. Such shortages would impact any intervention delivering reproductive health commodities equally.

**Increasing demand for modern contraception**

It might be difficult to reach a higher uptake in certain countries, due to several factors affecting demand even when modern contraception is available and affordable. Social constraints, as well as the availability and prevalence of accurate information sources should be considered a crucial factor when selecting implementation areas, especially as many countries should not be assumed to be homogenous in this regard. Ethnic differences and social norms which govern family planning views, such as religion or cultural norms of male dominance and surrounding fertility, can be an important factor in certain regions (Odimegwu & Adewovin, 2021). For example, a study in Nigeria found that a woman adopting modern birth control is a sign of disrespect for a man (Okwor & Olaseha, 2010).

A recent scoping review found that sociodemographic factors such as race, ethnicity and religion receive less attention than factors such as age, gender or geographic location, so evidence of their effects on contraceptive behavior is limited (Nowshin et al., 2022).

Certain demographics, such as adolescents, unmarried women, or childless women, might face specific additional barriers (Chandra-Mouli et al., 2014). The unmet need rate is much higher among adolescent women (15–19 years) than among all women of reproductive age (Sully et al., 2020). Unmarried women are often subject to more social pressures against the uptake of contraception.

Such constraints can be mitigated to some extent, depending on the ToC selected, but come with a high risk of limiting the positive impact and the cost efficiency of an intervention. This should be taken into account when designing information collection, as requesting patient specific information might be an additional deterrent for vulnerable groups accessing contraceptives.
Dissatisfaction or side effects can lead to discontinuation, with short-acting methods having the highest discontinuation rate (Sully et al., 2020). Ensuring a wide range of contraceptives are available can substantially reduce the overall discontinuation rate of contraception (Jain et al., 2013).

Affordability
Experts are concerned that, in some communities, the purchase of contraception where the government does not fully fund it might be unaffordable for many members of the community. Costs can be a key barrier to contraception uptake in low-income countries, though a 2016 systematic review found the evidence for this to be weak and mixed, with some studies finding contraceptives to have a low price elasticity (Korachais et al., 2016).

Whether subsidized or free contraceptives are or can be made available, could be an important consideration when choosing the country of intervention. Alternatively, a charity could partner with one of the large aid organizations distributing free contraceptive commodities to expand their reach into the intervention area.

8.8 Remaining uncertainties
Will stock-outs be solved by other actors (e.g. social enterprises) or even just market forces without the intervention of a charity?

On social enterprises
Many countries do not have the kind of legislation that allows contraception to be sold outside accredited facilities (Nagai et al., 2019; Family Planning Division Ministry of Health and Family Welfare Government of India, 2014), which limits the actors who could do this.

On-market forces
The low profit margin for contraceptives is often the reason they are not stocked by commercial outlets, or prioritized in a pull system, which is why we see the stock-outs in the first place (Capps, Qureshi, Israr and Sultan, 2012; Black, 1973). Therefore, it seems quite unlikely that the market will solve this anytime soon.
It is also important to note that stock-outs are common for a wide range of health commodities, not just contraception, and the market is also behind in solving these issues.

**Evaluating previous shifts to use IPM or other improved information and inventory management systems**

Below we list all of the countries, that we are aware of, that use IPM or other improved information and inventory management systems, and whether these shifts and improvements were made by NGOs, social enterprises, governments, or market forces.

- **Mozambique** – The Provincial Directorate of Health in Cabo Delgado recognized known barriers to the immunization supply chain and worked with a technical team of NGOs – VillageReach and the Community Development Foundation (FDC) – to design a five-year pilot project with an informed push system.
- **Senegal** – After the government committed to improve the modern contraception prevalence rate (mCPR) in Senegal, the Bill and Melinda Gates Foundation provided funding to NGO IntraHealth International to implement a shift towards an Informed Push Model for contraception, which has later been expanded to include other health commodities. This Informed Push Model also includes the use of third party logistics providers.
- **Kenya** – An improved information and inventory management system was set up by NGO KEMSA for 20 health commodities, which has now scaled up to over 250 commodities. KEMSA has now become a state corporation.
- **Benin** – The Ministry of Health recognized known barriers to the immunization supply chain and engaged a technical team, including Agence de Médecine Préventive (AMP), the HERMES Logistics Modeling Team, PATH, and Transaid, for system redesign to an Informed Push Model.
- **Nigeria** – The Minister of State for Health launched a vaccination transformation project which used NGOs as donors and implementers to switch to an Informed Push Model.
- **Tanzania** – Implementation of electronic logistics management information system led by USAID’s DELIVER and Supply Chain Management System programs ([USAID, 2016b](https://example.com)).
- **Togo** – Led by the government, a shift to an Informed Push Model for contraception seems to have been piloted in Togo through a public–private partnership in 2014. It is unclear whether this program was scaled up past the pilot stage ([Van de Weerdt, 2014](https://example.com)), though some sources note this shift as a success which suggests that it has been scaled further ([ARC, 2022; Ali, 2017](https://example.com)).
- **Zanzibar** – Advocacy efforts from NGO African Women Leaders Network for Reproductive Health and Family Planning encouraged the government to
strengthen the contraceptives supply and forecasting system (Advance Family Planning, 2015).

- **Zambia** – Improvements seemed to be led by the government (Cavallaro, 2016), but this is quite unclear.
- **Zimbabwe** – Zimbabwe Informed Push (ZIP) and other improvements to information and inventory management systems were led by USAID’s DELIVER Project for contraceptives, HIV prevention, diagnosis, and treatment commodities (including male and female condoms), tuberculosis drugs and laboratory supplies, malaria drugs, rapid diagnostics tests (RDTs), male circumcision commodities, and primary health care packages.

This list is purely illustrative, but it may suggest that it is unlikely that social enterprises or market forces will cause a shift towards fixing stock-outs, as we haven’t seen this in other countries (though they have been used – e.g., third party logistics providers – to help with the implementation). We also searched specifically for social-enterprise led IPM services and couldn’t find any.

## 9 Current gaps in the research

There are significant gaps in the availability of data on the numbers of contraceptives users, their demographics, their levels of information and their preferences. While there is some data about the procurement and availability of various methods of contraception across various levels of the supply chain, the data on the flow of goods and their distribution is scarce and incomplete. It is often hard to distinguish between several factors affecting the overall uptake of contraception – the sources and accuracy of information, social pressures and norms, availability and affordability of goods, administrative access, and medical barriers to access.

Studies indicate that inefficiencies in the supply chains have a significant impact on the availability of modern contraceptives, but current evidence is limited (Mukasa et al., 2017), making it hard to predict the likely effect improving supply chains would have on the use of various contraceptive methods.

## 10 Conclusion

Overall, we believe that fixing stock-outs of contraceptives through the last-mile
delivery is an idea worth recommending to future charity founders.

Last–mile delivery is a problem in many countries, leading to frequent stock–outs and increased difficulty in accessing contraception. Even in countries where other factors constrain the uptake of modern contraception, there is evidence to believe that many women already would access contraceptives if they were available. Studies show that reliable availability and a wide method mix offered further increases in the voluntary uptake of modern contraceptive methods.

By improving the capacity of staff at the end distribution points, additional demand generation work is enabled by offering access to information and counseling, helping even more women pick the right method for their own situation.

Even where other interventions are more effective at generating demand, there is little evidence to suggest that higher demand would be sufficient to generate better supply in the public sector. Other interventions targeting the demand generation can be complemented, and even enhanced, by the improvement of the last–mile delivery of contraception.

The lack of information availability and increased costs can be barriers towards the private market picking up the currently unmet demand. Private shops and clinics are often useful to broaden the reach of contraception, complementing and expanding public health services. Many women could access refilling their chosen method of contraception at nearby shops and pharmacies, lowering the costs of continuation of contraceptive methods.
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