

DUKE UNIVERSITY

Associations between HIV/AIDS funding activities and family planning efforts

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Spring 2012

Abstract

Thirty years since the onset of the HIV epidemic, the global community has achieved many significant milestones to combat the disease thanks to an unprecedented financial commitment for the cause. However, some argue that the disproportionately large disease-specific funding creates a parallel funding structure, which may hinder the necessary integration between different health agendas. One key issue is the lack of integration between HIV and family planning/reproductive health services. Despite the natural and substantive link, the existing literature suggests that the expansion of HIV program may be at the expense of critical family planning programs. This paper seeks to examine the claim that there may be a negative linkage between HIV/AIDS funding and family planning efforts. The author first observes the extent of family planning needs in countries with high HIV prevalence rates and finds that in ten countries worst hit by the epidemic, 1 in 4 women do not have access to contraceptives despite their desire to use contraception. The author then uses the difference-in-differences method to study the changes in Family Planning Efforts index (measured by the Futures Group) in 41 HIV-endemic countries by the amount of HIV aid received relative to each country's Gross National Income. These analyses repeatedly suggest that countries receiving a large sum of HIV aid relative to their national economy perform worse in family planning efforts over time compared to the countries receiving smaller sums of HIV aid. This paper also includes case studies of Uganda, Zimbabwe, and Vietnam to provide qualitative dimensions and to present policy implications. This is a preliminary research connecting HIV/AIDS funding and its effect on family planning efforts. Future research is critical to comprehensively understand the linkage between the two factors and to develop effective ways for integration.

Associations between HIV/AIDS funding activities and family planning efforts

The global HIV incidence rate has been on a decline since 1997. In 2009, 2.6 million people became newly infected compared to 3.2 million in 1997 (UNAIDS, 2010b). At the turn of the millennium, many pieces in the fight against HIV/AIDS began to solidify. Antiretroviral therapy can prolong the lives of people living with the infection almost to a normal lifespan, making HIV a chronic illness rather than an acute infection. Additionally, the evidence, though preliminary, that HIV-1 virus may have attenuated through a decrease in fitness suggests that today's HIV epidemic may be qualitatively different from when it began in the 1980s (Arien, Vanham, & Arts, 2007). Simultaneous to changing characteristics of the virus, consensus began to build around effective prevention methods such as increasing male circumcision and promoting voluntary counseling and testing (VCT). South Africa's CAPRISA research on microbicides provided a hope for an effective prevention method for sexually active women, a traditionally marginalized population in areas where negotiation for safe sex is difficult. HIV Prevention Trials Network (HPTN) found that early introduction of ARV therapy among serodiscordant couples can prevent transmission with a staggering 96% reduction. Furthermore, the international society increased solidarity in targeting the most at-risk populations such as men who have sex with men, injecting drug users, and sex workers as evidenced by the unanimously passed 2011 Political Declaration on HIV/AIDS (UNGA, 2011).

With these pieces coming together to strengthen the fight against the global HIV/AIDS epidemic, experts such as the UNAIDS regional director Madame Tlouⁱ, South Africa's Health Minister Motsoalediⁱⁱ, and PEPFAR Ambassador Goosby have declared that we can finally see the end of the tunnel. Amidst the high hopes of building an "AIDS-free generation" as Secretary of State Hillary Clinton saidⁱⁱⁱ, there still remains a significant issue to tackle: the gap between family planning (FP) and HIV/AIDS.

Increasingly, experts are identifying the lack of a synergic integration between HIV and family planning programs as a major gap in current strategies against the disease. Family planning is essential to HIV/AIDS on two levels: 1. preventing sexual transmission of HIV through barrier methods and 2. reducing the incidents of vertical transmission from mother to child by preventing unwanted pregnancies. In this paper, I seek to first provide an outline of family planning service availability and delivery in HIV/AIDS endemic countries. I then evaluate whether differing levels of HIV/AIDS funding are associated with changes in family planning efforts using the FPE index from Futures Group. I also examine three country-level case studies to present a qualitative angle for conceptualizing FP-HIV integration. Based on these analyses, I highlight policy implications and recommendations for key stakeholders.

Literature review

Benefits of Family Planning

“Sexual and reproductive health has less priority and has lost out to AIDS, as if addressing the one had no connection with addressing the other,” (Berer, 2003, p. 7)

The above quote refers to the general reduction in enthusiasm for advancing the reproductive health agenda in the world. The United Nations Population Fund also diagnosed that “family planning is now seriously underfunded,” (UNFPA, 2006). In addition to playing a crucial role in combating HIV/AIDS through barrier methods, family planning has many unique benefits. Maternal and infant mortality rates are high in many low- and middle-income countries at about 450 per 100,000 live births in 2005 (Stover & Ross, 2010). Reducing the incidents of unwanted birth is important given that unwanted pregnancies may lead to unsafe abortions, pregnancy complications, and other health risks, especially in areas with weak primary care infrastructure (Prata, 2007). Therefore, allowing population growth to reflect real fertility desire of a population improves maternal health by reducing unwanted pregnancies and optimizing birth spacing.

In the development discourse, low fertility has been linked to many economic benefits. In countries with limited family planning services, population growth can outpace and overwhelm economic progress. Having fewer children is linked to the wellbeing of the entire household unit by increasing allocation of life-saving healthcare expenditures for infants and also by increasing education attainment for each child even in low-income households (Eswaran, 2002). Amartya Sen (2000) has argued that women’s empowerment and access to family planning must go hand-in-hand. He writes, “there is a reason to expect that an increase of gender equity... would tend to lower fertility rates,” (Sen, 2000). Not only are women protected from the aforementioned risks of unnecessary pregnancies, having control over fertility decisions increases women’s autonomy and bargaining power.

Benefits of Integration

Before analyzing the relationship between HIV funding and FP efforts, I examine the benefits of integration from existing literature.

The two most common modes of HIV transmission are heterosexual intercourse (horizontal) and mother-to-child transmission (MTCT) during pregnancy, at birth and during breastfeeding (vertical). Contraceptives, specifically the barrier methods, are essential for preventing horizontal transmission of HIV as HIV is a sexually transmitted disease. For heterosexual intercourse among serodiscordant couples, condom use has an estimated 87% (95% CI: 60-96%) effectiveness rate in preventing transmission (Davis, 1999).

The probability of vertical transmission in the absence of antiretroviral therapy (ART) is about 25-30%. Vertical transmissions occur when HIV-positive women fail to receive prevention of

mother to child transmission (PMTCT) services in which family planning constitutes the second among four prongs of PMTCT. If a HIV/AIDS-positive woman seeks to bear children, providing antiretroviral drugs therapy (ART) during prenatal, labor, and postnatal periods can lower the risk of vertical transmission to around 1-2% (DITRAME, 1999; PETRA, 2002; RETRO-CI, 1999; Siegfried, 2011; Volmink, 2009). These groundbreaking results on the efficacy of antiretroviral drugs in

preventing MTCT (PMTCT) have garnered much support and popularity. When a couple wants to cease childbearing or space births, however, access to family planning services is essential. In resource-poor settings with limited availability of and access to ARVs, unwanted pregnancies for HIV-positive women involve too many risks. These marginalized regions typically face health worker shortage and absenteeism. Given that unattended childbirths bear greater risks of maternal mortality, providing contraceptives may result in a reduction in the number of AIDS orphans. HIV-positive women can safely use most modern contraceptive methods with condoms providing a dual protection. For serodiscordant couples, using other modern methods along with condoms is essential to ensure that they avoid transmission as well as unwanted pregnancies since modern methods deliver more accurate protection against conception. Preventing unwanted pregnancies, therefore, reduces the incidents of vertical transmission and maternal morbidity and mortality.

It is not surprising that there are many distinctive economic benefits to FP-HIV integration. In a multi-country study in sub-Saharan Africa, a 16% reduction in the number of unwanted pregnancies for mothers with HIV could yield a similar impact in public health as having a national program for providing Nevirapine (an antiretroviral drug) to pregnant mothers (Sweat et al, 2004). This further supports the argument that family planning must be a more integral part of PMTCT effort. Given that most modern contraceptives are cheaper than antiretroviral drugs, securing contraceptive access for people at-risk of contracting HIV/AIDS as well as those who are already HIV-positive is cost-effective.

Barroso presents a rights-based approach to integration by presenting that women are biologically and socially more vulnerable to HIV infection (Barroso, 2011). Connecting HIV/AIDS and family planning services is essential to alleviate social marginalization of women. If integrated services become the status-quo, HIV-positive women would not be discouraged from accessing family planning services and vice-versa. Without rights-based integration, health workers may make the mistake of denying reproductive rights of people living with HIV/AIDS because of the prevailing perception that people living with HIV/AIDS (PLWHA) must abstain from sex at all cost (Petruney 2011).

Four Prongs of PMTCT

1. Prevent women from contracting HIV
2. Provide reproductive health counseling and support to HIV-positive women
3. provide ART for pregnant women with HIV
4. Better integrate HIV care, treatment, and support

There exists a conflicting body of literature on whether people with HIV have lower fertility desires. Researchers have found that there may be general societal discouragement for HIV-positive women to conceive. In countries with a high sterilization rate for the overall population such as Thailand, sterilization for HIV-positive people upon finding their status is commonplace.

Regardless of changes in fertility desires with HIV serostatus, family planning must be available to all to enable them to exercise reproductive rights and to make their *own* fertility decisions void of societal and structural obstacles. In still many cases, the reproductive rights of HIV-positive individuals are not recognized as the disease is highly stigmatized and associated with sexual promiscuity. However, the HIV-infected individuals may be the very people who need reproductive health services and assistance the most as their actions can be directly linked to the wellbeing of the future generation. Family planning is critical to the physical and economic wellbeing of the women, family, and community.

Barriers to Integration

Both family planning and HIV/AIDS prevention and care services are critical and have a natural substantive link in that they both focus on sexual decision-making. One can imagine how the influx of HIV prevention and care funds could result in improved family planning services by strengthening delivery structures. In fact, in recent years, experts and advocates have been pushing for a smart integration between family planning and HIV/AIDS services. However, the current HIV and family planning programs have not yet tapped into the aforementioned benefits of such integration.

While it is uncertain whether the lack of integration is detrimental to either program, it seems that creating a disproportionately large disease-specific program may be at the deficit of other programs as a nation's health system is not readily expandable. Particularly for FP-HIV integration, researchers have identified imbalanced parallel funding streams and lack of resources (i.e. monetary funding) to integrate as key barriers (Petrunev, Harlan, Lanham, & Robinson, 2010; Windisch et al., 2011).

Parallel funding streams refer to the creation of disease-specific programs and the subsequent disease-specific funding streams. As HIV/AIDS funding grew worldwide, influential multilateral actors in global health such as UNAIDS and the Global Fund encouraged low-resource countries to create national AIDS commissions (NAC). These commissions are often given privilege over other departments in the national health system because of their connection with big donors. Additionally, NACs are often the only entities with the capacity to measure data and conduct evaluations, though their plans are generally devised by external consultants (Windisch et al, 2011. 165). For example, Windisch argues that disproportionate funding for HIV/AIDS in Burkina Faso may have resulted in brain drain of health officials and health policy experts from other departments to the well-funded National HIV/AIDS Commission.

Another reason for such disparity between HIV/AIDS and all other health programs (specifically family planning) is how stakeholders frame the issue. ARV provision is framed as a “crisis scenario” while reproductive health agendas are viewed as a “politics-as-usual scenario” (Windisch et al., 2011). With HIV/AIDS increasingly becoming treated as a chronic illness (as in South Africa and Swaziland), it is questionable whether such framing is warranted. When a certain disease is treated as a “crisis”, it would garner more funding and attention. However, the efforts to combat HIV should not come at the expense of other public health agendas, especially when those other programs are intimately linked to the main objective to curb the HIV epidemic.

Although the HIV epidemic is currently well-funded (at least better-funded than other health programs) through bilateral and multilateral channels, the programs are almost exclusively dependent on only a small subset of key donors, making the funding base rather volatile (Garrett, 2012). Nunnenkamp and Ohler challenge the effectiveness of the current HIV/AIDS funding system. They found that there may be little aid effectiveness proportional to the money given to HIV/AIDS. They conclude that while increase in donor activity resulted in better access to treatment—primarily driven by PEPFAR—“official development aid (ODA) has not reduced the number of people living with HIV,” (Nunnenkamp & Ohler, 2010). While this may be a result of people living longer with the disease, it begs the question of aid efficacy.

Currently, the evidence for parallel funding as a significant barrier to FP-HIV integration is based on qualitative surveys. Petruney et al’s 2011 study on stakeholders’ perceptions on using contraception as HIV prevention collects responses from 22 experts and policymakers in the world. Windisch et al’s 2011 survey of health system in Burkina Faso also refers to interviews with respondents and government officers. While there seems to be an overarching agreement on the parallel funding structure being the major hindrance to integration, there has not been a study that analyzes the effect that HIV-specific funding activities can have on family planning efforts. I hope to bridge that gap by comparing HIV official development aid amount with family planning effort using Futures Group’s composite index.

Data Collection and Methodology

1. Relationship between Family Planning and HIV/AIDS

Prior to comparing HIV funding to family planning efforts, it is beneficial to broadly examine the general availability of family planning services in HIV endemic countries. In order to map family planning and HIV/AIDS data together, I used the UN database, which combines data from multiple surveys such as the Demographic and Health Survey, Multiple Indicators Cluster Surveys (MICS), National Surveys on Family Planning, and National HIV/AIDS surveys. UNAIDS has HIV/AIDS data for every country in 2001 and 2009 and this time frame is often used to compare a country’s progress in combating the HIV epidemic. The 2001-2009 timeframe is useful because it envelops the time period when international funding for HIV soared.

The Demographic and Health Surveys, from which many international health data are measured, are conducted based on the country's own terms. For example, Bangladesh's latest DHS survey was conducted in 2007 while Chad's latest survey was conducted in 2004. Because of the lack of uniform time frame for national-level health surveys, it was difficult to find data points for family planning that accurately correspond to the chosen timeframe, 2001-2009. For that reason, I reviewed multiple survey datasets for family planning use and chose 30 countries out of 44 initial countries that have comparable data points to the 2001-2009 HIV data. The accurate match of the time frame varies with countries like Madagascar, which has FP data from 2000 and 2009 surveys, to Thailand with data points from 1997 and 2006. Nevertheless, given that the global family planning programs have been consistent particularly in the 80s and the early 90s and that HIV funding influx began in 2004, I assume that these datasets serve the purpose of examining family planning indicators pre- and post- the funding influx. For surveys conducted through a two-year span like Namibia's 2006/07 DHS data, I used the latter year.

2. Comparing Family Planning Efforts with HIV/AIDS ODA

After reviewing the general interaction in HIV/AIDS and FP trends, I looked specifically into the effect that HIV donor activities may have in family planning programs. Futures Group and USAID conduct periodic studies approximately every five years on family planning efforts and calculate the FPE index for 80 countries worldwide (Ross & Smith, 2010). They identify multiple stakeholders in each country to measure their perceived family planning effort. The index utilizes 31 variables, which are then combined into four composite variables: Policy, Service, Evaluation, and Access. These four components are then averaged to yield the total family planning efforts score. The "Services" component is comprised of the following indicators: strength of community-based distribution, social marketing, training program, and involvement of other private and civil actors. The "Policies" component examines factors such as: policy on fertility, political willingness as judged by favorable statements, advertising, and domestic funding. The "Access" component measures access to six different contraceptives as well as access to safe abortion. "Evaluation" simply measures the strength of record keeping and evaluation programs in family planning agency.

I acquired the data for 1999 and 2009 FPE index as well as component values from direct communication with the Futures Group. There are 68 countries for which both 1999 and 2009 data are available. These countries have varying degrees of HIV/AIDS prevalence rates using the 2004 data ranging from no evidence of HIV epidemic to matured epidemic (UNAIDS, 2004).

Currently, there is not a consensus on what level of HIV prevalence constitutes a significant HIV epidemic. Scholars have classified prevalence rate greater than 1% of the total population as being "generalized" and prevalence rate less than 1% as being "concentrated" (Wilson, 2006). Nunnencamp and Ohler used the >1% cutoff for their difference-in-differences analysis of HIV/AIDS funding and HIV/AIDS related variables. Using this, I can narrow down my countries of HIV prevalence to 30. However, in doing so, I would eliminate India with a 0.9% adult prevalence rate and HIV-positive population of 5 million in 2004. I would also eliminate

Vietnam with a 0.4% adult prevalence rate, which has become a PEPFAR focus country in 2004. Despite a low prevalence rate, the number of HIV-positive individuals in India is equivalent to the number of HIV-positive persons in South Africa, arguably the country hardest-hit by HIV. The epidemic is also gradually surfacing in regions of Southeast Asia and Eastern Europe. Therefore, it is valuable to use the conservative cutoff of 0.4% to broaden the scope of the research to study the trend globally. Using the 0.4% cutoff rate yields 42 countries.

I collected official development aid (ODA) data from the OECD Creditor's Reporting System (CRS), which reports bilateral and multilateral ODA to each country. These data are compiled in OECD's QWIDS (Query Wizard for International Development Statistics) website. To focus specifically on funds that go directly to target HIV/AIDS, I used two categories: 2. STD control including HIV/AIDS and 2. social mitigation of HIV/AIDS. The two categories allow me to track funding for "all activities related to sexually transmitted diseases and HIV/AIDS control, e.g., information, education and communication, testing, prevention, treatment and care" and for "special programs to address the consequences of HIV/AIDS, e.g. social, legal and economic assistance to people living with HIV/AIDS" (DAC, 2009).

It is difficult to compare ODA data in absolute values since countries have varying needs for HIV/AIDS funding. Therefore, I proceeded to calculate HIV funding per person living with HIV/AIDS using the UNAIDS' 2004 data for adults population with HIV (PLWHA). However, there were a few problems with this parameter. Calculating "HIV funding per PLWHA during 2002-2008" indicated that Tajikistan received the most funding per PLWHA because they received more than \$22 million over the course of 6 years for 200 reported HIV-infected individuals. Turkmenistan, Kyrgyzstan, and Nicaragua also ranked high while South Africa, the biggest recipient of US's bilateral aid, was among the bottom 10 countries. This may be due to some baseline cost of having a national HIV/AIDS program regardless of the number of infected individuals. Maintaining a strong bilateral partnership with these countries may also serve the United States' diplomatic interests. Regardless of the reasons, using this parameter was not relevant to my research objective.

To solve this problem while still contextualizing the amount of ODA, I realized that it may be more relevant to study the amount of HIV-specific funding in relation to the country's economy. Regardless of the level of the HIV epidemic, countries may be more or less influenced by the amount of HIV-specific funding proportional to their economies. For example, Malawi received almost \$800 million HIV-specific foreign aid from 2002-2008. During those six years, its combined Gross National Income was \$20.2 billion current USD. Therefore, the HIV funding was equivalent to 2.64 % of its GNI during that time. This parameter contextualizes the amount of HIV funding in relation to the country's overall GNI and allows viewers to understand the significance of the funding amount in terms of the influence it can have on recipient governments. Appendix I shows how the figures compare for 41 countries with adult HIV prevalence rate of 0.4% or above.^{iv}

In addition to looking at HIV/AIDS ODA collectively, I also analyzed family planning effort using the PEPFAR focus countries as a “treatment” group. I chose the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) as it is an unprecedented effort from a single nation to combat a single disease. There has been nothing like PEPFAR before and since. PEPFAR began under the George Bush administration as a response to the international call for the United States to take leadership in fighting HIV/AIDS. In 2009, PEPFAR claimed to work in 88 countries. However, some countries receive bilateral support while others benefit from the overarching regional programs. For these reasons, I decided to limit my treatment group to the 15 focus countries, 11 for which I had FPE data.

In order to compare family planning efforts for both HIV ODA as a whole and PEPFAR funding specifically, I used the difference-in-differences method. Difference-in-differences (DID) is a quasi experimental method that is most commonly used to evaluate the effect of a treatment in a given time period. It compares two groups (control and treatment) over two periods of time (pre- and post-treatment) to account for time difference as well as the difference within two groups. I found the DID method to be especially valuable in measuring the possible association between HIV funding and Family Planning Effort Index because of its ability to broadly measure the association while eliminating the time variable.

A key limitation with this method is that it assumes that both treatment and control have the same exact characteristics and that they would have had identical change over time in the absence of treatment. The 41 countries in this study exhibit a vastly different set of characteristics such as geographical regions, political system, degree of HIV/AIDS epidemic, and maternal health indicators. However, any resulting patterns from DID analysis would be important precisely because they would suggest the existence of certain associations in spite of these varying characteristics.

Additionally, I provide qualitative case studies for Uganda, Vietnam and Zimbabwe to supplement the aforementioned shortcomings associated with aggregate analysis.

Data analysis and Findings

Mapping family planning and HIV/AIDS status

Unmet need for contraception in HIV prevalent countries can undermine the PMTCT effort since securing access to family planning services for all women is the 2nd prong in the four pronged approach to PMTCT (UNICEF, 2010). Unmet need is defined as the gap between women’s reproductive intentions and their contraceptive behavior. UNFPA calculates unmet need for family planning as below^v.

$$\text{Unmet need for family planning for limiting births} = \frac{\text{Women (married or in consensual union) who are pregnant or amenorrheic and whose pregnancies were unwanted} + \text{fecund women who desire to stop childbearing and who are not using a contraceptive method}}{\text{Total number of women of reproductive age (15-49) who are married or in consensual union}} \times 100$$

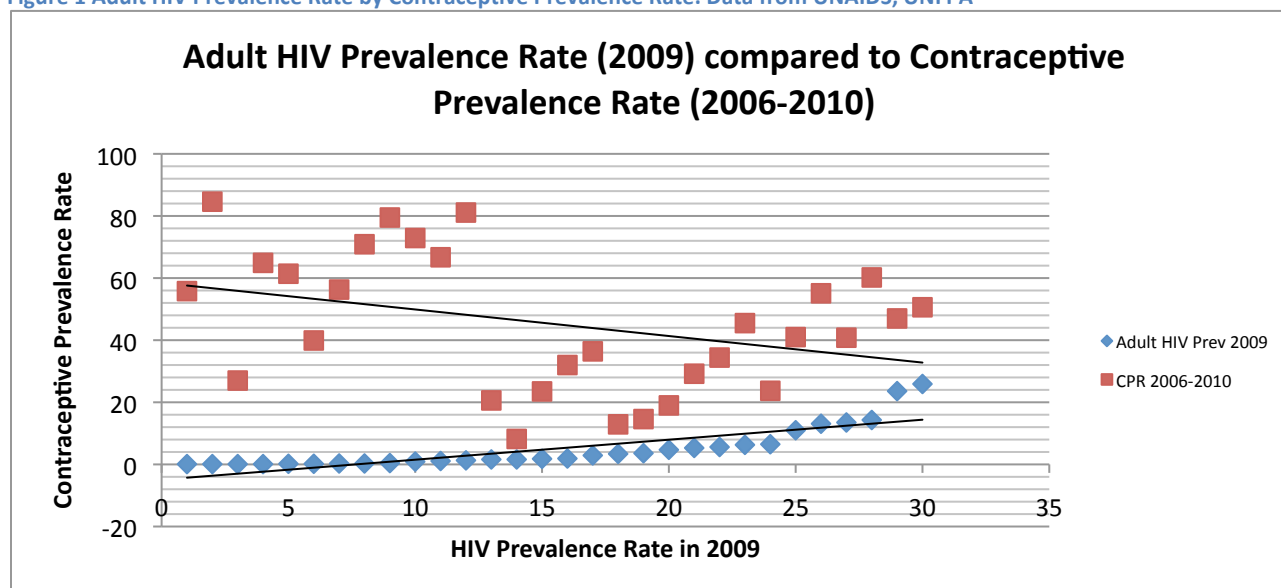
Table 1 shows that the ten countries with the highest adult HIV prevalence rate have an unmet average need for contraception of approximately 25%. This means a quarter of women living in these countries do not have access to contraceptives despite their desire to use contraception.

Table 1. Contraceptive Prevalence Rates and Unmet Needs in ten countries with high HIV prevalence rates. Data from UNPD^{vi}

		Adult HIV Prevalence rate in 2009 (%)	Contraceptive Prevalence Rate (Women ages 15-49, married or union, 2003-2009) All CPR (modern)	Unmet need for Contraception (women ages 15-49, married or in union 2004-2009)
1	Swaziland	25.90	51% (46.8%)	24%
2	Botswana	24.80	53%	-
3	Lesotho	23.60	47% (45.6%)	31%
4	South Africa	17.80	60% (59.8%)	14%
5	Zimbabwe	14.30	60% (57.9%)	13%
6	Zambia	13.50	40.8% (26.5%)	27%
7	Namibia	13.10	55% (45.7%)	21%
8	Mozambique	11.50	16% (11.8%)	18%
9	Malawi	11.00	41% (38.4%)	28%
10	Uganda	6.50	24% (17.9%)	41%

Figure 1 is a graph plotting Adult HIV Prevalence Rate in 2009 by contraceptive prevalence rate (CPR) in comparable years for 30 countries for which international data was available. As a general trend, the countries with low levels of HIV prevalence had greater CPR than countries with higher level of HIV prevalence. The trend line shows a weak negative slope for CPR as corresponding adult HIV prevalence rates increase. See Appendix II for data.

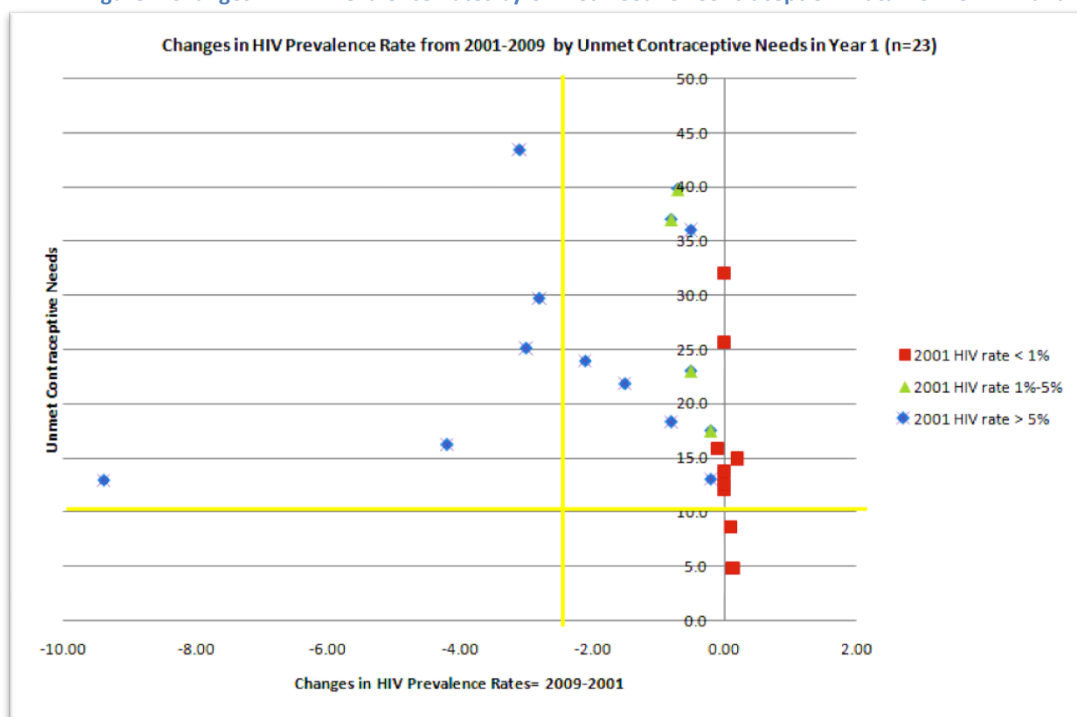
Figure 1 Adult HIV Prevalence Rate by Contraceptive Prevalence Rate. Data from UNAIDS, UNFPA



Graphing the change in adult HIV prevalence rates between 2001 and 2009 by unmet need for contraception in year 1 for 24 countries yields the below graph (see Appendix III for data). I divided the 24 countries into three groups according to their initial HIV prevalence rate: High prevalence (adult HIV rate greater than 5%), Moderate prevalence (adult HIV rate between 1% and 5%), Low prevalence (adult HIV rate less than 1%). I then divided the countries by their unmet need: Low unmet need (below 10%) and Moderate/High unmet need (above 10%). I chose 10% as the cutoff using unmet contraceptive needs in the United States as an anchoring point (Moreland, Smith, & Sharma, 2010). Also, I chose -2.5 as a cutoff point for change in HIV prevalence rate, calculated by subtracting 2001 rate from 2009 rate. Using these cutoff points allows me to study the graph in four quadrants.

Countries in Q1 have medium to high unmet contraceptive needs with little or no change in HIV prevalence during the given time period. These are countries in Latin America, Asia, and the Middle East with a small scale HIV epidemic and varying levels of family planning services. Q2 shows five countries that have experienced a moderate to high reduction in HIV prevalence rate from 2001 to 2009 and also display high levels of unmet needs for contraception. The far left point represents Zimbabwe with a significant reduction in HIV prevalence rate and a moderate level of unmet contraceptive needs. The top most data point represents Cote d'Ivoire with a high unmet need for contraception and moderate decrease in HIV prevalence rate. Looking at the graph as a whole, all countries with high initial adult HIV prevalence rate (represented by blue diamonds) have moderate to high unmet need for contraception while most countries with low initial adult HIV prevalence rate (represented by red squares) have low to moderate unmet need.

Figure 2 Changes in HIV Prevalence Rates by Unmet Need for Contraception. Data from UNFPA and UNAIDS



Comparing HIV funding and family planning efforts

I. Difference-in-Differences Analysis using high HIV ODA:GNI ratio as “treatment”

In order to study the effect of HIV official development aid broadly on family planning efforts for 41 countries with adult HIV prevalence of 0.4% or higher, I divided the HIV ODA / GNI in 2002-2008 parameter into three levels. The levels are: 11 countries where HIV ODA is equivalent to >0.5% of their GNI, 13 countries where HIV ODA is equivalent to 0.1 - 0.5% of their GNI, and 17 countries where HIV ODA is equivalent to less than 0.1% of their GNI. Countries with the highest level of ODA relative to their GNI would be in the “treatment” group. I then compared this with Family Planning Effort Index from 1999 and 2009. Since the time period for FPE index envelops 2002-2008, I assume that we can observe the effect of different ODA level prior to and after the studied time period. I calculated the DID for Total FPE index as well as the four component indices: policies, services, evaluation, access.

Figure 3 Changes in FPE Index between 1999 and 2009 by different levels of HIV official development aid for 41 countries with HIV prevalence rate of or above 0.4% (See Appendix IV for numerical chart)

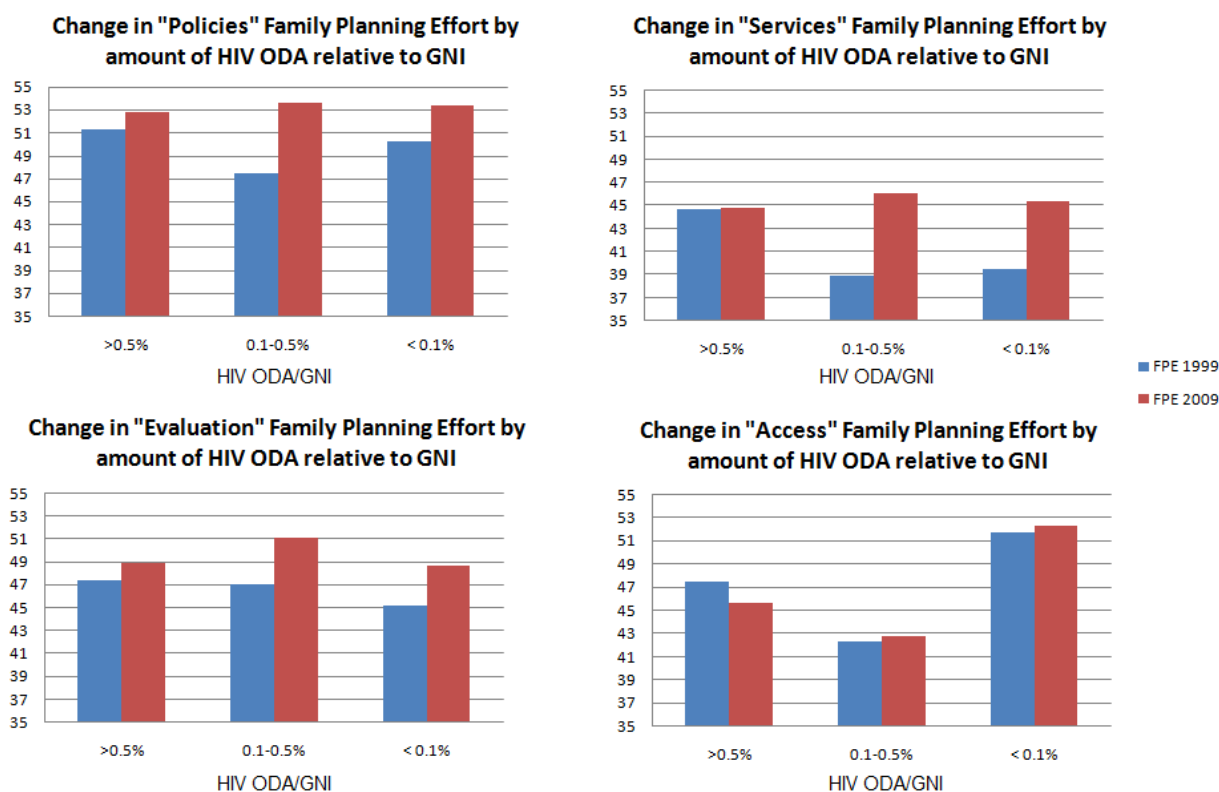


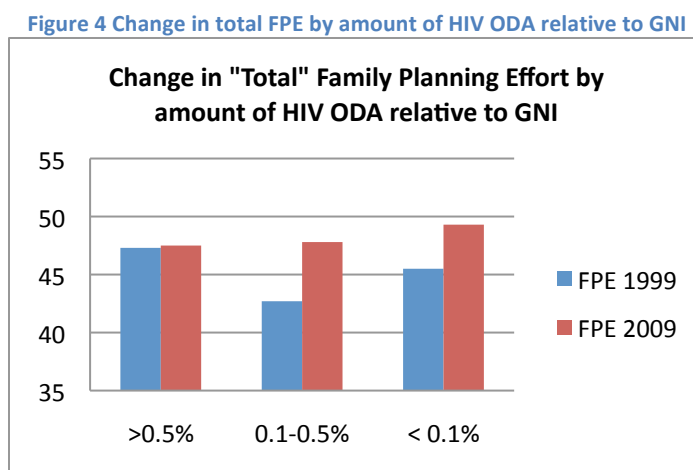
Table 2 DID between high-ODA group and low-ODA group & Family Planning Effort index

DID between >0.5% group and <0.1% group				
Total	Policies	Services	Access	Evaluation
3.66	1.7	5.7	2.5	2

In order to calculate the difference-in-differences measurements, one must compare the change in values from 1999 to 2009 in both control group and treatment group and calculate the difference of the two differences. For example, the low ODA/GNI group (<0.1%) increased its “Access” effort by 5.8 points while the high ODA/GNI group (>0.5%) increased the same effort by 0.1 points. Therefore, the DID is 5.7 as shown in Table 2. Given that the highest score the selected set of countries got was 71.1 for the Total FPE index and 73.8 – 77.8 for each component in 2009 and that the average hover around 45 for these scores, the difference-in-differences results are notable.

One significant finding from this DID analysis is that the high-ODA group - which received the most amount of HIV ODA disbursement compared to their GNI - consistently experienced a *lesser* degree of improvement in all components of family planning effort than the groups with moderate or low amount of HIV ODA relative to their GNI.

The difference was especially striking when examining the services and policies components. Table 2 shows that the difference-in-differences measure is the greatest concerning the “Services” component. While that is notable, the ending figures equalized across all three groups for Services. The “Access” component, on the other hand, shows a greater contrast in 2009 as the high HIV ODA recipients actually experienced a slight decrease while the reverse is true for the moderate and low ODA groups.



Overall, the total family planning effort of all three groups increased from 1999 to 2009 (Figure 4). However, the high ODA group experienced an incremental growth compared to the significant growths in the moderate and the low ODA groups. Looking at the graph below, it is notable that the groups that received moderate and low HIV funding relative to their GNIs *had initially scored lower* in their family planning effort compared to high funding group in 1999. The bottom two groups not only improved considerably more than the high funding group, they both exceeded the high funding group in 2009. Not only was the rate of growth greater for the bottom two groups (control groups), but they were able to match or even trump the high ODA group despite having significantly lower initial starting points in 1999. If we consider that

funding for health agendas other than HIV/malaria/TB had plateaued during the period from 1999 to 2009, the increase in family planning effort in these HIV endemic countries is incredible.

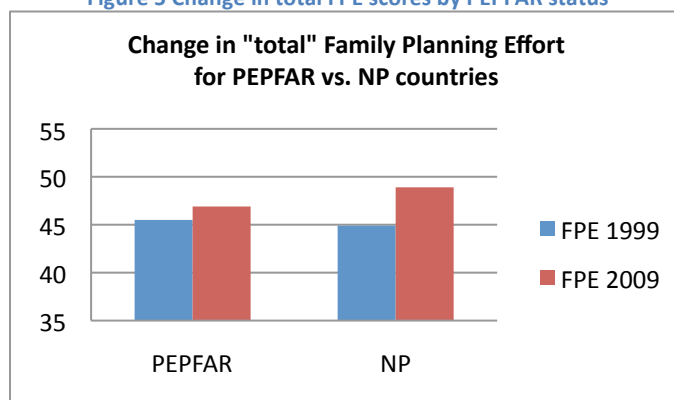
II. Difference-in-differences Analysis for PEPFAR focus countries

Next, I analyzed the same set of countries using PEPFAR focus country status as “treatment”. Of 41 original set of countries, 30 were non-PEPFAR (NP) countries and 11 were PEPFAR focus countries. As mentioned in the methodology section, PEPFAR is an unprecedented HIV funding scheme that began in 2003. Most of its funding goes to providing antiretroviral treatment with great success, supplying life-saving ARVs to more than 3.2 million people as of September 2010 (PEPFAR 2010 Operational Plan). In Appendix VII, we can see that all PEPFAR countries received a substantial amount of official development aid for HIV/AIDS from 2002 to 2008. Cote d’Ivoire and Vietnam received around \$230 million USD while countries like Nigeria and South Africa received well over one billion USD in ODA. Most of these ODA disbursement amounts can be accounted for almost entirely by PEPFAR commitments. It is astonishing that a single country’s bilateral contribution can account for almost all of international funding directed at HIV in some countries.

According to the 2010 Operational Plan, PEPFAR works in many program areas, such as prevention of sexual transmission, biomedical prevention, orphaned and vulnerable children (OVC) care, and health system strengthening (PEPFAR, 2011). Because of this variety of areas that PEPFAR operates in, there is reason to believe that influx of PEPFAR funding may have spillover effects on other health programs.

However, the difference-in-differences analysis reveals that PEPFAR countries did not perform better than NP countries in family planning effort despite the intimate and clear linkage between two issues. The graph below shows that NP countries have experienced a greater increase in the total family planning efforts from 1999 to 2009 than PEPFAR countries. Consistent with the previous section, non-PEPFAR countries had initially scored lower than PEPFAR countries in 1999, but the NP countries improved their effort significantly and exceeded the PEPFAR countries’ total FPE scores in 2009.

Figure 5 Change in total FPE scores by PEPFAR status



A closer look at the four components shows a bit more varied results of this analysis.

Table 3 DID results for FPE and PEPFAR status

DID between PEPFAR and non-PEPFAR countries				
Total	Policies	Services	Access	Evaluation
2.65	-0.9	5.2	3.8	-2.2

The difference is decidedly greater in “Services” and “Access” components, favoring the non-PEPFAR control group. PEPFAR countries actually experienced a reduction in effort in providing access to family planning. In contrast, PEPFAR countries seem to have improved the “Evaluation” component better than non-PEPFAR countries and slightly better in the “Policies” component as well. For policy and evaluation components, both treatment and control groups ended at similar scores in 2009. Therefore, their effort in the two components equalized overtime.

However, this equalizing pattern can be attributed to dramatic gains in family planning effort by a few countries, as evidenced in Appendix VII. Aside from Vietnam, PEPFAR countries did not experience significant gains in family planning effort. Instead, countries like Tanzania, Uganda, and Nigeria experienced a significant reduction (greater than 10 points) in FPE. The DID results supporting the treatment group (mostly in Policies and Evaluations), therefore, may be largely driven by the large improvement in family planning effort in Vietnam. Total FPE scores show an increase of 48.81 points from 28.31 in 1999 to 71.12 in 2009. I will highlight Vietnam’s case in the latter section to explain how the family planning agenda was able to coexist with the HIV/AIDS agenda.

Figure 6 Changes in FPE Index between 1999 and 2009 by PEPFAR status: 11 PEPFAR focus countries vs. 30 non-PEPFAR

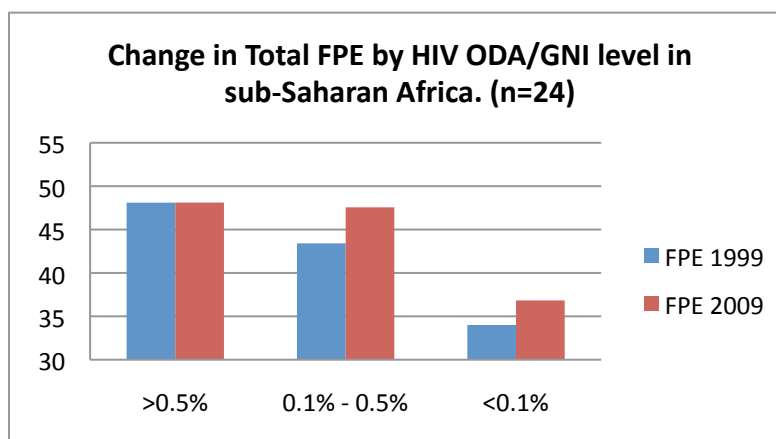


III. Difference-in-Differences Analysis for sub-Saharan African countries

I also conducted the difference-in-differences analysis for sub-Saharan African countries to test the sensitivity of the previous two analyses. Out of 41 countries with adult HIV prevalence rate higher than 0.4%, 24 countries were sub-Saharan African countries. This analysis is valuable because the region shares the greatest burden of the epidemic with about 5% of adult prevalence rate, amounting to over 22.5 million people living with HIV (UNAIDS, 2010a). Because of this high disease burden, sub-Saharan Africa receives the bulk of ODA designated for HIV/AIDS. In 2010, for example, over \$4.352 billion USD flowed into sub-Saharan Africa while South America, North/Central America, and Asia received \$64 million, \$255 million, and \$679 million respectively (Appendix VIII).

Appendix VI shows the difference-in-differences calculation for 24 countries in sub-Saharan Africa. Again, the countries that received the highest amount of HIV ODA (equal to or greater than 0.5% of their Gross National Income) consistently show a stagnation and/or reduction in their family planning efforts from 1999 to 2009. For Total FPE index, the high-ODA group only experienced an incremental growth of 0.01 while the moderate- to low-ODA groups experienced 4.15 to 2.83 growths respectively. The moderate and low ODA groups had lower FPE scores in 1999, but contrary to the previous two analyses, these groups' growths were not enough to exceed the family planning effort of high ODA group in 2009.

Figure 7 Change in total FPE by HIV ODA/GNI in sub-Saharan Africa



It is important to note, however, that the low-ODA group had a weak family planning infrastructure to begin with, as manifested by its average total FPE in 1999, which is more than 10 points below the averages of the other two groups. While the DID analysis favors the moderate and low groups and these control groups did experience greater improvement in family planning effort, the results suggest that for countries in sub-Saharan Africa with weak infrastructures, a dramatic increase in family planning effort is improbable without concurrent increase in domestic stabilization and inflow of funding for overall public health infrastructure. Also, the notable improvements in the moderate- and low-ODA groups may suggest that family

planning efforts may eventually reach a plateau as countries seem to improve their family planning programs to a certain threshold, thereby equalizing their family planning effort level.

Looking at the four component indices separately, it is interesting that there does not seem to be a single component in which the high-ODA group excels over the other two groups. The DID result for “services” component is negative, but that is based on the considerable decline experienced by the low-ODA group rather than by increase in services in the treatment group. In fact, both groups declined to varying degrees for services while the moderate-group improved significantly.

Figure 8 Changes in FPE index between 1999 and 2009 by HIV ODA/GNI: Sub-Saharan African countries

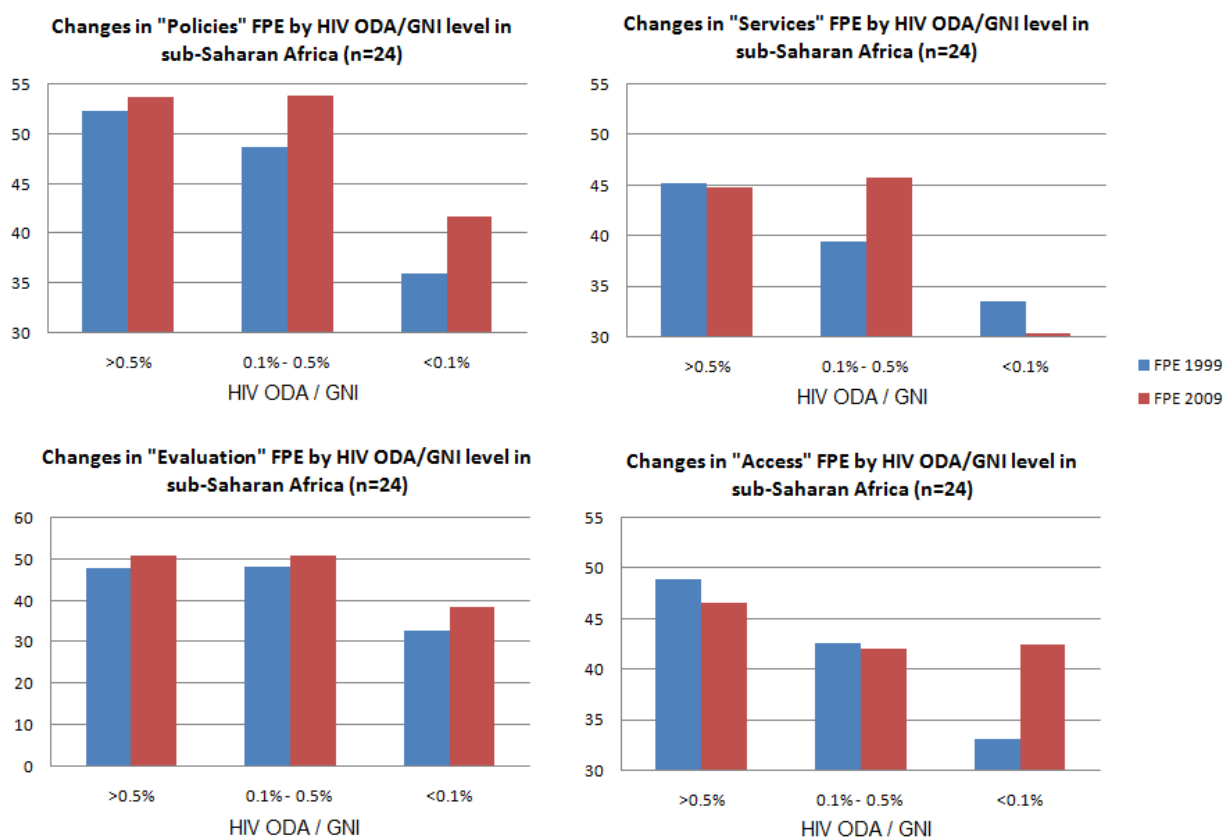


Table 4 DID results for sub-Saharan African group

DID between >0.5% group and <0.1% group				
Total	Policies	Services	Access	Evaluation
2.82	4.42	-2.77	11.62	2.85

The large DID result in “Access” is notable. The low-ODA/GNI group increased its effort to provide access to FP by about 10 points over the 10 year span while the other two groups decreased its access efforts. Overall, DID analysis of sub-Saharan African countries is consistent

with the results from comparing ODA/GNI in all 41 countries as well as using PEPFAR/NP groups.

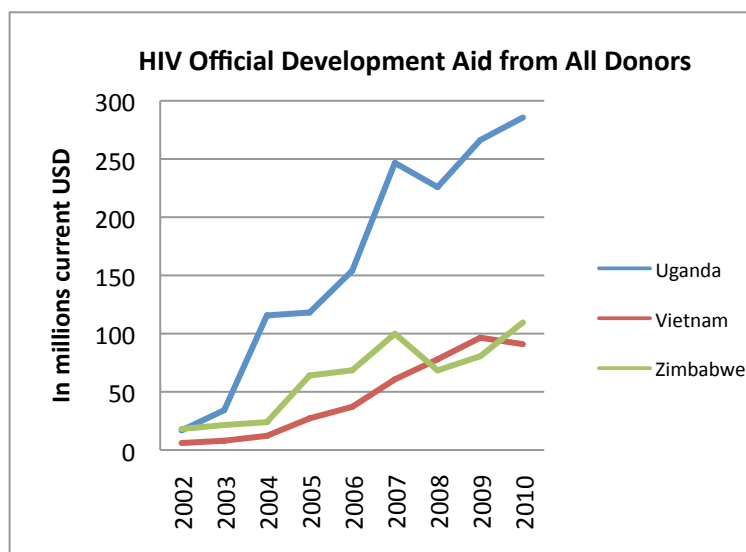
Taking several difference-in-differences measurements between Family Planning Effort Index and HIV funding consistently suggested that recipient countries with a high level of HIV funding do not perform *better* than countries with lesser HIV funding on family planning efforts. In fact, they **consistently show stagnant or worsening trend** in their family planning programs. My quantitative assessment using the DID method provides additional support for the qualitative findings from the existing literature that disease-specific, parallel funding streams seem to act as a barrier to integration between HIV services and family planning services.

Case studies: Uganda, Vietnam, Zimbabwe

To supplement the above section on difference-in-differences method, I chose three countries to observe their HIV/AIDS and family planning trends, policies, and funding directions. The three countries are Uganda, Vietnam, and Zimbabwe.

Uganda is chosen as a country which has had a great success in responding to HIV/AIDS during the early phase of the epidemic but is now experiencing a reversal in its HIV trend. HIV prevalence among antenatal care attendees have moderately increased since 2003 (UNAIDS, 2010b). Additionally, Uganda's family planning programs lack strong agency and political will. Most of family planning use is confined to male condom usage, which has previously been

Figure 9 HIV ODA for three countries



endorsed and instituted as a prevention tool for HIV/AIDS. **Zimbabwe** is studied for its exceptional performance in family planning using community-based health outreach in the 1990s. The National FP program is well-established and supported. Zimbabwe displays some level of integration between HIV/AIDS and family planning, especially when pertaining to PMTCT coverage in well-established antenatal care system. However, there has not been a rigorous focus on integration. **Vietnam** exhibits both qualities of Uganda and Zimbabwe in that it has an exceptional state-led family planning program and a well-functioning HIV/AIDS programs. However, Vietnam's HIV epidemic is qualitatively different from Uganda and Zimbabwe's because of the scale and timing of the outbreak.

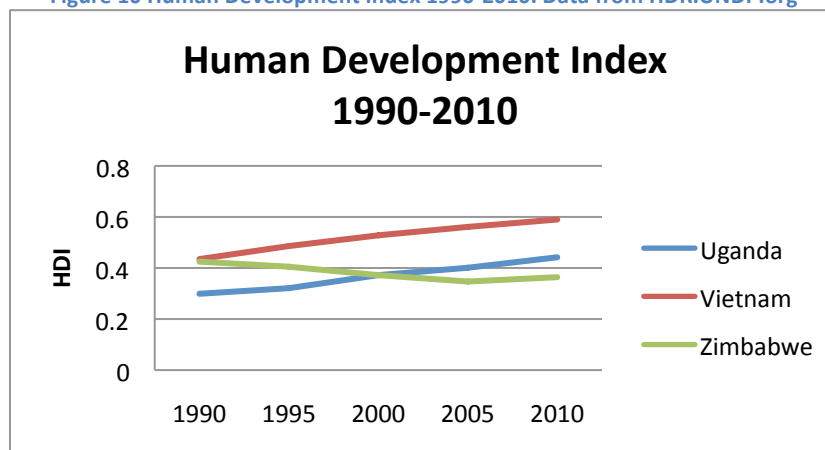
All three countries receive substantial international funding for HIV-specific programs (Figure 9). Uganda and Vietnam are PEPFAR focus countries. Therefore, most of their HIV ODA comes from the United States through different state departments and programs. While the United States is the largest bilateral donor for overall ODA in Zimbabwe, its HIV funding comes primarily from the Global Fund, which contributed about 46% of Zimbabwe's total HIV ODA in 2010 (OECD data). The United Kingdom's Department for International Development (DFID) is also a key player.

I used International Human Development Indicators to compare the three countries side-by-side and to provide additional context. Developed in 1990 by Mahbubul Haq and Amartya Sen, the Human Development Index "measures the average achievements in a country in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living" (UNDP Human Development Reports). In addition to defining development as level of income and rate of economic growth, HDI surveys multiple dimensions of human life that affect wellbeing. Table 5 presents the breakdown of each dimension per country from the 2011 Report and Figure 10 presents each country's HDI trend from 1990 to 2010.

Table 5 2011 Human Development Index by Indicators

	HDI Rank	Development Category	HDI Value	Non-income HID Value	Health index	Income index	Gender inequality index
Uganda	161	Low	0.446	0.506	0.538	0.347	0.577
Vietnam	128	Medium	0.593	0.510	0.870	0.478	0.305
Zimbabwe	173	Low	0.376	0.526	0.495	0.19	0.583
World Average	N= 187		0.682	0.683			0.492

Figure 10 Human Development Index 1990-2010. Data from HDR.UNDP.org



Based on the above indicators, I conclude that Vietnam, Uganda, and Zimbabwe are unique and that studying them would yield valuable findings on potential benefits and obstacles of integrating family planning and HIV/AIDS services.

Uganda:

Trends in the HIV/AIDS Epidemic and Existing Service Framework

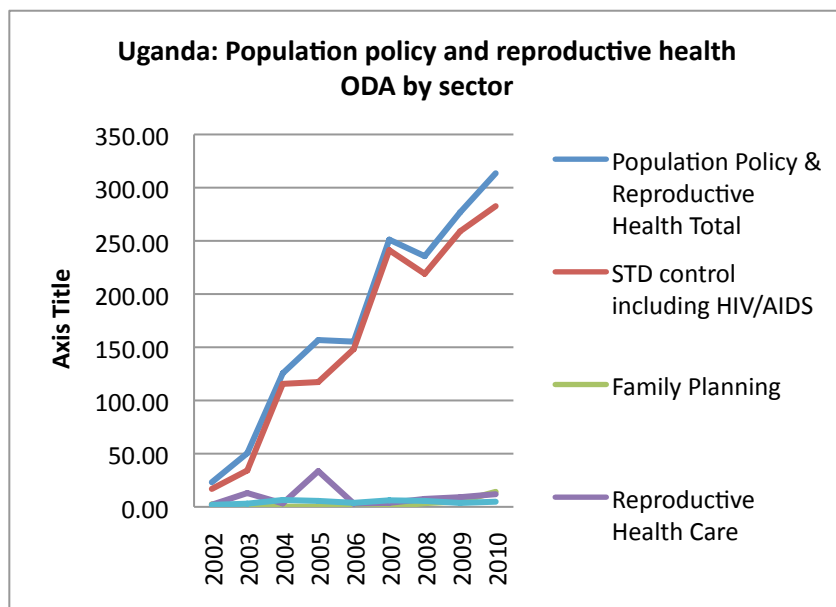
Uganda is one of the earliest countries to be severely affected by AIDS. It is also known as one of the first success stories in combating the disease, thanks to its innovative responses to the epidemic during the early years. The openness and frankness in information dissemination brought forth an unprecedented behavior change in HIV prevention (Low-Beer & Stoneburner 2003; Albright & Kawooya, 2005). As a result, the government, with the help of international donors, managed to turn around the epidemic. Uganda's epidemic peaked in 1991 at around 15% but soon experienced a dramatic decrease with the prevalence rate reaching 5% in 2000 (USAID, 2002). While Uganda has successfully reduced the HIV prevalence rate since 1991, there is evidence that the HIV epidemic in Uganda has been stagnant, if not worsening, since 2002. The Uganda AIDS Commission argues that the recent decline may be attributed to the "phasing out of 'zero grazing' and other partner reduction/fidelity-focused campaigns of the late 1980s. It may also signal declines in political commitment and practice of self-protective behaviors in the general population," (UAC, 2007). Additionally, Uganda's HIV/AIDS program is heavily dependent on donor countries and entities, with the public investment for HIV accounting for a mere 15% of total HIV spending.

In 2009, an estimated 1.2 million people were HIV-positive and the prevalence rate among adults was 6.5%. 610,000 were women aged 15 and up and 150,000 children were also infected. HIV devastated many families, resulting in 120,000 to 150,000 (UNAIDS and WHO 2008) orphans aged 0 to 17. Over 100,000 new infections take place annually and vertical transmission from mother to child account for 22% of all new cases.

HIV Funding vs. Family Planning Funding

Studying the international funding for reproductive health and population policy in Uganda, one can easily locate the discrepancy between funding for HIV/AIDS and funding for all other reproductive health programs. Table 6 shows the international funding data from 2002 to 2010 as found in OECD QWIDS system. From 2002 to 2010, HIV/AIDS funding increased by 16 folds while funding for family planning increased by 7 fold. Not only is there a stark contrast in the

Figure 11 ODA data for Population Policy and Reproductive Health in Uganda



rate of increase, the resulting amount of aid in 2010 is 282.63 million USD for HIV/AIDS and 14.13 million USD for family planning.

Table 6 Uganda's reproductive health ODA by purpose. Data from OECD QWIDS

ODA in millions USD	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Population Policy & Reproductive Health	23.12	50.42	125.55	156.78	155.29	251.16	235.61	276.89	313.53
STD control including HIV/AIDS	16.86	34.22	115.61	117.29	148.28	241.26	219.03	259.02	282.63
Family Planning	2.39	0.23	0.18	0.28	0.12	..	3.50	5.07	14.13
Reproductive Health Care	1.99	12.97	3.28	33.60	3.11	3.75	7.47	9.09	11.93
Pop. policy and admin. management	1.88	3.01	6.47	5.60	3.78	6.15	5.59	3.68	4.85

Using the OECD QWIDS data source, I plotted the amount of official development aid for HIV/AIDS and all other reproductive health agendas in Figure 11. The dark blue line represents the total amount of aid disbursed for population policy and reproductive health in Uganda. The light blue line that follows closely to the ever-increasing ODA for reproductive health is funding for HIV/AIDS. However, all other programs have experienced minimal growth over the last ten years.

In addition to the large amount of official development aid for health that Uganda receives, it is important to look at the percentage of Uganda's total health expenditure (THE) is from external sources. According to the World Health Organization, external resources on health constituted 25.9% of THE in 2010. The percentage of external resources for Ugandan health has remained about the same since 1997 with the peak year being 2005, reaching 31% sourced through external funding (WHO, 2012). While the government also contributes comparable amount to health expenditures, Uganda's dependence on foreign funding may limit the country's ability to negotiate with the funders on certain policy issues.

Shortcomings in Family Planning Service Provision

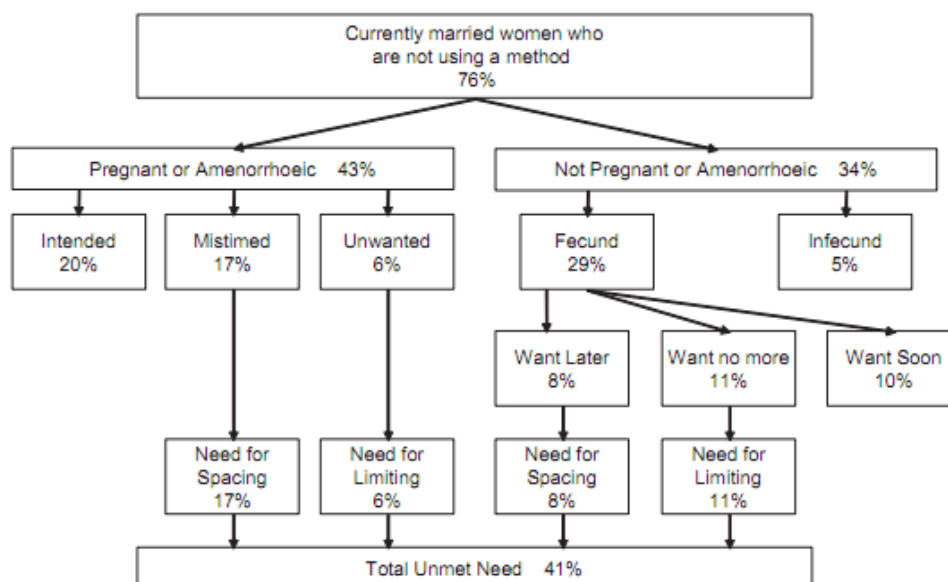
Uganda is one of the few countries worldwide where the total fertility rate has not had a significant decline in recent years. In 2009, the fertility rate was at 6.25 births per woman, a slight decline from 7.1 births in 1969. Fertility rates were even higher in rural areas at 7.4 births on average. Fertility desire is high in Uganda as manifested by its steadily high fertility rate. High under-5 mortality and low life expectancy generally factor into this desire along with societal expectation for women to have children. Age, marital status, and previous experience with child death are also closely related to an infected person's fertility intentions (Kakaire et al, 2010). Studies in Uganda confirm the prevailing desire to have more children regardless of HIV serostatus. Many men and women contract HIV during their prime reproductive age (18-49).

HIV prevalence rate is highest among women aged 30-34 (Ministry of Health and Micro International, 2006). Nakayiwa et al's cross-sectional study of 1,092 HIV infected men and women in Jinja, Uganda found that 18% of those surveyed desired more children. Men were four times more likely to express fertility desire than the women at 27% and 7% respectively. In another survey, 23% of HIV positive men had further fertility desires compared to 19% of women (Wanyenze et al, 2011).

While there is evidence for fertility desires in the general population, there is an increasing demand for contraceptives to limit the number of children as evidenced by high unmet need for contraception. The 2006 Ugandan Demographic Health Survey reports the contraceptive prevalence rate at 23.7% for all methods and a mere 17.9% for modern methods. Only 42% of women had ever used contraceptives and the unmet need is estimated at 41% for women in reproductive age. In 2007, unwanted fertility accounted for 21.3% of infant infections and 13.4% of deaths. Unwanted pregnancies lead to induced abortion in many cases. Figure 12 shows how the unmet need for contraceptive is calculated using the 2006 Uganda Demographic and Health Survey.

UNPD's World Fertility Report 2009 rated the Uganda government's view on the level of fertility as an all-time "too high" since 1976. Their population policy regarding fertility level was "lower" despite the "direct support" they provide in supporting contraceptive methods (UNPD, 2009).

Figure 12 How to calculate unmet need for contraception. Source: Uganda DHS 2006 Report



Note: Only major categories used to define unmet need are shown in the figure.

The knowledge and uptake of modern FP methods are weak despite growing demands. Researchers have identified several factors that limit contraceptive use in Uganda: 1. misperception of modern methods, 2. shortage of popular contraceptives, 3. stigmatization of using contraception to prevent pregnancy, and 4. lack of training opportunities for health care providers.

As noted above, contraceptive prevalence rate in Uganda is already low at 24% but it decreases to about 18% when excluding traditional methods such as withdrawal, lactational, amenorrhea, and rhythm (UNFPA 2010). Compared to modern methods, traditional methods do not provide effective protection against pregnancy. Despite this fact, there exists a prevailing fear of side effects and inefficacy concerning some modern contraceptives (Ssali, 2005). However, the fear of side effects may stem from the fact that many women do have negative experience with modern methods due to incorrect use. Institutionally, materials for appropriate counseling (visual and verbal demonstration, handouts, etc.) need to be available to health workers. Most health workers wanted more training, as they felt inadequate to make quality recommendations (Mugisha, 2008b)

Because of the skewed perception and fear of some methods, most women enter family planning clinics with a particular method in mind. When there is a shortage of popular contraceptives, the window of opportunity for changing social behavior is lost (Mugisha, 2008). Following up is challenging because of the breach in trust. Access to contraceptives differs drastically from urban to rural areas. Although the overall use of contraceptive is low, it is much lower in rural areas. Maintaining a constant supply of contraceptives in rural areas is logistically and structurally challenging.

Culturally, contraception is stigmatized and difficult to access especially for young women since only the married women were able to obtain contraception until the mid 1990s (Khan, 2008). Some women have expressed how they take pills out of its container and into a more discrete one as to avoid being found using birth control. By doing that, they mix the placebo pills and the real pills, which makes it even more difficult to keep the schedule (Mugisha, 2008a).

Gaps in integrating FP-HIV services

One in five pregnancies results in induced abortions in Uganda due to the high degree of unintended pregnancies (Singh, Prada, Mirembe, & Kiggundu, 2005). In a population survey of 1100 HIV-infected individuals of both genders, 339 people reported either being pregnant or their partner being pregnant since HIV diagnoses. However, a staggering 43% responded that their pregnancies were unplanned (Wanyenze et al., 2011). In a country with a high maternal mortality rate of 435 deaths per 100,000 live births, complications of pregnancy and induced abortion exert a huge toll on women's health. Inadequate family planning services adversely affect the country's fight against HIV/AIDS and hinder Uganda from taking real steps to curb the epidemic.

In order to properly integrate family planning and HIV/AIDS services and to expand fertility choice for women, however, several structural obstacles must be addressed. Firstly, the key difference between Uganda's family planning program and Vietnam and Zimbabwe's family planning programs is limited or little political will. While the Ministry of Finance promised that it will "ensure that family planning services are accessible to all those who need them," the political commitment has been "inconsistent" at best (Khan, 2008). The Lancet (2006) reported that childbearing "starts early and lasts a long time" in Uganda and that President Museveni envisions Uganda's population growth to have the same effect as China's economic success (Wakabi, 2006).

There is a severe lack of trained personnel and additional training opportunities for health care workers in Uganda (Mugisha, 2008). This limits the quality and the amount of family planning information available for the general population, especially those with HIV. Many health workers felt like that they did not have adequate training to offer comprehensive family planning counseling. Even if a health worker is fully equipped to provide FP services, some providers held a biased view against reproductive rights of women or couples with HIV. Women who are HIV positive, therefore, are not adequately targeted by reproductive health programs and are often unaware that they can safely use most modern contraceptives.

Even for those using contraceptives, HIV positive women are not counseled to use effective modern contraceptives other than condoms. Both Wanyenze 2011 and Ssali et al. 2005 found that FP use is greater among women with HIV. However, the use is generally limited to male condoms. Ssali found that the contraceptive prevalence rate among PLWH decreased from 68% to 15% if excluding condom use. While male condom usage is common due to Uganda's HIV/AIDS prevention effort, condom availability does not guarantee consistent and appropriate use. Condom use is also found to be unreliable in relationships where women cannot dictate contraceptive use. This often occurs when the woman perceives her partner to be dominant and when a couple is in a serious relationship (Woolf & Maisto, 2008). With this sexual and gender dynamic, it may be beneficial to promote the use of female-initiated modern contraceptives to avoid unwanted pregnancies for women who are HIV-positive. Additionally, using HIV clinics and testing sites as points of contact for reproductive health may allow health workers to reach the sexually-active youth for whom contraceptive acquisition is more nuanced than in married population. Hladik recommends a significant improvement in access to FP services to optimally pursue Uganda's PMTCT goals (Hladik W, 2009).

Vietnam

Vietnam is increasingly recognized as a target country for HIV/AIDS in Southeast Asia. International aid for HIV increased from \$6 million in 2002 to over \$95 million in 2009 with PEPFAR being the primary funder. Adult HIV prevalence rate saw a gradual increase from 0.24% in 1999 to 0.4% at the end of 2003 to 0.5% in 2008 (UNAIDS data). Despite growing concerns

about HIV/AIDS in Vietnam, the epidemic is still considered “concentrated” among the most at-risk populations.

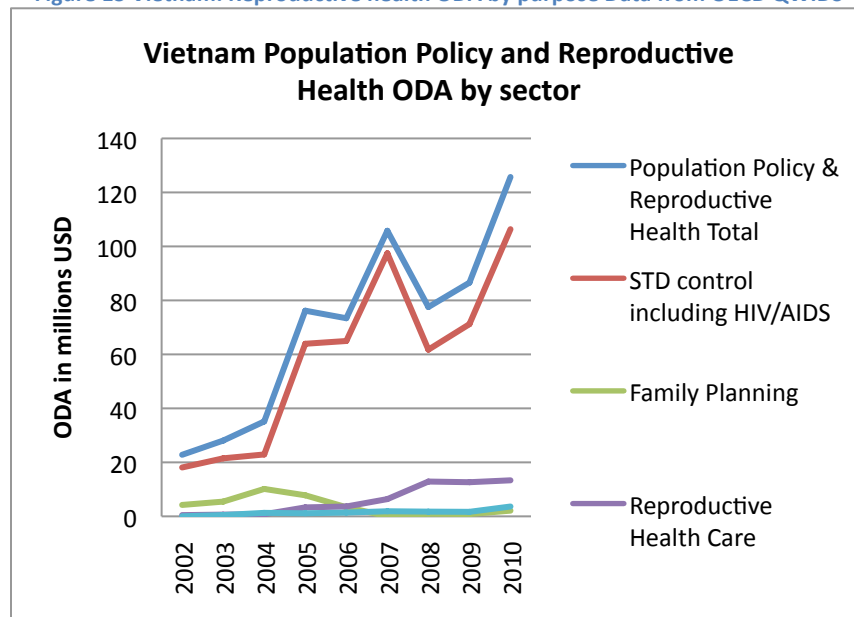
In other countries, sudden increase in external funding for HIV/AIDS has been blamed for decrease in other public health efforts. However, Vietnam has retained a strong grip on other public health issues, especially in family planning. This section provides an overview of how Vietnam’s family planning agenda was able to withstand the sudden flood of HIV/AIDS funding.

HIV/AIDS in Vietnam

The 2010 Global AIDS Report announced that the incidence of HIV infection rose by 31% from 2001 and 2010 in East Asia. While most transmission occurs in India, Vietnam is identified as a highly prevalent country in the region along with Thailand, Indonesia, and Malaysia. Vietnam’s HIV epidemic has not reached the “generalized” standing and remains concentrated in most-at-risk-populations (MARPS), namely injecting drug users (IDU), female sex workers (FSW), and men who have sex with men (MSM). Also, men are disproportionately affected, accounting for 73.2% of all reported cases in 2009 (UNAIDS 2010). Routine testing for HIV is extremely low in the general population at just over 2.0% according to the 2005 Vietnam Population and AIDS Indicator Survey (UNAIDS Country Progress Report 2010). Because the epidemic is “concentrated” in these at risk groups, state policy on HIV/AIDS initially framed the issue as a “their” problem. The disease was initially associated with drug abuse and prostitution, actions that the Central Government labeled as “social evils” and condoms and syringes were consequently classified as “evil” rather than effective prevention tools (Giang & Huong, 2004). The infected persons were identified and isolated from social spheres.

Beginning in 2004, however, the Central Government shifted its response to the epidemic away from sending negative public messages to emphasizing collective responsibility. According to the 2010 National Composite Policy Index, the target populations for HIV programs include: people living in remote and disadvantaged regions, orphans and OVCs, young people, and pregnant women in addition to the three most at-risk populations (IDU, FSW, MSM). This policy change corresponds to the time period of large HIV funding influx in Vietnam. The trend in HIV/AIDS funding experienced an abrupt overturn in 2003 (Figure 13). From 1996-2000, the Vietnamese government provided the majority of funding for HIV programs. In 2003, the influx of foreign grants surpassed the central government’s financial commitment for the epidemic (Giang & Huong, 2004). While the funding amount is still small compared to funding for highly-endemic areas like Uganda and South Africa, Vietnam’s trend in “reproductive health ODA by purpose” looks like Uganda’s. What is different, however, is the percent of total health expenditure (THE) that these external funding constitute. In 2010, only 3.4% of THE came from external sources in Vietnam as opposed to 25.9% for Uganda’s THE and the figure has remained more or less consistent since 1995. This difference in the amount of health ODA relative to THE may signify a key difference in aid-dependence of Vietnam and Uganda, which translates to the difference in their abilities to design and conduct their own programs.

Figure 13 Vietnam: Reproductive health ODA by purpose Data from OECD QWIDS



The increase in international funding for HIV/AIDS also inspired the creation and strengthening of Vietnam's NGO sector. As of 2010, there were over 120 PLWHA groups, establishing a strong coalition among the marginalized populations and allowing them to speak on their behalf (UNAIDS Country Progress Report 2010). While the Central Government coordinates any mass campaigns and HIV/AIDS services, the increase in civil society in a distinctly Socialist state is interesting. Civil society organizations typically participate in advocacy and service delivery. The increase in their responsibility and visibility along with heightened foreign donor activities may lead to fundamental changes in Vietnam's social and political spheres.

Development of Vietnam's Family Planning Agenda

As a socialist country striving for "socialist modernism", the Vietnamese government has considered fertility control as a major pillar for development (Giang & Huong, 2004). Having a small, prosperous family was considered a virtue and a pathway to modernity. In 1984, the National Committee for Population and Birth with Plan was established, engaging the highest level of the government in the family planning dialogue. The commitment increased in government actions as domestic funding for family planning programs increased tenfold from \$27 billion VN in 1992 to \$260 billion VN in 1996 (Giang & Huong, 2004). With enthusiastic support from both the government and international donors like UNFPA, Vietnam was able to reach its demographic goals established by the first "National Population and Family Planning strategy 1993-2000" even before the target year, hitting the total fertility rate of 2.33 in 1989. In 2008, the total fertility rate had stabilized around 1.9.

In 2002, Vietnam had already reached the contraceptive prevalence rate of 78.5% for adult women with the percentage of unmet family planning needs at 4.8%. Vietnam's family planning success can be attributed to the strong state interest in fertility control as part of state-led nation

building. The government strongly emphasized the “two-children-per-couple” policy and when the fertility rate increased a bit in 2003-2004, the central government responded promptly by calling people to adhere to the demographic goals. The government officials who broke the two-children-per-couple policy were shamed. The government’s action towards this brief “population surge” suggests a high level of surveillance and commitment they have for the family planning agenda. They also have the autonomy to make these policies as the central government has consistently funded most of Vietnam’s family planning programs since 1999. With these cornerstones of family planning in place, Vietnam’s second National Population and Family Planning strategy 2001-2010 focuses on shifting the attention from fertility control to expanding reproductive health services broadly. Also, the National Committee for Population and Birth with Plan was granted greater responsibility and power when it was later commissioned as the Vietnam Commission for Population, Family, Children (VCPFC).

Room for Integration?

Vietnam’s HIV/AIDS and family planning programs are strong with substantial funding for both sectors. However, the integration gap exists despite the strengths of Vietnam’s public health system. One key issue is with the characterization of these two programs. Reproduction is traditionally viewed as “women’s business” and women are responsible for fertility control. This narrow view on reproduction reinforces the feminization of family planning. In 2008, the most popular contraceptive method was intrauterine device (IUD), used by 44.28% of all adult women in Vietnam, followed by contraceptive pills used by 10.47% of all adult women (Vietnam National Survey 2008). These are women-initiated methods and require little action from male sexual partners. Induced abortion is legal in Vietnam and is frequently practiced although the exact data is difficult to quantify.

While family planning is feminized with minimal male involvement, Vietnam’s HIV/AIDS programs often alienate the “everyday women” from their target populations. Since Vietnam’s HIV epidemic is more concentrated in MSM and sex workers, it may seem logical to exclude married women from HIV programs. However, such decision hinders the effort to curb the epidemic. With ultra-feminization of family planning, Vietnamese men do not receive message about their (and their partner’s) reproductive health. Combined with the narrowly-targeted HIV messages, there seems to be a gap in connecting HIV/AIDS and family planning for the general population.

It is also unclear the extent of family planning services the people living with HIV/AIDS gets and whether their level of access differs from the general population. In a 2010 study of the incidents of induced abortion among PLWHA, about 68% of women chose abortion after learning about their HIV serostatus compared to 22% prior to the diagnosis in two villages in Northern Vietnam. 75% of women who received abortion identified the fear of transmitting AIDS as the primary reason for abortion. The percentage of women seeking abortion decreased to 50% for those who were diagnosed after 2004 due to the increase in PMTCT services and

uptake. However, 50% induced abortion rate is still too high, suggesting that even with PMTCT services and high uptake of family planning among the general public, HIV-positive women are having unwanted pregnancies. Even for the general population, “Vietnamese women tend to use induced abortion to achieve their desired family size in the context of inadequate availability and inefficient use of contraceptives (Teerawichitchainan & Amin 2009).” A careful integration between the two services would reduce the incidence of unwanted pregnancies among HIV-positive women, thereby reducing the rate of risky induced abortions and protecting maternal health.

Zimbabwe

Zimbabwe has experienced a severe inflation starting from February 2007. By mid-2008, hyperinflation in Zimbabwe marked the second worst monthly inflation rates in history where prices doubled in about 24.7 hours (Steve H. Hanke, 2010). In 2009, 95% of the population was unemployed and 5.1 million of 12 million Zimbabweans were in need of food assistance (AFP, 2009; CIA, 2012). The economic downfall and the following dollarization in 2008 severely affected Zimbabwe’s public health. . In addition to the economic meltdown, political instability stemming from President Mugabe’s extended term in the office detracted potential foreign donors from investing in and supporting Zimbabwe’s failing health care system. Brain draining of health care professionals strained health care delivery in an already saturated national health system. There is only 1 doctor for 12,000 people on average in Zimbabwe and the situation is even direr in rural areas (Meldrum, 2008). Despite these hardships, the overall HIV prevalence rate experienced a continual decline.

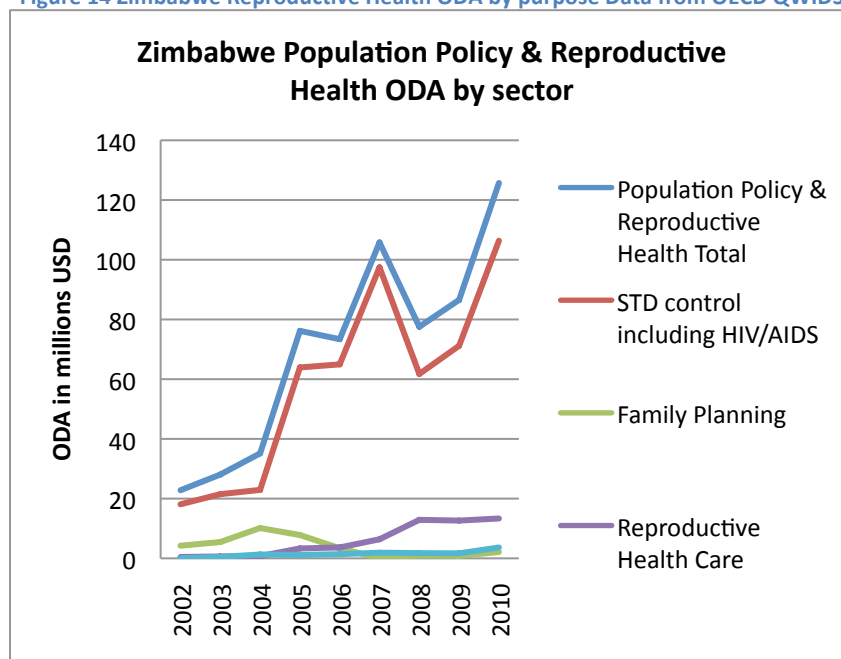
Zimbabwe’s HIV/AIDS Program

The Zimbabwean government uses a multi-sectoral approach to HIV/AIDS and it has been proven successful thus far. Zimbabwe’s HIV prevalence rate has been on a steady decline since 2002 (33.7% adult prevalence rate). The Ministry of Health and Child Welfare estimates that in 2010, about 14.3% of adults ages 15-49 were HIV positive. This significant decline was made possible by prevention programs, PMTCT, and AIDS-related mortality. Ojikutu et al. refers to factors like greater mortality compared to new incidence; behavioral change, and immigration among youth to help explain the decline (Ojikutu, 2008). PMTCT is one of the strongest HIV programs in Zimbabwe. The percentage of women attending antenatal clinics had always been high due to successful reproductive health care network.

In the treatment realm, only about 17% of people needing ARVs received the therapy at the end of 2007, the lowest rate in sub-Saharan Africa. By May 2010, however, the coverage increased to 44 percent. The increase can be attributed to an increase in local manufacturing of ARVs that begun in 2008, thereby securing a sustainable supply of drugs as well as increased foreign funding for HIV. Funding for HIV/AIDS programs in Zimbabwe mainly comes from three sources; the National AIDS Trust Fund (AIDS Levy), the Government of Zimbabwe, and

international donors. The AIDS Levy is funded by a 3% taxation scheme from all business sectors. The Levy contributed USD 5.1 million in 2009 of which more than half went to the treatment and care effort (UNAIDS, 2010b). Government funding stream had been volatile from 2007 to 2009 due to the economic downfall. It shifted from USD 10.6 million in 2007 to USD 0.35 million in 2008 to USD 7.5 million in 2009 (Zimbabwe Country Report, 2010). International donors donated more than USD 54.2 million in 2009, USD 113.7 million in 2010, and USD 114.5 in 2011, bulk of which came from the Global Fund, US bilateral aid, and DFID.

Figure 14 Zimbabwe Reproductive Health ODA by purpose Data from OECD QWIDS



The Zimbabwe National AIDS Council (NAC) speculates that the rapid spread of HIV may be attributed to “high prevalence of other sexually transmitted infections; low levels of male circumcision; high rates of multiple concurrent sexual relationships; low, incorrect and/or inconsistent condom use; the low socioeconomic status of women; settlement patterns and mobility; poverty; and distressed economic conditions in general,” (USAIDS, 2010). Tuberculosis-HIV co-infection rate is also high with about 75% of persons with TB testing HIV-positive in 2010 which contributes to the severity of the epidemic (WHO, 2011).

While Zimbabwe’s HIV epidemic is generalized with the disease affecting the population in general, there are the most at-risk populations (MARPS) that share a decisively high percentage of the disease burden. The 2010 Zimbabwean Demographic and Health Survey found that HIV prevalence rate was high among widowed men and women (67% and 58% respectively) and low among the never-married group (8% women, 4% men). Female Sex-Workers are also highly at-risk with 57.2% prevalence rate in 2005 (USAIDS, 2010). The percentage of adult men and women who have had sexual intercourse with multiple partners in the last 12 months increased dramatically from 2007 (14.1% M, 1.3%F) to 2009 (28.3%M, 9.0%F) (UNAIDS, 2010b). This

can be due to the increased incidence of commercial/casual sex among the populations living along the country border. MARPS do not have legal standing because of unclear policy guidelines. Nevertheless, these populations can access HIV services regardless of their immigration status (Republic of Zimbabwe, 2009a: 49). While the at-risk groups are not targeted by specific national programs, there are NGOs that meet some needs. Legal outlets are available to assist people who have been victimized in high-risk activities to seek legal counsel. The International Office of Migration estimates that there are about one million MARPS in Zimbabwe as of 2009 (IOM, 2010).

National Family Planning Program

Zimbabwe is allegedly an African success story in family planning. Knowledge of family planning is almost universal and the contraceptive prevalence rate is among the highest in sub-Saharan Africa. The total fertility rate faced a dramatic decline from 7.1 in 1970 to 3.36 in 2009 (Zimbabwe National Statistics Agency, 2011). It is also notable that most women use modern family planning methods.

The Zimbabwean government demonstrated incredible commitment in increasing access to family planning services. Following the political independence in 1980, the government established the Zimbabwe National Family Planning Council under the Ministry of Health that soon implemented two successful programs: Community-Based Distribution (CBD) and a network of fixed and mobile family planning clinics (Population Council, 2001). In the 1990s, CBD workers were praised as local champions in bringing the fertility rate down. They have been instrumental in delivering birth controls to the rural population and being individually responsible for family planning uptake in a community (Meldrum & Hill, 1994). Currently, the percentage of people using CBD as the most recent source of supply has diminished to just 1.8% (Population Council, 2008). However, this decline is likely due to the greater and more permanent sources of contraception that have become available to women and men.

Contraceptive pill is the most popular contraceptive, accounting for 41% of current use among married women, followed by the injectable (8%) (Zimbabwe National Statistics Agency, 2011). Only an estimated 50% of all contraceptive users use male condom. This low level of condom use may signify that there is little effort to increase the use of dual protection despite the steady HIV epidemic in Zimbabwe.

Ways to integrate Zimbabwe's FP and HIV services

One of the rights-based gaps in providing reproductive health to PLWHA is their "right to conception" (Mantell, Smit, & Stein, 2009). Similar to most societies, fertility is valued as a quintessential heterosexual identity in Zimbabwe. Mike Kesby (2000) conducted a participatory diagramming focus group and found that while contraceptive use was relatively high in Zimbabwe, most people use contraceptives to space births rather than to avoid pregnancies.

From previous studies by Meursing (1997), Kesby notes that “the socio-economic pressure to marry and have children is such that even those who know they are HIV positive feel obliged to engage in unprotected sex in order to secure pregnancy,” (Kesby, 2000).

However, these surveys do not differentiate whether the fertility desire is for the *next* child (one more child) or for multiple children from the time of survey. The Demographic and Health Survey in Lesotho found a “strong inverse relationship between future childbearing desires and the number of children still living for both HIV-positive and HIV-negative women,” (Adair, 2007). If there is a similar sentiment in Zimbabwe, reproductive health services must be extended to HIV-positive couples and mothers to assist them to realize the number of children they desire. Family planning counselors, therefore, must not discriminate against HIV-positive couples. Rather, they must be sensitive to the couple’s fertility desires to connect them to effective PMTCT services while emphasizing the need for family planning on intervals where they seek to avoid childbearing.

As noted above, the low level of condom use presents the opposite problem from what Uganda has. There is very little emphasis on using dual protection against HIV and other sexually transmitted diseases in addition to preventing unwanted pregnancies. However, dual protection is necessary for serodiscordant couples to avoid transmitting HIV to the HIV-negative partner. Hageman found that the consistent and correct condom use is often interrupted for pregnancy attempts (Hageman, 2010). This interruption is often coupled with little knowledge about the woman’s fertility cycle, exposing the HIV-negative partner to the risk of transmission indiscriminately. If the couple was continuously connected to reproductive healthcare provider, they would have more guidance on how to pursue their fertility desires.

As with both Vietnam and Uganda, the Zimbabwean youth are ill-targeted in both family planning and HIV services. Magure (2010) found that the unmet need for the never-married, sexually active women has actually been increasing based on the three DHS data. From 1994 to 2005-06, the unmet need among unmarried, sexually active population rose from 28% to 33% (Magure, 2010). Considering that the unmet need among the married women is less than 15%, there is a discrepancy in accessing FP services as a youth. Similarly, unmet need was the highest among women with no children at about 47% (Magure, 2010). Young married women in Magure’s survey also expressed the inability to postpone childbearing for their first child due to “social pressures, unfamiliarity with family planning, or lack of contraceptive choices,” (p. 21). Prata (2011) also found that health professionals often turn away young people seeking information and services on condom. This discrepancy in unmet need for the married population and the unmarried population reveals a serious gap in family planning and HIV programs and further affirms the need for integration. The fact that young people cannot conveniently access family planning services highlights the need for training of healthcare providers.

Figure 15. Policy Summary for Uganda, Vietnam, Zimbabwe

	Family Planning		HIV/AIDS		Recommendation for Integration
	Strengths	Weaknesses	Strengths	Weaknesses	
Uganda	High male condom usage.	Weak political commitment. Low level of modern contraceptives usage. High unmet need for contraception.	Previous experience with success.	Dependence on external funding.	Use HIV/AIDS infrastructure to accommodate people's family planning needs. Promote dual protection.
Vietnam	Strong political commitment. High use of modern contraceptives (especially IUDs).	Female-driven: excludes men from using contraceptives. High level of induced abortion.	Well-funded at early stage of the epidemic.	Limited establishment of Civil Society.	Dual protection for couples living with HIV/AIDS. Reduce induced abortions among PLWHA
Zimbabwe	High level of modern contraceptives (especially pills). Well-established	Unable to reach the youth. Low condom usage.	Declining prevalence rate.	Inconsistent condom use (barrier method). Impending funding cuts.	Provide HIV services in reproductive health clinics.

Policy Implications

Country-level case studies show how different countries have a distinct set of strengths and weaknesses that characterize their national HIV/AIDS and Family Planning programs. All three countries showed some degree of disparity in international funding for HIV/AIDS compared to all other reproductive health programs. However, the government's ability to achieve a balanced development of both FP and HIV/AIDS programs depends on many factors such as the strength of public health infrastructure, domestic funding for the cause, and political willingness. The Vietnamese government assumed the responsibility to fund its national reproductive health services while it yielded the funding effort for HIV/AIDS to international donors. However, Uganda's dependence on international donors for much of its health system may hinder its ability to shift its resources to increase access to family planning. In all three countries, there were gaps

that must be addressed to achieve a meaningful and smart integration, even in countries with strong HIV/AIDS and Family Planning programs. I have identified relevant factors that can fill the gaps in FP-HIV integration.

Firstly, both respect and recognition of fertility desires among people living with HIV/AIDS are crucial. Prevention of Mother-to-Child Transmission of HIV/AIDS (PMTCT) services cannot be successful if there are provider and cultural bias against reproductive rights of HIV-positive men and women.

Secondly, it is important to establish a momentum in family planning. In Zimbabwe, family planning did not suffer a devastating backlash despite the political and economic instabilities in the 2000s because the program was already well-established in all levels. Such momentum and commitment can be achieved through strong political will. Government leadership can have a huge influence on sustaining or limiting the country's commitment to family planning programs amidst huge influx in HIV funding. Vietnam's family planning program did not falter despite the unprecedented and overwhelming HIV funding flow since 2004. While the increase in HIV/AIDS funding was significant enough to establish NGO-presence in a socialist state, it did not result in a brain drain of health workers from primary care to HIV-specific care because of the central government's commitment to the public health system. In contrast, the Ugandan President Museveni's belief that fertility can serve as a means to national advancement discouraged family planning outreach (Wakabi, 2006).

Youth and the unmarried population are currently under-targeted in both HIV/AIDS and Family Planning services. Contraceptive desires and intentions of youth are not even quantified in most national surveys since family planning indicators simply measure married women. Young people in all three countries have expressed some difficulty acquiring contraceptives either due to provider bias or lack of knowledge. Access to family planning and reproductive services can significantly improve the health and social status of sexually active and/or at-risk youth.

Naturally, different populations have differential preferences for contraceptives. However, the percentage of people using dual-protection is low in most countries regardless of the widespread availability and use of other popular methods (Kott, 2010). In Uganda, the male condom is the most widespread method, while other modern methods are largely absent in public discourse. In Vietnam and Zimbabwe, modern methods like IUD and pills are the most popular methods, respectively. However, the proportion of people using the barrier methods in these countries is low. Healthcare workers must realize the importance of dual-protection, especially among serodiscordant couples and sexually-active persons in HIV prevalent regions. Modern contraceptives deliver greater protection against pregnancies, while barrier methods protect against HIV/AIDS and other sexually transmitted diseases. Therefore, contraceptive prevalence rate must be disaggregated to understand the complete picture of family planning uptake in a country.

As evidenced by the three case studies, each country deals with a different set of challenges when it comes to FP-HIV integration. However, there are still common barriers that can be identified. It is crucial to diagnose each country separately while reaching a consensus on key best practices.

Conclusion

Looking at the general mapping of countries' HIV/AIDS epidemic and unmet contraceptive need, we can conclude that there is a shortage of family planning services in some countries with high HIV prevalence. Among 30 countries with various HIV epidemic statuses, economies and demographics, there was a weak inverse relationship between HIV prevalence rate and unmet need for contraception. The presence of large unmet need for contraception in HIV-endemic areas can be particularly detrimental to the health of people living with HIV/AIDS, as well as those who are at-risk of contracting the virus. For areas with high level of HIV infection, access to family planning (both barrier and modern methods) may lead to a reduction in sexual transmission of this still deadly disease and a reduction in the incidence of mother-to-child transmission of the disease from unwanted pregnancies.

Unwanted pregnancies often result in induced abortions, ill-timed childbirth, and in the case of HIV-positive mothers, seropositive children in low and middle income countries. Given that many areas with high HIV prevalence suffer from high maternal and infant mortalities from general lack of access to primary care, unwanted pregnancies pose unnecessary risks and burdens for HIV-positive couples and individuals. For these reasons, unmet need for contraception must be met to expand people's right to realize their fertility desires. With some forethought, improving access to one type of service could naturally strengthen the availability for the other.

Despite clear benefits of FP-HIV integration and putting family planning access at the forefront of HIV prevention, evidence from my analysis show that the gap still exists. **The difference-in-differences analyses show that countries that receive a large sum of HIV official development aid relative to their Gross National Income perform worse in family planning efforts over time compared to the countries with smaller sums of HIV ODA disbursement.** The trend was also observed when looking at PEPFAR versus non-PEPFAR countries and even more prominently among sub-Saharan African countries. While this is a preliminary analysis, the repeated results showing a negative relationship between HIV funding levels and family planning effort across various groups seem to suggest that both recipient and donor countries are failing to reap the benefits of integration. My difference-in-differences findings are also consistent with the current literature, which argues that brain drain, resource shifting, and change in policy do in fact occur with large inflow of disease-specific funding in countries with weak public health institution. These results compel us to re-evaluate the current balance between family planning and HIV agenda. In order to ensure efficient use of the limited global health resources, smart integration between family planning and HIV/AIDS programs is necessary.

Limitations and future research directions

This paper provides a preliminary research connecting HIV/AIDS funding and its effect on family planning efforts. While my difference-in-differences analysis reveals a general trend in how HIV/AIDS funding may be associated with family planning efforts, I recognize that there are multiple factors that may affect the relationship between the two sectors that I was not able to account for due to the limited scope of my research. For future research, I suggest further disaggregating the international funding for HIV by different donors (the Global Fund, DFID, PEPFAR) and examining whether their particular policies initiate changes in the recipient country's policies. On a qualitative note, I found that country's ability to balance HIV and FP activities depended heavily on the political institution and commitment from the top leadership. Whether such political will and feasibility can bore out of international aid is still a question to be answered. If there is a connection between the donor government's policy directives and the recipient government's political will, perhaps advocating for integrated policies is more pertinent than bridging the parallel funding structure. Also, it would be beneficial to develop a framework with which to analyze the necessary steps to integration that a country can take depending on their individual characteristics.

Glossary

ARV: Antiretrovirals

DFID: United Kingdom's Department for International Development

DHS: Demographic and Health Survey

DID: Difference-in-differences

FP : Family Planning

FPE: Family Planning Effort

FSW: Female Sex Workers

GNI: Gross National Income

HDI: Human Development Index

IDU: Injection Drug Users

IUD: Intrauterine device

MARP: Most-At-Risk-Populations

MSM: Men who have sex with men

NP: Non-PEPFAR

ODA: Official Development Aid

OECD: Organization for Economic Cooperation and Development

PEPFAR: President's Emergency Plan for AIDS Relief

PLWHA: People Living with HIV/AIDS

PMTCT: Prevention of Mother-to-Child Transmission

USAID: United States Agency for International Development

UNAIDS: Joint United Nations Programme on HIV/AIDS

UNDP: United Nations Development Programmes

UNFPA: United Nations Population Fund

Appendix

Appendix I. Comparing the amount of HIV ODA and GNI for countries with adult HIV prevalence rate of >0.4%

Countries (* indicates PEPFAR focus countries)	HIV/ODA 02-08 (USD)	HIV prevalence rate end 2003 (in %)	Adult with HIV end 2003	GNI 2002-2008 (current USD)	HIV ODA/GNI 2002-2008 (in %)
Benin	74729385	1.9	62000	2.93E+10	0.255
Brazil	45773862	0.7	650000	5.93E+12	0.001
Burkina Faso	1.25E+08	4.2	270000	3.65E+10	0.343
Cambodia	2.58E+08	2.6	170000	4.42E+10	0.584
Cameroon	96063999	6.9	520000	1.11E+11	0.087
Chad	48869200	4.8	180000	2.69E+10	0.182
Colombia	11892375	0.7	180000	9.72E+11	0.001
Congo	34741237	4.9	80000	2.76E+10	0.126
Costa Rica	4594557	0.6	12000	1.47E+11	0.003
*Cote d'Ivoire	2.45E+08	7	530000	1.05E+11	0.233
Dominican Republic	77090762	1.7	85000	2.13E+11	0.036
El Salvador	27447833	0.7	28000	1.19E+11	0.023
*Ethiopia	9.32E+08	4.4	1400000	9.32E+10	0.999
Ghana	1.96E+08	31	320000	8.87E+10	0.221
Guatemala	51436209	1.1	74000	1.88E+11	0.027
Guinea	53499440	3.2	130000	2.22E+10	0.241
*Haiti	3.43E+08	5.6	260000	2.25E+10	1.525
Honduras	75927921	1.8	59000	6.86E+10	0.111
India	7.1E+08	0.9	5000000	5.87E+12	0.012
Jamaica	37720439	1.2	21000	7.46E+10	0.051
*Kenya	9.98E+08	6.7	1100000	1.36E+11	0.735
Lesotho	84955936	28.9	300000	1.11E+10	0.765
Madagascar	54357208	1.7	130000	3.89E+10	0.140
Malawi	5.34E+08	14.2	810000	2.02E+10	2.643
Malaysia	1108526	0.4	51000	9.64E+11	0.000
Mali	1.13E+08	1.9	120000	3.53E+10	0.319
Mauritania	12831029	0.6	8900	1.36E+10	0.094
*Mozambique	6.47E+08	12.2	1200000	4.28E+10	1.513
Niger	34348682	1.2	64000	2.31E+10	0.149
*Nigeria	1.04E+09	5.4	3300000	7.01E+11	0.149
Panama	4060892	0.9	15000	1.09E+11	0.004
Paraguay	6843056	0.5	15000	5.73E+10	0.012
Peru	47330777	0.5	80000	5.44E+11	0.009
Senegal	87710246	0.8	41000	5.85E+10	0.150
*South Africa	1.18E+09	21.5	5100000	1.48E+12	0.080

*Tanzania	9.45E+08	8.8	1500000	1.02E+11	0.928
Trin & Tob	9400437	3.2	28000	1.05E+11	0.009
Uganda	9.11E+08	4.1	450000	6.36E+10	1.433
Viet Nam	2.29E+08	0.4	200000	3.72E+11	0.062
Zambia	8E+08	16.5	830000	4.62E+10	1.731
Zimbabwe	3.64E+08	24.6	1600000	3.58E+10	1.019

- Red denotes 11 countries where HIV ODA is equivalent to >0.5% of their GNI
- Green denotes 13 countries where HIV ODA is equivalent to 0.1 - 0.5% of their GNI
- While denotes 17 countries where HIV ODA is equivalent to less than 0.1% of their GNI

Appendix II. HIV Prevalence Rate & Contraceptive Prevalence Rate for 30 countries. Source: UNAIDS, UNFPA

	Country	Adult HIV Prev Rate 2009	Contraceptive Prevalence Rate 2006-2010		Country	Adult HIV Prev Rate 2009	Contraceptive Prevalence Rate 2006-2010
1	Bangladesh	0.1	55.8	16	Haiti	1.9	32
2	China	0.1	84.6	17	Rwanda	2.9	36.4
3	Pakistan	0.1	27	18	Côte d'Ivoire	3.4	12.9
4	Uzbekistan	0.1	64.9	19	Nigeria	3.6	14.6
5	Indonesia	0.2	61.4	20	Central African Republic	4.7	19
6	Madagascar	0.2	39.9	21	Cameroon	5.3	29.2
7	India	0.3	56.3	22	United Rep. Tanzania	5.6	34.4
8	Mexico	0.3	70.9	23	Kenya	6.3	45.5
9	Viet Nam	0.43	79.5	24	Uganda	6.5	23.7
10	Dominican Republic	0.9	72.9	25	Malawi	11	41
11	Ukraine	1.1	66.7	26	Namibia	13.1	55.1
12	Thailand	1.3	81.1	27	Zambia	13.5	40.8
13	Dem. Rep. Congo	1.6	20.6	28	Zimbabwe	14.3	60.2
14	Sierra Leone	1.6	8.2	29	Lesotho	23.6	47
15	Ghana	1.8	23.5	30	Swaziland	25.9	50.6

Appendix III. Unmet Need for Contraception compared to change in HIV Prevalence rates. Source: UNFPA World Contraceptive Use Chart & UNAIDS Global AIDS Report 2011

country	Unmet Need Y1	Adult HIV Prev 2009	Adult HIV Prev 2001	HIV Prev: 2009-2001
Cameroon	13.0	5.30	5.5	-0.20
Central African Republic	16.2	4.70	8.9	-4.20
Côte d'Ivoire	43.4	3.40	6.5	-3.10
Dominican Republic	12.5	0.90	0.9	0.00
Ghana	23.0	1.80	2.3	-0.50
Haiti	39.8	1.90	2.6	-0.70
India	15.8	0.30	0.4	-0.10
Indonesia	8.6	0.20	0.1	0.10
Kenya	23.9	6.30	8.4	-2.10
Madagascar	25.6	0.20	0.2	0.00
Malawi	29.7	11.00	13.8	-2.80
Mexico	12.1	0.30	0.3	0.00
Namibia	25.1	13.10	16.1	-3.00
Nigeria	17.5	3.60	3.8	-0.20
Pakistan	32.0	0.10	0.1	0.00
Rwanda	37.0	2.90	3.7	-0.80
Uganda	36.0	6.50	7.0	-0.50
Ukraine	14.9	1.10	0.9	0.20
United Republic of Tanzania	21.8	5.60	7.1	-1.50
Uzbekistan	13.7	0.10	0.1	0.00
Viet Nam	4.8	0.43	0.3	0.13
Zambia	18.3	13.50	14.3	-0.80
Zimbabwe	12.9	14.30	23.7	-9.40

Appendix IV. Difference-in-differences between HIV ODA/GNI and Family Planning Effort Index for 41 countries with HIV prevalence rate of or above 0.4%

	ODA/GNI	FPE 1999	FPE 2009	Difference in Y2-Y1		ODA/GNI	FPE 1999	FPE 2009	Difference in Y2-Y1
Total	>0.5%	47.3	47.5	0.16	Policies	>0.5%	51.3	52.8	1.5
	0.1-0.5%	42.7	47.8	5.12		0.1-0.5%	47.5	53.6	6.1
	< 0.1%	45.5	49.3	3.82		< 0.1%	50.2	53.4	3.2
Services	>0.5%	44.7	44.8	0.1	Evaluation	>0.5%	47.4	48.9	1.5
	0.1-0.5%	38.9	46.1	7.2		0.1-0.5%	47	51.1	4.1
	< 0.1%	39.5	45.3	5.8		< 0.1%	45.2	48.7	3.5
Access	>0.5%	47.5	45.6	-1.9	DID between >0.5% group and <0.1% group				
	0.1-0.5%	42.3	42.8	0.5	Total	Policies	Services	Access	Evaluation
	< 0.1%	51.7	52.3	0.6	3.66	1.7	5.7	2.5	2

*HIV ODA data and GNI in current USD data for 2002-2008 retrieved from World Bank.

Appendix V. Difference-in-differences between PEPFAR vs. non-PEPFAR countries and Family Planning Effort Index

		FPE 1999	FPE 2009	Difference in Y2-Y1		FPE 1999	FPE 2009	Difference in Y2-Y1	
Total	PEPFAR	45.5	46.9	1.35	Policies	PEPFAR	48.9	53.2	4.3
	NP	44.9	48.9	4		NP	49.9	53.3	3.4
Services	PEPFAR	42	42.8	0.8	Evaluation	PEPFAR	44.9	49.7	4.8
	NP	40.4	46.4	6		NP	46.9	49.5	2.6
Access	PEPFAR	49	46.1	-2.9	DID between PEPFAR and non-PEPFAR countries				
	NP	47.1	48	0.9	Total	Policies	Evaluation	Access	Evaluation
					2.65	-0.9	5.2	3.8	-2.2

Appendix VI Difference-in-differences between HIV ODA/GNI and Family Planning Effort Index for 24 countries in sub-Saharan Africa with adult HIV prevalence rate of or above 0.4%

	ODA/GNI level	FPE 1999	FPE 2009	Difference in Y2-Y1		ODA/GNI level	FPE 1999	FPE 2009	Difference in Y2-Y1		
Total	>0.5%	48.1	48.11	0.01		Policies	>0.5%	52.36	53.78	1.42	
	0.1% - 0.5%	43.41	47.56	4.15			0.1% - 0.5%	48.63	53.93	5.3	
	<0.1%	34	36.83	2.83			<0.1%	35.92	41.76	5.84	
Services	>0.5%	45.16	44.82	-0.34		Evaluation	>0.5%	47.91	50.84	2.93	
	0.1% - 0.5%	39.49	45.82	6.33				0.1% - 0.5%	48.25	50.84	2.59
	<0.1%	33.49	30.38	-3.11				<0.1%	32.89	38.67	5.78
Access	>0.5%	48.87	46.57	-2.3							
	0.1% - 0.5%	42.55	42.09	-0.46							
	<0.1%	33.09	42.41	9.32							
DID between >0.5% group and <0.1% group											
Total		Policies		Services		Evaluation		Access			
2.82		4.42		-2.77		2.85		11.62			

Appendix VII. Characteristics of PEPFAR countries

Countries	HIV ODA* 02-08 (in mil USD)	PEPFAR funding* FY04-FY 08 (in mil USD)	FPE Index 1999					FPE Index 2009				
			Total	Policies	Services	Eval	Access	Total	Policies	Services	Eval	Access
Cote d'Ivoire	244.69	320.2	51.96	59.25	48.45	50.83	50.41	54.37	61.11	52.29	62.29	47.13
Ethiopia	931.59	851.1	38.73	53.19	35.29	24.67	33.92	45.28	55.93	43.64	37.71	39.39
Haiti	342.54	320.7	38.95	46.65	35.93	28.54	40.44	33.23	36.94	31.29	29.68	34.13
Kenya	997.77	1346.6	49.55	49.42	47.03	46.04	56.94	48.73	55.79	40.96	75.78	43.52
Mozambique	647.16	582.7	23.38	24.20	23.05	35.15	17.11	39.19	41.96	33.37	46.67	43.65
Nigeria	1043.37	1097.3	50.32	36.08	42.69	81.40	70.30	33.63	38.12	32.93	38.89	27.57
South Africa	1178.51	1447.7	47.36	55.50	46.11	33.30	46.25	48.05	54.06	38.60	50.17	57.82
Tanzania	945.26	828.4	71.23	72.16	66.17	74.00	79.55	47.01	50.52	44.26	49.14	47.20
Uganda	911.47	929.3	61.08	60.24	55.85	59.79	74.18	50.40	63.35	47.80	47.88	41.51
Viet Nam	229.12	233.7	28.31	33.99	25.62	18.50	31.45	71.12	77.78	67.41	63.26	73.76
Zambia	799.98	834	39.89	47.43	35.35	42.18	38.53	44.60	49.17	38.21	45.27	50.95

*ODA data is from OECD QWIDS data. PEPFAR data is from <<http://www.avert.org/pepfar.htm>>. PEPFAR data collects committed donation amounts as described in the PEPFAR Operational Plans while OECD ODA data only counts disbursements.

Appendix VIII. HIV ODA flow by regions. OECD Statistics QWIDS

	Time Period	2002	2003	2004	2005	2006	2007	2008	2009	2010
Recipient(s)										
Africa - North of Sahara, Total		0.91	3.75	5.70	5.58	6.72	15.84	14.59	14.72	16.47
Africa - South of Sahara, Total		244.90	608.91	1128.17	1533.49	1937.43	2787.34	3767.90	3774.01	4352.40
North & Central America, Total		22.10	62.39	101.20	108.97	159.12	190.71	218.84	229.77	255.74
South America, Total		8.28	20.76	36.98	49.53	60.75	62.34	73.33	71.45	63.78
Asia, Total		84.60	173.50	266.32	377.21	456.22	695.93	640.49	783.92	678.93
Middle East, Total		0.04	1.15	1.61	7.00	4.37	6.11	9.78	5.62	15.41
Europe, Total		2.31	6.85	9.45	86.14	66.34	70.41	70.36	64.94	80.34
Oceania, Total		4.49	7.32	12.51	17.99	23.60	23.66	29.51	28.22	42.46

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