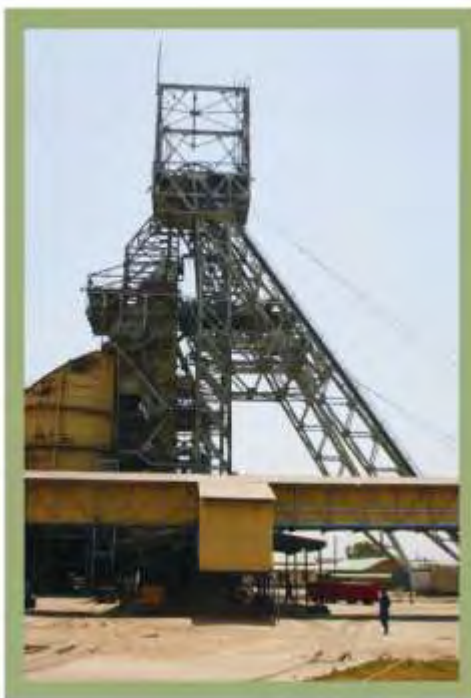
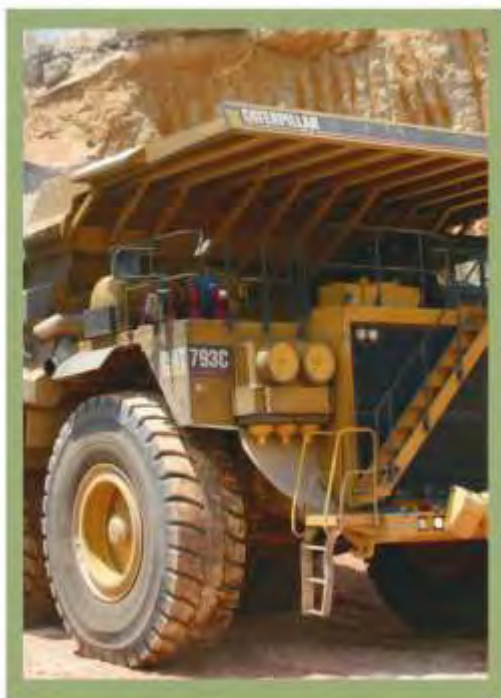


Cost Benefit Analysis of HIV Workplace Programmes in Zambia



September 2007





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Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ARV	Anti Retroviral
ART	Antiretroviral Therapy
CBOs	Community Based Organizations
CHAMP	Comprehensive HIV AIDS Management Programme
CSO	Central Statistics Office
DfID	Department for International Development (UK)
DHS	Demographic and Health Survey
ECA	Economic Commission for Africa
FAO	Food and Agriculture Organization of the United Nations
FASAZ	Farming Systems Association of Zambia
FGD	Focus Group Discussion
GDA	Global Development Alliance
GRZ	Government of the Republic of Zambia
HIV	Human Immuno-deficiency Virus
ILO	International Labour Organisation
IOM	International Organization for Migration
MoH	Ministry of Health
MoU	Memorandum of Understanding
NAC	National HIV/AIDS/STI/TB Council
NASF	National HIV/AIDS Strategic Framework
NGO	Non-Governmental Organisation
PEPFAR	Presidents Emergency Plan for AIDS Relief
PLWH	People Living With HIV
PMTCT	Prevention of Mother to Child Transmission
SHARe	Support to the HIV/AIDS Response in Zambia
STI	Sexually Transmitted Infection
UNAIDS	Joint United Nations Programme on AIDS
UNDP	United Nations Development Programme
UNESCO	United Nations of Educational, Scientific and Cultural Organization
UNZA	University of Zambia
USAID	United States Agency for International Development
USD	United States Dollar
VCT	Voluntary Counselling and Testing
ZESCO	Zambia Electricity Supply Corporation
ZNFU	Zambia National Farmers' Union
ZSBS	Zambia Sexual Behaviour Survey



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Executive Summary

This study attempted to answer the question, “What are the costs and benefits of workplace HIV and AIDS programmes in Zambia when viewed across several companies?”

Seven companies that are part of the Global Development Alliance Programme in Zambia¹ were included in this research. The companies range in size from 350 to 10,000 employees, and each company has an HIV workplace programme in place. All were within either the mining or agricultural sectors. Four are located primarily in the Copperbelt and are mining-related firms. The agricultural firms were headquartered in three different provinces in the country with productivity in an additional two provinces.

Data were collected during the months of May and June 2007 from seven companies. All GDA companies were included in the study. Four of the GDA companies are involved in the mining sector; three in the agricultural sector. Several data collection and analyses methods were used: structured schedules designed to elicit specific cost, programme structure, and labour structure information, cost, structural and HIV data obtained from the CHAMP’s (GDA technical support partners’) databases, printed information and staff, informal discussions, focus group discussions with employees, structured interviews with community members and administrators, and observations.

The study was divided into three main areas: (1) a cost-benefit analysis of the workplace programmes, (2) employee and community perceptions of the programme, and (3) the programme’s impact on non-permanent employees.

Cost Benefit Analysis

The net benefit of an HIV preventative programme is the costs avoided and reduced (the benefit) minus the costs of the programme itself. This analysis extended the usual definition to include costs and benefits of treatment and care. Six of the seven companies examined showed net benefits for their workplace programme. On average, these benefits amounted to 47 USD per employee for the year 2006. Companies with new HIV programmes appear to have smaller benefits than those with programmes of longer duration.

The bulk of the programme costs are attributable to the education and training effort. Considerable time and effort had been spent on educating and training peer educators in awareness, care, and treatment of HIV and AIDS. About the same amount of value was spent on employee time - the value of time spent in education, training, and workshops of employees who, under different circumstances, would have other duties.

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About 14 percent of employees are estimated to be HIV positive. Of 50,000 employees, employee turnovers due to HIV and AIDS are estimated to be about 500 in the last year. Another 316 turnovers, however, were likely avoided. One hundred and fifty-one employees are estimated to have improved their health by converting from untreated HIV positive status to some sort of treatment. The figure includes those who were HIV positive without treatment, to cases of HIV positive who received treatment, possibly ARVs. Nearly seven percent or 3,296 employees avoided infection in 2006, while two percent were on ARVs and enjoying improved health and productivity.

The typical company spends an average of nearly 9,000 USD per employee to both cover funeral costs of an employee dying of AIDS, and to replace that employee. Replacement employee costs, whether from early retirement or death, average around 8,000 USD. The largest cost was in the value of time spent by a supervisor in helping the new employee to learn the job. Supervisors are expensive and the time devoted to helping a new employee, particularly a skilled employee, is large. New employees' low productivity was also a high cost.

Twenty eight percent of benefits accruing to the GDA companies with HIV programmes can be attributed to reduced productivity losses from sick employees. The typical company saved nearly half a million dollars in productivity that otherwise would have been lost.

Uniformly, treating patients diagnosed with HIV or AIDS was cheaper than treating undiagnosed patients. Costs of treating undiagnosed HIV positive patients were estimated to be about seven times that of those who had been diagnosed and were on ARVs. Given that ARVs are free, and most ARV patients are seen to be relatively healthy and stable, this is of little surprise. The estimated costs across companies of treating an undiagnosed patient, neither monitored, nor on ARVs was 371 USD in 2006. This contrasted with the cost of treating (but not medicating) an ARV patient, an estimated annual cost of 55 USD.

Employee Morale And Community Impact

Knowledge and other benefits from the workplace programmes are also spreading to the surrounding communities. Access to HIV related information, condoms, VCT, and in some cases, ARVs have improved the lives of community members and these efforts are much appreciated. Most of the employees in focus group discussions and interviews confirmed that the companies have implemented the HIV workplace programme and most companies provide monetary assistance for funeral costs, to purchase the coffin, and food for the funeral house.

Employees observed that seminars and workshops conducted in the workplace, which included workers and some community members, have helped change their practices. Workers said they noticed lower death rates among employees. Employees also observed that there has been an improvement in workers' productivity because of medical intervention provided by the company, such as free medication for both employees and their dependants.

The most visible impact for employees of companies' workplace programmes is raising awareness of HIV and AIDS. As one employee suggested; "Knowledge is power." This includes knowledge about HIV transmission and prevention and services available, including VCT and PMTCT.



Despite the mainly positive effects of the HIV workplace programmes implemented by the respective companies, the research also revealed less positive points. One aspect that came out of the focus group discussions and interviews is that, some employees perceive the HIV workplace programme as threatening to their employment contracts. It is a signal to the employees that greater clarity about the HIV policies within companies is needed.

Employees in this research confirm that HIV and AIDS are having a negative impact on their lives, and also on their families and their communities. Their main concern was that they would contract HIV and eventually die. This would mean leaving their children as orphans without guarantees as to who would take care of them.

HIV and AIDS were found to have a significant impact on the current and future plans of employees. They reported in focus group discussions and interviews that their plans are sometimes blocked because of the presence of an AIDS patient in the house or community. In particular, plans having financial implications are disturbed if the resources have to be diverted to medical care for the patient.

Non-Permanent Employees

Monthly, non-permanent workers are paid an average of 65 percent of what regular workers are paid in these three agricultural firms. About 17 percent of overall benefits to employers of HIV programmes to seasonal workers derived from reduced medical costs for one company. The HIV programme for non-permanent workers paid for itself. For the other two companies, the programme produced net benefits. Over the three companies, benefits averaged 32 USD for each seasonal employee.

Although non-permanent workers are eligible for, and benefit from, most existing aspects of workplace programmes, at present they are not specifically targeted in prevention campaigns, particularly behaviour change and social change communications, and furthermore many say they are unable to access workplace HIV activities. The amount of time that workers participate in HIV-related activities varies greatly within each company, and in Company C workers stated that they spend between zero and 24 hours per quarter in HIV-related activities. Workers at the same company were the most likely to say that they were unable to access aspects of the workplace programme because they are non-permanent.

Planning for the future is a key factor when assessing the vulnerabilities of workers, as research has shown that if workers are preoccupied by short-term tangible needs, the prospect of a future chronic illness might not factor into their everyday decision-making, i.e. whether to engage in risky sexual behaviour. Amongst workers who took part in this research, many expressed that their family is of key importance (the workers are generally providing for immediate and extended family); however planning to look after families in the long term was difficult because contracts are short (in companies B and C contracts last for less than one year, and in companies A and D contracts are two years).

The gruelling physical nature of the contract work also adds to vulnerability. In one discussion, a worker stated that his job was risky and that workers are “always coughing and [their] bodies get wasted”. In another discussion a woman said she had to walk to the work site in the pre-dawn hours, a dangerous time for women to be out on their own.



In most cases temporary workers are aware of HIV-related information being provided by the company, although they are not well informed about where to get tested for HIV, and many are unsure as to whether their company has a workplace HIV policy. Because families are not part of the local community, workers express concern about the reach of the programmes.

At both sites basic knowledge about modes of HIV transmission was high. Most respondents had heard of HIV, could name at least one correct mode of transmission, gave correct answers for what HIV is (a disease, a virus) and showed few misconceptions about HIV transmission. There were high numbers of correct responses about causes of transmission of STIs, the most common being sex without a condom, followed by having more than one partner. However, this overall knowledge has not led people to employ standard prevention techniques or to adopt risk-lowering behaviour. Respondents show low levels of condom use combined with relatively high levels of multiple concurrent sexual partnerships. Levels of transactional sex - often an indicator of unequal gender dynamics in the wider community - were also high, with nearly a third of respondents at both sites stating that they had participated in such relationships. In the farms, there were high levels of stigma surrounding working with people living with HIV.

This discrepancy between knowledge and behaviour is consistent with existing research conducted with mobile workers in the region. Although more longitudinal qualitative research is needed at these sites to explain this, previous studies do offer explanations (for example see Campbell, 2003). These include environmental vulnerability factors such as living and working conditions, lack of recreational options, and mobility itself (distance from families), which workers themselves state can affect their health-seeking behaviour.

Conclusions And Recommendations

Replacement labour may be less skilled, have less knowledge, and be more distracted, less committed, more overworked, and less focused than original labourers. The major cost of HIV and AIDS for some industries, then, might well be the loss of markets in the region or country.

Data obtained by companies was rarely organized in a manner to give accurate costs or benefits of HIV programmes or human resource implications of the disease for the company. Given the overwhelming evidence of this study that HIV and AIDS is a major cost and can be mitigated, it is a major recommendation of this study that companies should look upon HIV as a strategic issue, design ways to keep track of costs, benefits and counts, and look upon these figures as central to company planning in the medium term.

The 2007 DHS survey should be extensively analyzed to establish a baseline for industries and the national workforce. Given that the impact of HIV for companies is only partially captured by a company-based examination, industry-based analysis is needed.

When there is a relatively large supply of unskilled labour in an industry that requires poorly educated labour or skilled labour in the usual sense, the supply of such labour cannot shrink past a certain point before the viability of the industry itself is threatened



From the employees and community members' perspectives, there is room for improvement. For instance, in the further implementation of the HIV workplace programmes, the language and visualisation of prevention messages must reach the illiterate and non-English speaking members of the communities, resulting in increased access to HIV related health care and services. For workplace programmes to be effective, they need to be multi-sectoral, comprehensive, focused, and community driven

While most people appreciate the work of the companies regarding HIV, some employees feel that the companies are not doing enough to help families that are affected with HIV. Community members expressed the need to translate the brochures' information about HIV from English to the local languages, which will help those who cannot read and understand English to have access to HIV information.

Besides the need for more information about HIV in general, the research found that several community members are not sure of the effects of ARVs, even though they can receive them gratis. The communities need more information about the effects and efficacy of ARVs before people began taking them.

The question of treatment and care for non-permanent workers remains largely unresolved. Companies feel they cannot provide treatment to mobile workers, as it would be unethical to begin treatment if it cannot be continued when the contract is over. Yet, the study reveals that even modest incorporation of such workers in workplace programmes provides benefits to both companies and temporary workers.

A more holistic approach to prevention programmes for non-permanent workers is required. Through implementing broader workplace programmes – for example including the wider community and addressing the environmental vulnerability factors of non-permanent workers – existing programmes can be made more effective.



Background

“I’ve really noticed a big decline in the number of employees who are sick and leaving since we instituted the HIV programme here.”

This was volunteered by a Human Resource Manager at a copper mine. Such comments were not uncommon as our team did its work gathering data on the impact of private industry HIV programmes. Yet, few executives could cite the value of benefits to the company other than anecdotally, and several wondered whether the programme could produce enough benefits to outweigh its costs.

This ambiguity stems from at least two dominant sources - both of them addressed in this report. First, whereas the literature abounds with evidence that HIV and AIDS are widespread in Africa and among agriculture and mining sectors in Southern Africa in particular, it is nearly silent on research-based evidence of its net benefits to companies which are market driven. Second, cost-benefit studies of HIV and AIDS are rare worldwide. When health economists look at costs and benefits, they tend to compare the costs of treatment of a disease with that of prevention. A company-wide programme does not fit these parameters².

Companies, nevertheless, are implementing HIV programmes. Executives often feel strongly that such programmes are beneficial-if only for employee morale and maintenance of employee health. They recognize that some measures need to be taken to tackle a disease which threatens their workforce. Yet, they have not turned their own numbers into an analysis that might show how much they lose from the illness and how much of this loss might be regained in an effective HIV programme. Most companies face impediments to integrating such programmes into targeted economic planning and strategies. This study is intended as a first step in filling this gap. While only a targeted, comprehensive investigation of each company can give definitive returns-to-investment estimates, this study outlines major parameters across several companies and two important sectors of Zambia’s economy.

² Neither is there much literature on HIV even in this more common health approach to cost-benefit analysis. A search of health literature data bases yielded only two studies of this nature (using HIV, costs, and benefits as search terms). There were 174 pieces of literature that appeared, and all but two were cost-effectiveness analyses.



This research attempts to extend the accuracy and scope of typical cost benefit analyses in several ways by:

- Working closely with the companies over a period of time to hone estimates of major factors which refined initial estimates
- Incorporating actual HIV testing counts (CT), estimates of ARV use-in companies with on-site hospitals and programme administration costs of education and training inputs
- Visiting multiple company sites where cost variations were expected
- Capturing employee impressions, often using local language
- Capturing community impressions, gathered formally and informally within the community settings
- Cross-checking structures, parameters and data with people who work daily with the companies on these programmes

Objective

This study attempted to answer the question, “What are the costs and benefits of HIV workplace programmes in Zambia when viewed across several companies?”

In exploring this larger question, several sub-questions were addressed:

- Is there a net benefit to companies of their HIV workplace programmes?
- What are the costs of such programmes and where are costs highest and lowest?
- What types of benefits accrue to these companies?
- What is the source of the benefits?
- How can costs and benefits be calculated using a combination of company data, programme statistics, and industry parameters?
- What are the benefits to communities of HIV workplace programmes?
- How do employees perceive workplace programmes?
- How do workplace programmes impact on contract and seasonal workers?

Scope

Seven companies in Zambia were included in this research. Companies ranged in size from 350 to 10,000 employees. All were within either the mining or agricultural sectors. Four are located primarily in Copperbelt Province and are mining-related firms. The agricultural firms were headquartered in three different provinces in the country with productivity in two other provinces.

In response to the increasing impact of HIV on their workforce, and in response to the ILO call for workplace programmes, the companies which took part in this research have started HIV workplace programmes. Besides developing an HIV policy, most companies have recruited and trained peer educators within their companies, who sensitize their peers within the workplace. Some companies have also extended peer-education on HIV to the surrounding communities.



Topics of peer-education and awareness include modes of HIV transmission, ways through which HIV cannot be transmitted, the importance of VCT and where this can be done, how to live positively, and information on care and support. Often these companies work hand-in-hand with institutions such as CHAMP and other civil society organisations, combining resources with technical expertise on HIV. In most companies VCT is being offered, while recently some have started providing ARVs to their employees.

The study started out with a simple strategy: within the narrow confines of the Global Development Alliance (GDA) technical support partner's resources, determine what types of benefits GDA companies were deriving from their HIV Programmes. One benefit could not be captured through cost data - that of employees' morale. Another benefit could not easily be linked to costs using generally accepted conceptual frameworks of workplace programmes - that of community behavioural and attitude changes. Thus, in addition to cost data, a component intended to capture these non-cost benefits was added.

The research benefits from its rather large scope. By looking at several companies in two different sectors of the economy, a more general picture emerged and comparisons of sectors led to a greater understanding of which parameters applied to specific sectors and which were general across most or all companies.

The study grew in scope and sophistication as programmes and organisations involved in the HIV issue within Zambia asked to become partners. The Department for International Development in the UK, the International Organization for Migration, the Food and Agricultural Organisation of the United Nations, and the USAID funded SHARe project, joined the research. A component which focused on non-permanent workers was added and the research team grew.

GDA Programme

The Zambian HIV/AIDS Global Development Alliances (GDAs) were formed to address the development problem of reducing the impact of HIV and AIDS on the mining and agribusiness sectors in Zambia. Through funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), USAID, and both direct and indirect contributions from three of the largest agribusinesses, as well as five of the major mining sector companies in Zambia, a three to five year public-private partnership was agreed upon to expand the private sector's response to HIV to the outreach communities.

The agribusiness GDA partners are Dunavant (Zambia) Ltd., Zambia Sugar PLC, and Mkushi Farmers Association. The mining GDA partners are: Konkola Copper Mines PLC, Mopani Copper Mines PLC, Copperbelt Energy Corporation PLC, Kansanshi Mines PLC, and First Quantum Mining and Operations Ltd. (formerly Bwana Mkubwa Mines Ltd.).

In October 2005, the US Government signed a Memorandum of Understanding (MoU) with each of the above-mentioned private sector organisations that contribute highly to Zambia's economy, being the first GDAs in the world that focus on HIV.

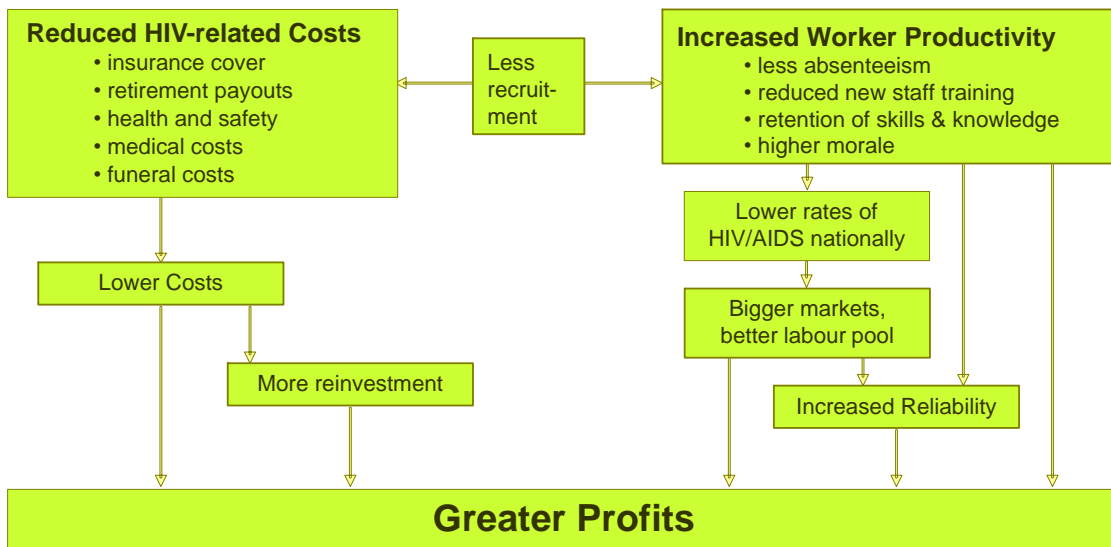


The US Government has contributed 3.26 million USD for technical support and direct inputs to the GDAs, with over 7 million USD leveraged from the private sector through both direct and indirect inputs³. The GDA partners work closely with the Ministry of Health (MoH) and the National HIV/AIDS/STI/TB Council (NAC) to ensure harmonisation of private and public sector responses and approaches. Since 2006, the development of a public-private partnership for the expansion of good quality ART services in Zambia has been in process. Currently, selected private sector organisations are undergoing ART accreditation by the Medical Council of Zambia. Once accredited, the private sector will be eligible to sign a memorandum of understanding with the Ministry of Health, and subsequently to receive free ARV supplies under the national programme.

Conceptual Framework

HIV and AIDS affect the profitability and, thus, viability of companies in a range of ways. Primarily they reduce worker productivity and increase costs. Organisations worldwide have recognized this drain and this recognition might largely explain why many companies have active HIV programmes and cover the costs of treatment for workers. Figure 1 below outlines the benefits to companies of such programmes. It is adapted from a diagram of the International Labour Organisation (ILO) which shows the costs of HIV to employers.

Figure 1: Organisational benefits of HIV workplace programme



³ These financial contributions include actual and committed USG funds up until FY07, and GDA partner actual contributions up to March 2007.



The study followed this conceptual model. Specifically, we gathered data on the costs and productivity issues diagrammed in the first row. We calculated cost reductions and productivity gains from the programme in all the areas outlined, except employee morale. While these costs are readily measurable, effects on individual and work unit productivity, morale, and discipline are much more difficult to estimate (Rosen et al., 2002).

Thus, employee morale was handled separately in a non-cost form. We interviewed employees, conducted focus groups, and spoke with HIV Coordinators at the companies to capture employee morale issues.

We went beyond this conceptual model in one significant way. That is, we also studied community effects of the workplace programmes. Education, counselling, and testing (CT) extended to the outreach and surrounding communities of these companies. For many companies, employees live on company grounds, or are clustered in nearby areas so that communities are really an extension of the company environment.

It is noteworthy that not all the benefits of an HIV programme can be captured by looking through a narrow company cost-reduction lens. For example, one company had an extensive programme, but reaped few productivity gains, or reduced costs of their farmers, or unskilled workers. Yet the company feels strongly that the programme is a worthy investment. Seen through the lens of a market, they are likely to be correct. When too many small-scale farmers or unskilled labourers succumb to AIDS, the intensity of production is jeopardized, the market is at risk and the true cost to the company may well be the risk to its viability in the region. This is discussed more in a later section of this report.



Literature Review

Business Involvement In HIV

Studies in Kenya, Botswana, Zimbabwe, Malawi, and South Africa have found that increased health benefit claims, increased absenteeism, and increased expenditures on recruitment and training are among the largest HIV-related costs faced by companies (Rosen et al., 2002).

The supply of labour is evidently reduced by HIV and AIDS, and for companies operating in hard-hit regions, HIV will have major consequences on profitability and productivity. In 2005, ILO estimated that 28 million workers globally were lost due to AIDS, and a projected 48 million will be lost by 2020 if no measures are taken (ILO, 2005). The number of workers lost due to HIV, is, however, greater than the number of workers who die of AIDS. Workers who are living with HIV might be able to work for years, but their illnesses make them progressively unable to work, until they are fully unable to work. The ILO estimated that in 2005, there were more than two million workers who are at any time fully or partially unable to work due to AIDS (ILO, 2005).

In Zambia projections suggest that by 2010 the impact of AIDS will reduce the labour force by 21 percent. There was a labour force loss due to AIDS of 14,000 persons in 2005, alone, and an estimated total of 105,000 people lost by 2010 (Kamocho et al., 2005).

In a 1997 UNAIDS survey of 203 companies in 14 countries, the main motives given for corporate action on AIDS were: welfare of employees (46%), safety/prevention (34%), legal implications (24%), health care costs (16%), and concern for the worldwide epidemic (12%), followed by: community problems and absenteeism due to illness and public image (Bloom et al., 2001& Daly, 2000).

Increasingly, companies are recognising that their ability to protect their employees from HIV infection is limited, if education and outreach efforts are not extended to the local communities. The disease is easily passed from the wider community to employees and their families (Daly 2000). While workplace programmes on HIV are primarily targeted at the employees of the company, surrounding communities can also benefit from workplace programmes. Indirectly, information on HIV might trickle down to the family and friends of employees, but several companies have been targeting communities surrounding their companies directly. The Global Business Council on HIV/AIDS found that companies benefit from HIV programmes that go beyond the workplace and address issues in the local community (FHI 2002). Increasingly, companies understand that the HIV risk to their employees is inseparable from the HIV risk in the surrounding communities and are exploring ways to bring awareness, Voluntary Counselling and Testing (VCT), and Antiretroviral (ARV) access to the communities in which they operate.

Several studies detail this approach in the literature. Chevron Nigeria embraced the wider context from the onset in 1997, providing HIV prevention and care services for its direct workforce and local communities, including HIV workshops for employees' children and other youths in the communities where they operate (GBC, 2000). Heineken International's comprehensive HIV and AIDS approach provides access to ARVs for employees, partners, and children (GBC, 2000). In 1991, the Botswana Meat



Commission began an HIV prevention and care programme for its 1,500 employees, including ongoing HIV education for all workers, provision of condoms, sexually transmitted infection treatment at the workplace clinic, and HIV counselling for employees and their families (UNAIDS, 1998).

Several companies, such as Heineken, have invested in establishing a company clinic on the company premises. These company clinics are often open to the surrounding communities. Some companies collaborate with public health services near their premises, referring their staff to these external health care providers.

Company workplace programmes that collaborate with the public sector and civil society are not only more sustainable, but also more accepted by employees and communities. The oft-cited successful awareness and prevention campaigns run by the South African electricity company Eskom, in collaboration with local community groups and the government show the importance of the links between public and private sector (Bloom et al., 2001, GBC, 2000 & Daly, 2000). Counselling and treatment are provided for those infected with HIV. Eskom collaborates with government and NGOs on an education campaign for the wider community, and it makes regular broadcasts on national and regional radio stations. It also provides substantial funding for NGOs working on AIDS prevention and for vaccine research. Studies have found a high level of HIV awareness among Eskom's employees, lowered levels of discrimination against staff living with HIV, and greater willingness to report HIV status (Daly, 2000 & Bloom et al., 2001).

Good examples of such public-private partnerships within Southern Africa can be found in the mining sector. Such HIV workplace programmes have tended to focus on a company's employees and the surrounding community, in particular, sex workers in that community. Anglo Coal in South Africa collaborates with trade unions and surrounding communities on HIV programmes and formed partnerships with local government authorities in providing mobile STI clinics for outside communities and programmes promoting healthy lifestyles and better nutrition. Harmony Gold Mining Company employs miners who come from different parts of South Africa and neighbouring countries. They have a mobile clinic which offers antibiotic treatment, condoms, and information about HIV, including other sexually transmitted infections (Bloom et al., 2001).

While evidence is still limited, the majority of case studies describing business incursions into the HIV arena report positive results. Awareness amongst workers and communities has increased, morale has improved, and, in some cases, infection rates are down (Bloom et al., 2001 & Daly, 2000).



Agriculture

The impact of HIV and AIDS on the agriculture sector has received substantial attention both in Zambia and in the Southern African region. Most of these studies focus on household effects such as on poverty, food production, and household structure (Economic Commission for Africa, 2006; FAO, 2003; FAO, 2004, Curry et al, 2006, Weigers et al, 2006) The cause-effects are fairly straight forward if not always obvious. HIV and AIDS clearly reduce the labour quality and quantity from which rural farmers can draw. The number of people who are available for farming land is reduced. Substitute labour may either be unavailable or, when available, less knowledgeable than the original farmer. Additionally, sick family members draw time and energy away from production. The result is poorer nutrition overall and remaining energy reduced for education, social activities, and marketing.

As might be expected, AIDS-affected households in Northern Province [Zambia] were more likely to state that they had reduced the area cultivated, shifted from growing maize to cassava, and invested less in farm inputs such as fertilizer. (Weigers et. al., 2006).

Memfih (2005) points out that the effects on rural household iterate through a society to affect urban households. Urban relatives may supply substitute labour or may send ill household members to stay in rural home villages. Such interactions cause otherwise poor households to incur additional medical charges, and reduce agricultural productivity. Memfih concludes:

In areas heavily affected by HIV and AIDS, the catalytic effects and systemic impact of the epidemic on agricultural development may amplify existing development problems to such an extent as to trigger structural changes (i.e. in adult and infant mortality); and/or create new problems and challenges for agricultural development (child-headed households, the breakdown of informal agricultural institutions, and thus, of certain vital social safety net mechanisms.) (Memfih, 2005).

Jayne et al. (2005b) look at such structural changes in agriculture and conclude that the costs of agricultural labour will rise and cause the industry to lose some competitiveness on an international scale. As well as costs of labour, labour quality will deteriorate as the knowledge of abilities passed from one generation to another decreases. They thus identify several processes that they believe have been neglected in previous macro-economic studies of the effects of HIV on agriculture: slower population growth, slower development of informal markets, declines in land-to-person ratios, and shifts in cropping patterns. (Jayne et al., 2005a).

They conclude:

Macro-economic models that do not account for the complex effects of AIDS on human capital and intergenerational knowledge transfers are probably underestimating the economic and social consequences of the disease. (Jayne et al., 2005b).



Kamocha et al. (2003) look entirely at the labour force size patterns of the Zambian economy. They calculate that agriculture will lose about 15,755 persons annually due to AIDS. They feel, as have others, that “Labour losses due to HIV and AIDS will be more profoundly felt by the female labour force.” The women’s labour force will shrink an average of about 7,180 persons due to HIV and AIDS.” (Kamocha et al., 2003).

Wieggers et al. (2004) highlight the gender dimension of HIV. Prevalence among women and girls is higher than for men, women bear the burden of caring for the sick and orphaned, and certain social norms encourage men to have multiple sexual partners which is often reinforced by migration and mobility as a result of poverty. Gender inequalities, low status, social- and economic vulnerability, and limited livelihood opportunities increase women’s risk for transmission and make women and girls more likely to engage in transactional sex in order to survive. External factors such as drought worsen this, as women and girls resort to sex in order to obtain food, goods or money.

The Centre for International Health and Development at Boston University has conducted a number of cost studies on HIV. One study focuses on smallholder cotton growers (Larson et al., 2004). Not unexpectedly, they find that these small agricultural households are affected by HIV. The effect is substantially larger in households where labour supply is already stretched. In typical households as well as those where labour is constrained, the death of a previously healthy working-aged adult causes cotton output to fall by 14 to 33 percent. Adding a chronically ill, working aged adult causes a similar decline. The death of such a person or the death of one youth has lesser effects-from five to 11 percent. (Larson et al., 2004, Table 19, P. 28).

Using a household survey methodology for gathering data, Larson et al. (2004) find a number of other results which give us insights into how productivity of small farmers and HIV are interlinked. Ten percent of adults within sampled households reported to work sick during the past year⁴. Deaths were attributable mainly to tuberculosis, pneumonia and malaria, but nearly a quarter of deaths of working-aged adults were unspecified. Members of a typical household attended at least ten funerals during the year, three of which were not considered local.

Non-Permanent Workers

Mobile or non-permanent workers make up a large part of the workforce in the mining and commercial agriculture sectors. Labour brokers recruit contract workers for the mining industry from countries in the region, particularly Zimbabwe, Botswana, and South Africa. These workers travel to the mining sites from their respective countries for two or more months at a time. Mining companies also employ internal migrants - Zambians from other parts of the country - who travel back and forth between the mining areas and their original homes where they have left their families.

⁴ In regression models of all four output measures (cotton and maize area planted and output), the portion of working-aged adults who were sick regularly was a statistically significant factor.



The commercial agriculture sector employs a different type of mobile worker, those who undertake seasonal work during the harvesting season. Some of these seasonal workers come from surrounding areas, while others travel long distances in search of employment.

The relationship between population mobility and HIV is complex. Evidence suggests that migrants become vulnerable to HIV as a result of the conditions and structure of the migration process. Mobility contributes to concurrent multiple sexual partnerships, which is arguably one of the main drivers of the HIV epidemic in southern Africa (Halperin & Epstein, 2004). Separated from partners and families, and often working in harsh, lonely and isolating conditions, migrants may engage in multiple sexual relations while they are away from home. Female migrants are particularly vulnerable to transactional sexual encounters and sexual violence due to lack of economic autonomy and discriminatory gender norms.

The nature of mobility makes migrant workers difficult to reach, as they are often not in one location for a long time. Also, migrant workers may not understand/access existing interventions due to differences in language and culture. Furthermore, migrants often live outside communities, in temporary housing or hostel accommodation, where HIV prevention education, condom provision, HIV testing, and post-infection treatment and care may be scarce or non-existent. Lastly, undocumented migrants might be reluctant to access healthcare services due to fear of harassment or deportation.



Methods

Data were collected during the months of May and June 2007 from seven companies. All GDA companies were included in the study. Four of the GDA companies are involved in the mining sector; three in the agricultural sector. Several data collection and analyses methods were used: structured schedules designed to elicit specific cost, programme structure, and labour structure information, cost, structural and HIV data obtained from CHAMP's (GDA technical support partners') databases, printed information and staff, informal discussions, focus group discussions with employees, structured interviews with community members and administrators, and observations.

The research team consisted of a principal investigator⁵, researchers from the Food and Agriculture Organization, and International Organization of Migration. Some research assistants came from the University of Zambia, and others were independently hired cost accountants. In addition, the team was assisted by managers and counsellors at the various company sites and by CHAMP, a local civil society organization⁶.

The team of researchers were organized around three general themes:

- Cost Team: consisting of the principal investigator (a development economist) and two Cost accountants
- Employee/Community Team: consisting of two qualitative research specialists and two senior university assistants
- Migrant/Temporary Labour Team: consisting of two migrant labour specialists on mobility and HIV

These teams were also assisted by the GDA technical support organisation, CHAMP. CHAMP provides technical and administrative support to the GDA programme, has extensive databases on costs and employee status, and frequently assisted our teams in the field with logistics, transportation, and supplemental manpower.

Working with the research teams in the field were HIV Coordinators for the companies. They often scheduled the interviews, focus groups, and questionnaires. They also arranged for employees and community members to be interviewed.

The teams travelled by road to the sites during May and June 2007. Three of the companies had two sites that required visits. Specifics of each group and its methodologies are given in each of the three sections of this report.

⁵ Lynn Ilon, also a professor at Florida International University with over four years' experience in the region.

⁶ CHAMP – Comprehensive HIV AIDS Management Programme



Findings

The bulk of the rest of this report is divided into the three main areas of investigation and findings: cost-benefit analysis, employee and community perceptions, and non-permanent employee impact. Each of these sections contains specifics of relevant literature, methods, analysis, and findings. The final section of this report provides an overview of findings and recommendations.

Cost Benefit Analysis

Methods

Cost data included numbers on costs, counts and benefits. Data were gathered in categories organized around company departments that would have the data:

Table 1: Types of data gathered by cost team

Type	Data Gathered
Human Resources	<i>Counts of employees, sick leave, retirements, funerals, etc.</i>
Financial	<i>Average salaries, medical pay-outs, insurance payouts</i>
Management	<i>Estimates of recruitment, productivity, supervision times for new employees</i>
HIV programme costs	<i>Salaries, management time, CT expenditures, training costs</i>
Medical costs	<i>Cost estimates of treatment, patient numbers, employee counts for treatment</i>

Information was obtained in several ways:

- Most often, team members used forms to direct questions and record specific data culled from company information
- Some companies in some units had data prepared, and provided this data on wholly or partially completed forms
- Sometimes, the structure or processes of the company were best captured by asking a knowledgeable employee to describe a process (such as recruitment or training). Basic data were then recorded which could later be analyzed into accurate costs or counts
- Each company was separately tabulated. When additional clarification was needed, team members contacted company staff by email or phone



Data were generally gathered in one four to eight hour day with minimal follow-up needed. The team met with company designated staff specifically in the areas of inquiry: finance, human resources, medical care and treatment, and programme administration. Data were gathered for the 2006 calendar year⁷.

An issue faced in the analysis was the time lag between when an employee might first become HIV positive and when he/she would retire, die, or leave the company due to the effects of AIDS. That time lag has been estimated among medical experts in Zambian society to be about five-and-a-half years for the working population⁸. That period is extended when wellness programmes increase awareness of nutrition and care. Doctors in the hospitals studied here estimated that a wellness programme could extend this time period by about two years.

Any HIV programme that succeeds in lowering the rate of new infections realizes its benefits over a long period of time. If companies merely replace workers who have left for AIDS-related reasons, then the period between effectiveness of the programme (lowered HIV infection rates) and costs (new employee orientation and training) is at least five years. Benefits accrue when the rate at which replacement (new) employees are hired is reduced.

The literature generally treats such lags by assuming that a cost savings in the future (say, five years) has less value than if that same cost savings were to occur today. The reason is that a company can use the cost savings today for many purposes during the intervening five years. No one knows ahead of time the actual value of being able to use money today relative to its availability in the future. Nevertheless, economists frequently guess by applying what is known as a discount rate. The rate chosen is largely arbitrary.

This study does not discount future benefits. Given the variability of parameters: time lag, value of discount, and structure of savings; applying a discount rate is unlikely to make results more meaningful. The variance of necessary parameters means the application of such a discount rate obscures results, rather than improving them.

A good example of parameters variability is the time lag between infection and hiring a replacement employee. Some companies in Zambia explicitly or implicitly hire two or more employees for some staff positions assuming that deaths will dissipate their workforce. In this instance, the costs are immediate, sometimes occurring before the event. Another parameter variation is benefit calculation. Most of these companies have employee programmes which spread to the community. It is possible that for every employee who avoids infection, one or more community members avoid exposure (or visa versa). In turn, then, perhaps another employee avoids infection. Thus, it is not clear that one avoided infection among employees should, in fact, be counted as one. Perhaps there is a multiplier effect over time. Finally, the time lag between infection and replacement hiring is not clear even if each sick

⁷ This rule varied where companies kept books based on either their fiscal year or their programme (GDA) year (April to March). All years were twelve months.

⁸ This is several years short of similar individual in wealthier countries which had better nutrition, health care and, work conditions.



employee is replaced by only one new employee. Experts within Zambia now agree now that five-and-a-half years are a reasonable estimate of the time period between initial infection and death of an employee. But studies done in Zambia have used other time periods from eight to ten years. The choice of a time period for lagging benefits drives the final benefits figures.

Nevertheless, there is enough data revealed in this study, however, that knowledgeable readers could apply a discount rate of their own choosing, with a time period that satisfies them and makes estimates of discounted benefits and net benefits.

Count Of Employees Living With HIV

Many companies and CHAMP had very accurate total counts for CT and ARV treatment. A major problem however, was teasing out how many of each of these counts applied to employees, dependents, contract employees and the community. CHAMP was able to discern which of the CT subjects were employees and knew, in the aggregate, how many had tested positive. But, for CT done by the company, it is not so clear. The percent of employees who go for CT when CHAMP is present may not be the same percent as those who go for CT when done by the company, its clinic, or its outside medical provider. As raised in the literature and our own focus groups and interviews, employees are sensitive to having their employers know about their HIV status. Thus, they choose from several venues to get tested.

We had CT numbers and results for all companies for four years. For 2006, we had CT numbers tabulated by results and by reason for taking the test. We had further breakdowns for CT numbers administered by the GDA partners (number and prevalence for employees tested). Some companies that either purchased and distributed ARVs or treated HIV positive patients had ARV treatment information, although many could not break down these counts by employees, dependents, and contractors. We also had counts of employees and contractors and, in some cases, the percent of each who accessed healthcare, or even HIV treatment.

Using known counts and percentages and applying these percentages when breakdowns of counts were not available, we were able to get estimates for new and continuing ARV treatment uptake, those diagnosed HIV positive but not yet on ARVs, total numbers of people living with HIV, and those yet undiagnosed, but HIV positive. Using either employee numbers or percent of employees accessing healthcare for HIV reasons, we could apportion these numbers across types of employees and dependents. Because counts of ARVs, CT, and HIV prevalence were largely available for these companies, reasonably accurate models could be constructed of the likely rates in employee turnover and prevalence.

Assumed prevalence rates drive many of the results. We had data on average rates of prevalence for regions, populations (urban, rural, miners, mobile populations), from the literature and, in two cases, from studies conducted by two of the companies. Expected prevalence was based on those known from studies, Zambian DHS survey results or, in one case, an actual prevalence study within the company. We measured these expected prevalences against actual CT prevalence results with surprising results. In general, the model took expected prevalences and adjusted for employees who had previously tested positive, and those who had done CT because they felt sick. We could calculate what the



prevalence rate of this narrowed population would have to do in order to raise the entire company to its expected rate of prevalence. We compared that rate to the known rate in 2006 of people who tested positive among those going for CT. The differences were striking.

In each instance, the actual prevalence rate fell below the expected rate - sometimes marginally, sometimes substantially. Some or all of this is attributable to the education and testing programme⁹. To avoid over-playing results, we made the conservative assumption that half the differences were attributable to the programme.

Medical Costs

Three of the companies have fairly comprehensive clinics and hospitals on site, or nearby. These clinics and hospitals can treat a wide variety of illnesses and injuries. Two of the companies attempt to provide nearly comprehensive medical care for employees, dependents, contractors and, sometimes, retired employees. One provides first-line care with a small hospital, but refers major cases to outside hospitals, paying in large part, those charges.

Of those companies without their own hospitals, three had medical schemes that partially or fully covered employee health costs. Two had medical allowances from which employees could draw. A third provided medical insurance, but only covered a small portion of their workforce. The seventh company had small on-site clinics for basic health care needs and would cover some or all of the costs of medical care of outside clinics for their most senior employees.

In the case of those companies with hospitals, the medical personnel kept fairly good records of the types of patients and their medical conditions. These figures could frequently be used as a basis for estimating relative intensity of care. Using unit cost estimates (doctors' hourly costs, cost of CT tests, lab costs, and medication), the costs of treating new and continuing ARV patients and those diagnosed HIV positive, but not yet on ARVs could be estimated with some accuracy.

Estimating the costs of HIV positive patient care of those patients who had not been diagnosed was more difficult. Without testing, doctors cannot be sure who, in fact, is HIV positive and generally could not keep accurate records if diagnoses were not confirmed.

⁹ Prevalence rates calculations were driven by the rates of prevalence of those currently being tested to what would have been expected (adjusted for those already tested positive or those testing because they were sick). Any explanation, then, must address why the newly tested population has a lower prevalence rates than would have been previously expected. Although programme intervention is a clear explanation for some of this difference, the research did not attempt to answer the question of what portion of this difference could be attributable to the programme and what portion to other explanations. A large influx of new employees might change rates dramatically. Equally, in some instances, employees have two or three places to get tested and may self-select away from their employee testing sites or those administered by CHAMP in favour of private health facilities. This difference will be important to explore in future research.



To capture these costs, we asked all the doctors who ran the hospitals to estimate the percentage of both hospital and clinic patients who were HIV positive. We got estimates from five doctors and one company that reported numbers while completing our forms. Estimates ranged from 11 percent (this from the company that refers many cases to outside clinics), to 65 percent. Many had at least some data from which to base their estimates. The resulting average was 34 percent of outpatients and 40 percent of hospital patients. By taking total clinic and hospital costs, subtracting the costs of patients taking ARVs and those who are HIV positive, but not yet on ARVs, we could obtain the total expenditure of all patients except those undiagnosed, but living with HIV or AIDS. We attributed residual HIV related costs to these patients.

Using doctors' estimates of per-patient costs for diagnosed patients and their estimates of total patient load in hospitals and clinics due to HIV and AIDS, we were able to estimate the amount spent on undiagnosed patients. We used these relative costs and apportioned medical costs of those companies where per patient costs were not known.

Finally, we asked companies with hospitals to estimate the quantity of time and money spent on HIV positive patients by types of expenditures. For example, we asked each to estimate the amount of doctor time given to a patient beginning ARV treatment. We asked for lists of laboratory work and got costs for each component.

Modelling New Employees

When the cost of replacing a worker approaches 8,000 USD as it does in this research, mostly through lost productive and supervision times, it is important to understand why workers are leaving, even if they are not retiring or dying while on the job. HIV takes a considerable toll on the Zambian working population. Best guesses by professionals within Zambia are that a typical untreated adult lives only about five-and-a-half years after contracting HIV. This is considerably shorter than a lifespan in wealthier countries where someone recently infected, but remaining untreated might expect to live some 10 or more years. Poor quality diet, demanding labour conditions and poor medical care all conspire to shorten the life expectancy of an already ill Zambian.

Using the five-and-a-half year estimate, employee turnover was modelled. When employees go on ARVs, many live an apparently full work life¹⁰. Others who take ARVs do so at a very late stage in their AIDS illness and thus, extend their lives only another year or so. A few who go on ARVs are not responsive to the drugs and die in the same amount of time as those who never accessed ARVs. Using these parameters, an estimate of employee work-life and turnover was modelled for employees with undiagnosed (and untreated) HIV and those who have been diagnosed (and are regularly reviewed for treatment).

¹⁰ Several doctors reported that they have seen employees on ARVs working normal time and workloads for years. Free ARVs have only been available since 2005 in Zambia and companies who provided them before that time did so for only a few years. So, for purposes of this study, an employee successfully on ARVs was assumed to subsequently have a normal work-life. Only time will tell if, for the Zambian population, an assumption of a normal work-life holds true over the long run.



Using company counts of deaths and retirements was not a reasonable substitute for this work-life model. Ideally, each employer would be able to report the number of employees who left each year either through death or retirement, and how many of these could be attributed to HIV. If such data were accurate and readily available, one could replace the estimated five-and-a-half years with an actual figure. When employee deaths and retirement numbers were calculated, they produced unrealistic work life estimates - as high as 200 years. This is likely because many HIV positive employees go uncounted; they simply leave the company rather than retire or die.

Even if employers endeavoured to keep very accurate information in this regard, it is not always easy to know whether a retirement, in particular, or a death is due to AIDS. This is a medical judgment which must be backed by adequate tests. When an employee has not had a test, or when the employee chooses not to reveal the results of a test, even medical personnel are left to guess as to cause. An employee seeking early retirement, possibly due to illness may not reveal the actual reasons for retirement. Deaths while on-the-job would not be an accurate count of actual employee deaths due to AIDS because some would retire before they died.

Overhead In Program Costs

A major cost of an HIV programme is the cost of employee time, either education or training. Only one company reported the cost of employee time as a part of total HIV workplace programme costs. This is separate and apart from salaries of staff involved in the programme. In order to judge the approximate value of this employee time, the value of employee time devoted to training and workshop participants multiplied by hours of training/workshops, multiplied by average hourly salary was calculated.

Findings

Net Benefits

The net benefit of an HIV prevention programme is the costs avoided and reduced (the benefit) minus the costs of the programme itself. This analysis extended the usual definition to include costs and benefits of treatment and care. Specifically, it included:

- | | |
|-----------|---|
| Costs: | <ul style="list-style-type: none">• Costs of Prevention (Prevention education and training)• Costs of Care (Medical costs of treating those who are HIV positive and under treatment) |
| Benefits: | <ul style="list-style-type: none">• Costs avoided because of reduced numbers of HIV positive employees• Costs reduced because employees have shifted from being sick to stable health due to ARV medications |

As Table 2 shows, savings related to HIV workplace programmes are approximately three times the cost of the programmes. This varied substantially across companies, with only one company showing a net cost of their HIV programme, and the maximum benefit being 5½ times greater than their costs.



Table 2: Net benefits of HIV workplace programme

	Aggregate Costs (USD)	Aggregate Savings (USD)
Savings due to ARV treatment		2,214,300
Savings due to new infections		5,385,073
Costs of prevention	1,659,627	
Cost of care	802,074	
Sub-total	2,461,701	7,599,373
Net benefits	5,137,672	

Six of the seven companies examined showed net benefits for their workplace programme. On average, these benefits amounted to 47 USD per employee for the year 2006. Table 3 shows net benefits and the impact of these benefits on payroll.

Table 3: Net benefits per employee of HIV workplace programme

	Net Benefit USD	Percent of Total Payroll
Mining 1	-276	-2.6%
Agriculture 1	58	1.2%
Mining 2	5	0.0%
Mining 3	412	2.5%
Mining 4	24	2.1%
Agriculture 2	76	0.7%
Agriculture 3	33	0.2%
Average	47	0.6%



Many company managers expressed their satisfaction with the programme, but often couched that satisfaction in terms of doing the right thing for their employees, communities, and the nation. While the doctors who oversaw company clinics were frequently eager to talk about the benefits to the programme - observable differences in deaths, sickness, and hospitalizations, for example, managers tended to view the programmes as necessary costs which supported a workforce and community upon which it depended. One senior manager said, "I know that you won't find a benefit here, but we do it because it is the right thing to do. We'll do it anyhow, whether there is a benefit or not."

Two companies stand out as not showing net benefits. One company had an actual net cost while another had nearly equal costs and benefits. While the explanations are likely complex, some preliminary investigation revealed at least two important indications. The most striking result is that both companies are fairly new to the programme. In both instances, 2006 was their first full year with HIV programmes. The impact of programme timing is discussed in a later section of this report.

The company which showed a net cost had unusually high costs for the programme. They spent more than three times as much per employee as the typical company (545 USD versus 154 USD), and three times more than the next highest cost-per-employee company. While a number of costs were high, the highest was the value of employee time spent at workshops. The total cost of employee time at training and workshops was in the mid-range for all companies, not nearly as high as some, not nearly as low as others. But, because this company is the smallest, when calculated as a per-employee cost, it was relatively high. Because benefits accrue relative to the number of employees affected by early retirements, medical costs, etc. in order to show a net benefit, costs must also be viewed within a per-employee framework.

What makes employee time so costly for this one company is the fact that its programme costs must be spread across fewer employees who are paid relatively high salaries, and because the company is new to the programme. New programme entrants are likely to spend more time training staff than do older programmes. Since training has a cumulative effect, this new, smaller company benefits neither from costs-to-time benefits (increasing effectiveness of accrued training) nor costs-to-scale benefits (spreading fixed costs across a large number of employees). The evidence from the other six companies would indicate that this small, new company can expect to see its net costs disappear or turn into net benefits as the years of the programme increase.

Costs

Cost Of Programme

Of all the data gathered in this study, probably the most problematic were the numbers supplied for the costs of the HIV workplace programmes. Costs both for the medical and education efforts were difficult to gather and often appeared inaccurate once put into a framework. Several means were used to correct for errors, but resultant corrections cannot be assumed to be fully accurate.

Programme costs consisted of expenditures for training and workshops, costs of treating diagnosed cases of HIV and AIDS, employee time involved in treatment and prevention (whether salaried for this purpose or time taken from other work), and costs of counselling and testing. Some of these costs are paid directly from the GDA programme. Where such costs were accrued by CHAMP, the costs were



accurately recorded and fully accounted for. Companies, however, bear a substantial portion of the costs and often do not account for all of them.

For example, most companies did not consider the administrative time it took to oversee and administer the programme. Many provided lunches, materials, and transport for the training and workshops, but did not report such costs. Another problem encountered is that some of the companies spend a considerable amount of their expenditures on community efforts. One agricultural company purchases much of its product from independent farmers. Although these farmers are not their employees, the small-scale farmers do represent the productivity of their market and are, therefore, included in the programme. Yet, calculations for this analysis focused generally on the employed workforce¹¹.

The investigator had rather constant access to the GDA partner that was administering the programme along with its community workers. Using those with considerable knowledge of how each company works, the reported costs of the programme were weighed against what was known of the structure and scope of each company's programme. Hence, adjustments were made to reported costs when it was known that important costs had either been left out of the reporting, or were substantially attributable to a non-employee base.

Table 4 shows the breakdown of programme costs by purpose. Across all companies, about 166 USD was spent per employee per year.

Table 4: Programme costs

	Amount spent per employee (USD)	% of total programme costs
Education & Training	45.97	29.3%
All counselling and testing	3.37	2.0%
Salaries	36.62	21.5%
Other administration	17.89	10.5%
Employee time	46.91	27.6%
Cost of treating diagnosed HIV positive	15.46	9.1%
Totals	166.22	

¹¹ See a separate analysis later in this report that looks at this population.



The bulk of the costs are attributable to the education and training effort. Considerable time and effort had been spent on educating and training peer educators in awareness, care, and treatment of HIV and AIDS. About the same amount of value was spent on employee time, the value of time spent in education, training, and workshops of employees who, under different circumstances, would have other duties. The cost of testing kits is free when used within the context of the GDA programme, but some companies spend their own money to make testing available on demand by their employees at clinics, hospitals, and workshops.

Surprisingly, a comparatively smaller amount was spent on medical costs attributable to those who have been tested and diagnosed with HIV or AIDS - approximately 15 USD per employee, or nine percent of total costs.

Program Prevention

A substantial portion of the education and training component of the programme is devoted to sensitizing peer educators, employees, and community members to the risks, causes, and prevention of HIV. Getting the word out to the employees, their spouses and the surrounding community is a main objective of the programme. Expenditures on this effort reflect this priority as shown in Table 5. Although much of this effort involves the communities in which the company operates (and employees live), when computed just for employees, about a dollar each was spent on sensitization in 2006.

Table 5: Breakdown of education and training expenditures

	Expenditures per employee (USD)	% of total
Sensitization	1.02	41.1%
Prevention	0.48	19.3%
Orphans and vulnerable children	0.25	10.0%
Prevention of mother to child transmission	0.10	4.0%
Palliative care	0.45	18.1%
Palliative care of TB and HIV - care giver's training	0.10	4.0%
ARV Training	0.09	3.5%



Human Resources Time

On average, companies spent about 150,000 USD of employee time on the workplace programme. This is separate and apart from salaried time explicitly devoted to the programme. Most of this time was spent on workshops and training. When expenditures per company were averaged, they spent 27 percent of their programme costs on employee time.

Most of these trainings and workshops involved counsellors, educators, and care givers. What was not estimated was the value of their time talking with colleagues. Neither was the value estimated of non-educator colleagues in engaging in such conversation. Anecdotal evidence indicates that much of this time was done after work hours and on weekends. But, no doubt, it also involved time at work. This time was not captured as costs avoided, assuming those who have received information and counselling take less educator and counsellor time once under treatment. Thus, although this time is of value to the company, its undercount probably gets balanced by a similar undercount in benefits.

One company appeared to capture all types of employee time: time spent on training, time spent on educating, and time employees spent being educated. Their estimate per employee was about twice the average of time spent by other companies; even though the cost of employees was quite low for this company. A rough estimate of time spent by employees might be twice that analyzed here.

Benefits

Benefits of the HIV workplace programme are, simply, the costs avoided because employees have not contracted the disease and the costs reduced because employees have switched from being sick due to the disease, to being relatively active while on ARVs. These benefits affect the productivity of the workforce, the medical costs of treating them, and employee turnover.

Three types of prevalence rates provided the foundation for estimates of benefits. Across the companies, the expected prevalence rate averages 27 percent. This was due to the anticipated prevailing rate in mining companies short of any mitigating factors of 30 percent, as established by previous studies, and one mining company with a known prevalence rate of 33 percent. The prevalence rates measured by CT results across all companies were 16 percent.

It is likely that some, if not all of the difference between expected and measured rates can be attributed to the success of the HIV workplace programme. This study made the conservative estimate that about half of the difference between these rates might be attributable to the programme. Using this conservative estimate, we measured the effects of the programme on the number of employees avoiding infection, and having longer work lives due to conversion from sick and HIV positive to ARVs¹².

¹² ARV work life is considered to pattern those who do not have HIV once-and if- an ARV patient has stabilized. Most ARV employees have been on the drug three years or less. Within the last year, most just went on the ARVs which became widely available and free. Using a set of known parameters, we modelled work life years for those on ARVs. Parameters included: ARV failure, extended longevity, but eventual death of those testing late, and success of those who tested in time.



In fact, HIV has a major effect over several years for companies. Infections avoided today result in fewer turnovers in a number of years. ARV treatment today has a more immediate effect by possibly avoiding a death within a year or two. Nevertheless, this data is calculated to show the effect that the HIV programme conducted in 2006 would have on company costs and benefits in the future. Thus, any savings due to the 2006 programme, whether accrued immediately or in the future, were calculated. Many benefits will appear in the future and may, over time, have a cumulative effect although only one year effects were estimated here.

Table 6 reflects the numbers that drove these calculations. About 14 percent of employees are estimated to now be HIV positive. Of 50,000 employees, employee turnovers due to HIV and AIDS are estimated to be about 500 in the last year. Another 316 turnovers, however, were likely avoided. One hundred and fifty-one employees are estimated to have improved their health by converting from untreated HIV positive status to some sort of treatment. The figure includes those who were HIV positive without treatment, to cases of HIV positive who received treatment, possibly ARVs.

Table 6: Rates of infection, avoided infections and ARV treatment

	Total	% of Total Staff
Total number of employees	50,579	
Currently infected	7,093	14%
Current turnovers due to HIV	496	1%
Infections avoided due to programme	3,296	7%
Turnover avoided due to lower infections	316	1%
Employees on ARV	1,100	2%
Turnover avoided due to ARVs	151	0%

Thus, nearly seven percent or 3,296 employees avoided infection in 2006, while two percent were on ARVs and enjoying improved health and productivity.

Employee Turnover

Table 7 reveals that the typical company spends an average of nearly 9,000 USD per employee to both cover funeral costs of an employee dying of AIDS, and to replace that employee. Replacement employee costs, whether from early retirement or death, average around 8,000 USD. The largest cost was in the value of time spent by a supervisor in helping the new employee to learn the job. Supervisors are expensive and the time devoted to helping a new employee, particularly a skilled employee, is large. New employees' low productivity was also a high cost.



Table 7: Average annual cost of replacing an employee due to HIV

Average cost to a company of hiring a new employee	
Recruitment	183
Supervision	5,028
Training	225
Lost productive time	2,711
Subtotal	7,959
Average cost to a company of an employee dying while on the job	
Funeral costs	367
Funeral lost productivity	361
Subtotal	728

Table 8 shows estimates of cost savings due to lower employee turnover¹³. The typical company saved over half a million USD due to lower employee turnover. The biggest savings are attributable to lower rates of infection. Many companies estimated a considerable amount of time was spent in supervising new employees (particularly skilled employees and, to a lesser degree, new management workers).

¹³ The cost savings here are high so it is worth noting that the costs are truly averages across companies. For example, across all five companies, the cost of recruiting a new employee was calculated. The number in this table reflects the totals of all seven companies divided by seven. Across all companies, then, the average cost of recruiting one new employee was USD 2797.



Table 8: Typical company total savings due to lower employee turnover (in USD)

	Cost reduced due to employees on ARV treatment	% of total	Costs avoided due to new infections avoided	% of total
Average cost to a company of hiring one new employee				
Recruitment	2,797	1%	4,700	1%
Supervision	89,917	45%	127,199	39%
Training	2,995	1%	1,346	0%
Lost productive time	90,290	45%	175,807	54%
Subtotal	185,999		309,051	
Average cost to a company of an employee dying while on the job				
Funeral costs	6,519	3%	9,793	3%
Funeral lost productivity	7,181	4%	8,569	3%
Subtotal	13,700		18,361	
Grand Total	199,699		327,413	

Most of these cost savings were due to reducing time lost when a new employee is learning the job because there are fewer new employees. All companies estimated a productivity loss with new workers. The exception, however, is of some companies with a number of unskilled labourers who thought that the intensity of supervision of these employees changed very little from new hires to older hands. The largest costs often appeared to be with skilled labour which required more supervision and longer times to learn on the job than other employees. The costs of hiring new managers sometimes brought them on par with new skilled labour costs due, largely, to the value of their time lost.



Most companies would pay for funerals of employees and their dependents¹⁴. This is just one instance in many where the effect of HIV on employees overlaps with the welfare of their families and communities and visa versa. Many cost-benefit analyses of HIV overlook the cost of lost productivity when staff attend the funeral of an employee or close dependent. One company told of a recent funeral of an employee where four employees were sent to another region of the country for four days travel. The company paid for the transportation, kept salaries going, and paid for accommodations and meals for these travelling employees¹⁵. The calculations made here estimate that the cost of the funeral itself is equalled to the cost of lost productivity of staff attending the funeral.

Productivity Loss Due To HIV And AIDS

Twenty eight percent of benefits accruing to the GDA companies with HIV programmes can be attributed to reduced productivity losses from sick employees. The typical company saved nearly half a million dollars in productivity that otherwise would have been lost. Table 9 indicates how these benefits are distributed.

Table 9: Value of reduced productivity losses due to HIV for typical company (averaged across companies)

	Costs avoided due to fewer new infections	Costs reduced due to ARV treatment	Percent of total lost productivity
Productivity lost due to sick leave	97,104	32,365	25.2%
Sick but working lost productivity	284,701	99,236	74.8%
Totals	381,805	131,601	

Most companies in this survey reported surprisingly few actual sick days. One company told us that they had been downsizing in 2006 and employees did not want to take time off for fear of being released from employment. Several companies reported that, particularly with their unskilled, seasonal, and contract workers, sick days were few. Seasonal workers do not get paid for sick days and lower level employees know that there are many people who could and would take their job, should they appear unreliable. Thus, although companies did have losses of productivity due to sick days resulting from HIV, these losses were minimal. The benefits of saving on such productivity losses were minimized.

¹⁴ Although what was calculated here was the cost of an employee funeral, in fact, many companies funded more than employee funerals.

¹⁵ As a result of such costs, some companies now have policies of how many employees will be allowed to go to the funerals of staff and their dependents because the loss of productive time is so great.



Many managers reported that they thought a substantial percent of their workforce came to work even when they were sick. Some were able to give fairly accurate counts (say five of every shift of 180), or 10 of a labour force of 120. We asked these same managers how much production was reduced when an employee reported to work while ill. Across industries the answer was about 30 percent less productivity from a sick employee. We used these parameters to estimate the cost of lost productivity when an employee reports to work sick.

Using these figures and estimates from records and clinicians about the percentage of sick employees who had AIDS symptoms, we were able to estimate the loss of productivity when employees report to work feeling sick. Applying the estimates of HIV infection rates and workers on ARVs that no longer report to work sick, we were able to estimate total cost savings. Roughly three quarters of those productivity savings were attributable to avoided productivity losses when workers who report to work, feel sick.

Medical

Uniformly, treating patients diagnosed with HIV or AIDS was cheaper than treating undiagnosed patients. Costs of treating undiagnosed HIV positive patients were estimated to be about seven times that of those who had been diagnosed and were on ARVs. Given that ARVs are free and most ARV patients are seen to be relatively healthy and stable, this is of little surprise. The estimated costs across companies of treating an undiagnosed patient - neither monitored, nor on ARVs - was 371 USD in 2006. This contrasted with the cost of treating (but not medicating) an ARV patient, an estimated annual cost of 55 USD.

The average annual cost across companies of caring for an HIV or AIDS patient that has not been evaluated either put on ARVs, or is monitored for progression of the disease is 402 USD. This cost translated into considerable savings when applied to the estimates of employees who either avoided infections or successfully moved from undiagnosed AIDS to ARVs. The typical company will save about 200,000 USD annually on employees who did not get infected in 2006. They saved about 70,000 USD in 2006 on employees who were on ARVs and, hence, required less treatment, doctor time, and hospitalization. Doctors observed that they had seen significant changes in both deaths and hospitalizations since employees could access ARVs. They acknowledged, however, that there were some additional burdens on outpatient services, as many employees now needed to be monitored regularly. Firms who paid transportation costs to local clinics said that transport costs had gone up since employees went on ARVs and needed monthly visits to the clinics.

Costs Of Non-Permanent Workers

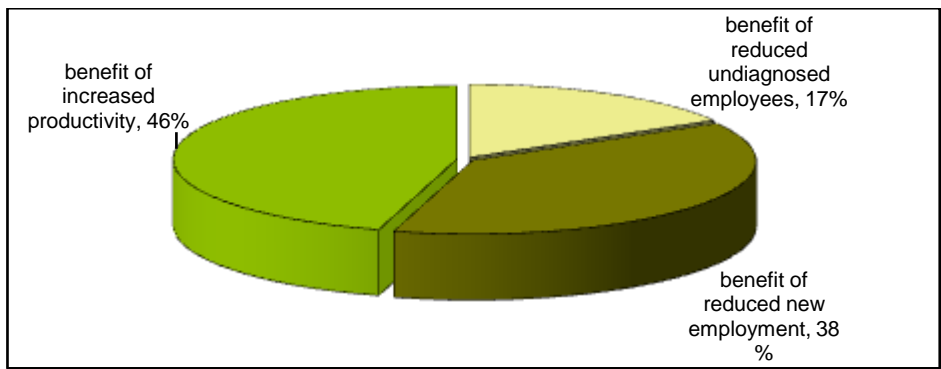
As contract workers in the mining sector have benefits similar to those of regular workers, the cost analysis of temporary workers focused on the three agricultural companies that employed seasonal workers. Such workers have very different benefits, pay scales, and costs than their permanent counterparts.

Monthly, seasonal workers in the commercial agriculture sector are paid an average of 65 percent of what regular workers are paid in these three agricultural firms. Since they work only five to eight



months per year (for these firms at any rate), their annual pay is an even smaller percent of regular workers' annual pay. These workers sometimes can access company-provided health care. About 17 percent of overall benefits to employers of HIV programmes to seasonal workers derived from reduced medical costs as shown in Figure 2.

Figure 2: Breakdown of HIV workplace programmes benefits for seasonal workers



Whereas Figure 2 shows an overall average, the actual percent of total benefits to any of the three companies varied widely, according to the structure of their costs. For example, one company covered no health costs of seasonal workers but, because they employ seasonal workers for processing, not harvesting or growing, their temporary workers require quite a bit of supervision when first introduced to the job. Nearly all the benefits for this company were due to the reduction of the percentage of seasonal workers who were new to the job. At present, they hired about 20 percent new workers each year. They are losing about one percent of their seasonal employees each year due to HIV and would have lost another one percent had there had not been a programme in effect. Company estimates show that an additional 3,500 USD of supervisor time was required to get a new seasonal worker up to full productivity.

Of the two companies that do provide health care, about 83 percent of their programme benefits derive from reduced healthcare costs. Most of the remainder of the benefit for these two companies derived from the increased productivity of workers when they reported to work feeling well rather than sick while they were under treatment. Nevertheless, one of these firms derived no net benefit or net cost to the programme for these workers. Therefore, the HIV programme for seasonal workers paid for itself. For the other two companies, the programme produced net benefits. Over the three companies, benefits averaged 32 USD for each seasonal employee.

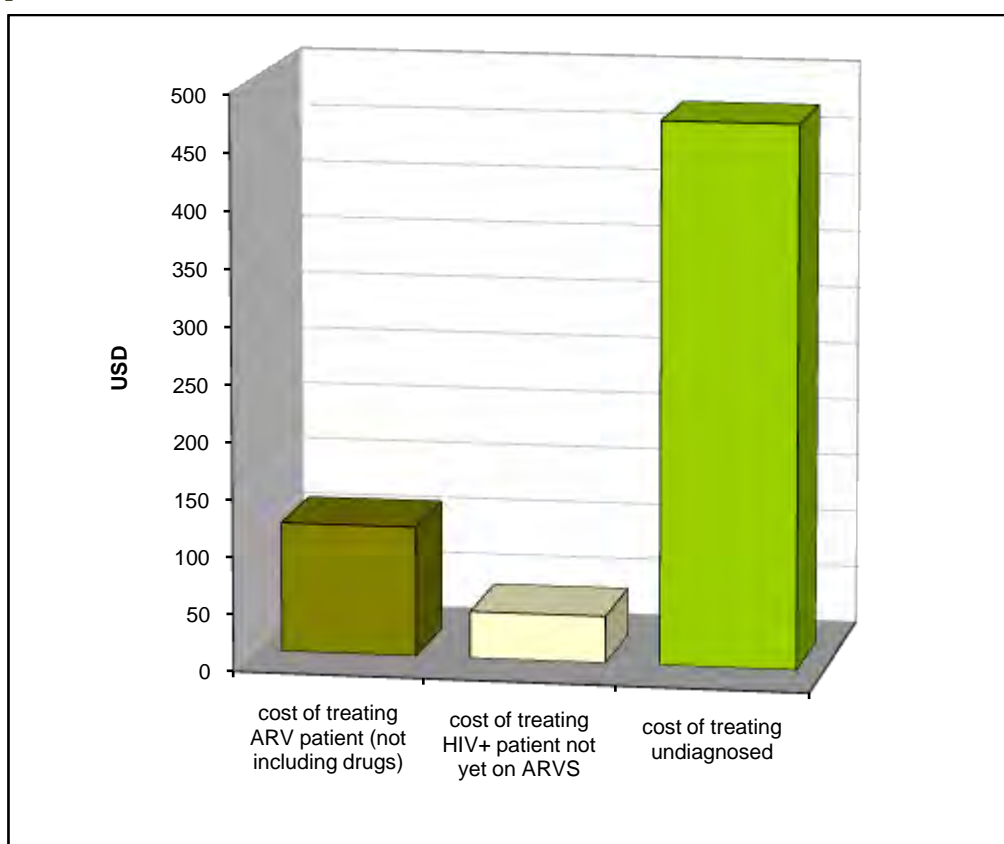


Analysis

Cost Of Untreated Workers Vs. ARV Workers

Figure 3 illustrates estimates of the costs of treating ARV patients, the cost of HIV positive patients who are not yet under treatment and both ARV patients and those who are HIV positive who remain undiagnosed and, therefore, not treated or monitored for the disease. The relative costs reflect anecdotal evidence from doctors that suggests that their hospitalisation loads have been greatly reduced as they have been able to move patients from hospitals and general ill-health to stable ARV patients.

Figure 3: Relative costs of treating ARV, pre-ARVs and undiagnosed HIV and AIDS patients



Generally, doctors report that annual laboratory testing is done for each patient living with HIV. Usually, stable ARV patients are relatively easy to care for and require little doctor and clinic time.

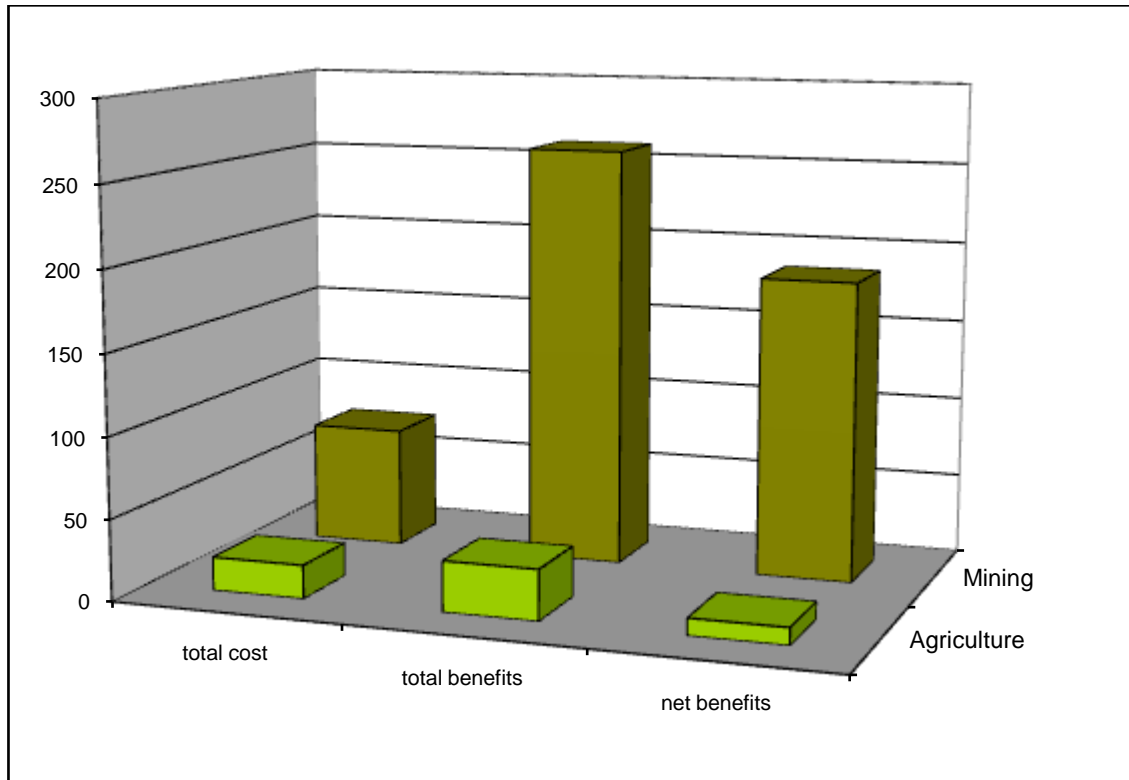
Our results parallel what is generally known among health care professionals. Once on ARVs or in a treatment program to prolong health before ARVs, patients become relatively healthy and incur few extra medical costs aside from the drugs which are rapidly becoming free and available for all Zambians. The difference in cost between caring for someone who has undiagnosed AIDS versus the cost of caring for that same person once he is on treatment underlies many of the benefits of the workplace programme calculated here.



Agriculture Vs. Mining

There were net benefits across the companies for both the mining and agriculture sectors. However, the characteristics of the two industries demanded different structures of both costs and benefits. Mining firms pay substantially higher wages, have a much higher percentage of skilled workers, and generally tend to pay higher amounts of medical costs. Figure 4 demonstrates the relative costs and benefits for the two industries.

Figure 4: Sectoral comparisons of costs, benefits and net benefits per employee



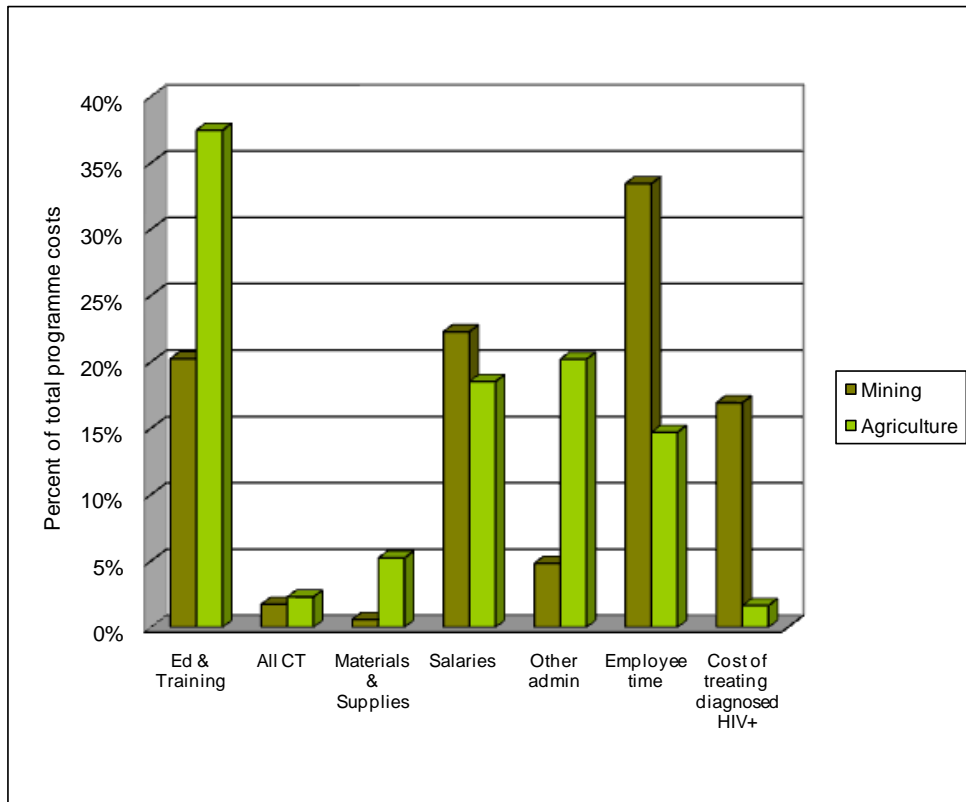
Despite the relative differences in costs and in benefits, both sectors derive net benefits. Clearly, the most striking comparison is that agriculture spends less, offers fewer benefits, and derives smaller net benefits per employee than mining. Given the salary differences between the two sectors, this is not surprising.

These same structural differences drive a variation in costs of the programme. Employee costs are much higher in the mining industry than in the agricultural industry.



Figure 5 shows the programme cost differences which result.

Figure 5: Breakdown of programme cost by sector

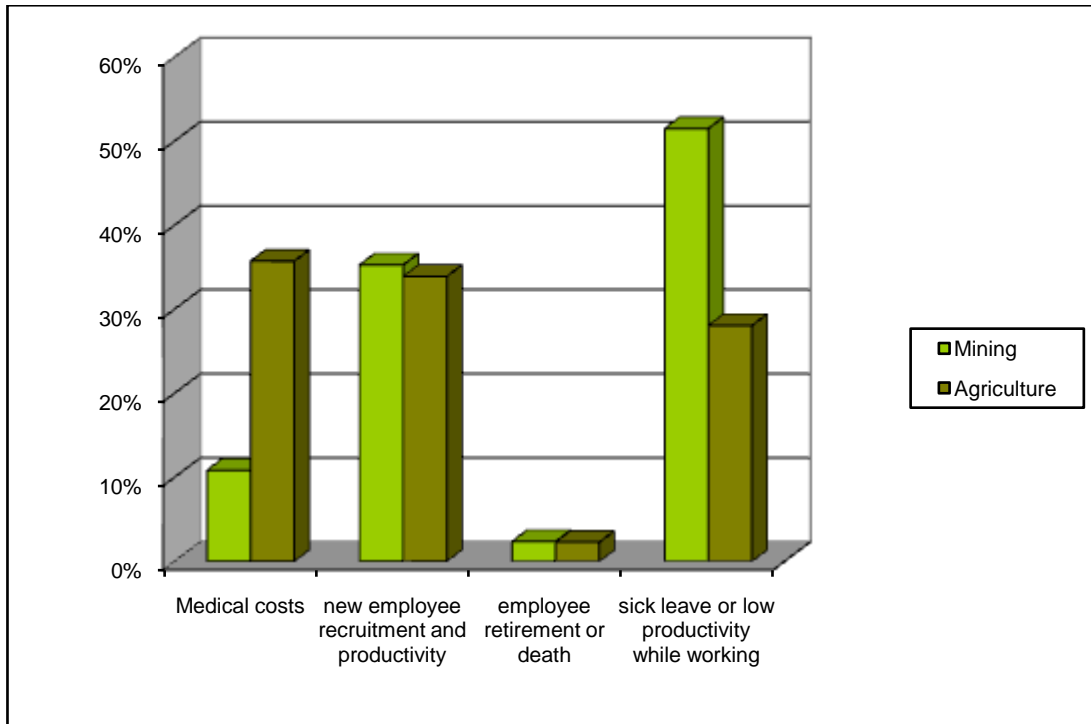


As a percentage of total programme costs, the mining sector spent more on employee time and salaries, while agriculture spent more on education, training, and administration. Overall, both industries spent roughly the same amounts on their programmes. Per-employee costs were also roughly comparable. Agricultural firms spent 143 USD per employee and mining firms spent 191 USD. Note that the two sectors differed widely on how much they spent on treating employees diagnosed with HIV. Annually, mining firms spent an average of 27 USD per employee for these costs whereas agricultural industries spent about 2 USD. This reflects the relative amounts they spent on healthcare as a whole.

The two industries were similar when comparing the breakdown of the derived benefits. New employee recruitment and productivity were primary costs for both industries as reflected in Figure 6. Loss of productivity due to existing employee leave or poor performance while sick was also a major cost.



Figure 6: Breakdown of benefits derived from programme by sector



Time On Programme

Companies with new HIV programmes appear to have smaller benefits than those with programmes of longer duration. This result was first noticed when two mining industry companies with new programmes did not conform to expected net benefits. More investigation revealed that there was a relationship between the length of time a company had participated in the programme and several other interesting factors:

Figure 7: Correlation coefficients with years of funding HIV programme

Total costs of programme	-.43
Total benefits of programme	.57
Net benefits of programme	.68

There are likely to be two factors at work. The nature of the GDA programme is to assist a company to build or enhance its own capacity to deal with HIV and AIDS. Longevity of such programme participation may be a good indicator of increased company capacity. For example, in the first year, none of the peer educators are trained or sensitised. A year later, they have all had some, often extensive, training and are getting more.



Another likely factor is employee awareness and sensitisation. Clearly, exposure to literature, training, informal conversation, and informed counsellors creates a more informed employee base. Time will only increase this awareness and probably propel the transition from awareness into action.

Finally, the longer a company has an HIV programme, the more employees and their dependents and community have been tested. Self-monitoring may lead to action in the form of prevention or seeking medical advice. It is noteworthy that all companies had lower than expected prevalence of HIV positive employees.



Employee Morale And Community Impact

Knowledge and other benefits from the workplace programmes are also spreading to the surrounding communities. Access to HIV related information, condoms, VCT, and in some cases, ARVs have improved the lives of community members and these efforts are much appreciated.

From the employees and community members' perspectives, there is room for improvement. For instance, in the further implementation of the HIV workplace programmes, the language and visualisation of prevention messages must reach the illiterate and non-English speaking members of the communities, resulting in increased access to HIV health care and services. For workplace programmes to be effective, they need to be multi-sectoral, comprehensive, focused, and community driven.

Literature Review

Employee And Community Perceptions

While evidence is so far limited, the majority of case studies describing workplace programmes report increased awareness amongst workers communities, and morale. In some cases infection rates are down (Bloom et al., 2001& Daly 2000).

The oft-cited successful awareness and prevention campaigns run by the South African electricity company Eskom, in collaboration with local community groups and the government show the importance of the links between public and private sector (Bloom et al., 2001, GBC 2000, & Daly 2000). Annual monitoring of program costs found that the company spends approximately 20 USD per year per employee, far less than the cost of recruiting and training new employees for most positions. Eskom also collaborates with government and NGOs on an education campaign for the wider community, and it makes regular broadcasts on national and regional radio stations. It also provides substantial funding for NGOs working on AIDS prevention and for vaccine research. Studies have found a high level of HIV awareness among Eskom's employees, lowered levels of discrimination against staff living with HIV, and greater willingness to report HIV status (Daly, 2000 & Bloom et al., 2001).

The exploratory research undertaken at Eskom by the Horizons Program and Development Research Africa, shows that HIV-related stigma and discrimination can seriously affect the workplace, especially employee morale. Non-discriminatory workplace HIV policies can make workers feel relatively secure that they will not be fired from their jobs, and social isolation and ridicule should be addressed when developing stigma-reduction activities (Population Council/Horizons, 2002). The study concludes that the commonly reported interaction between workplace and community-based stigma calls for a coordinated response, such as offering workers and their family members a choice of using VCT services in either the community or workplace.

In 2004, Horizons Program undertook a study to evaluate the impact of the workplace programme at Eskom, showing that Eskom's programme successfully addressed gaps in HIV knowledge among workers and catalyzed the dissemination of information by workers to family and community members. Additionally, the program increased awareness of Eskom's HIV policies, but workers want Eskom to take a more direct role in providing HIV treatment. It was also found that Eskom's efforts mobilized



peer educators and supervisors to confront stigma in the workplace and community, but more is needed to address workers' lingering concerns about stigma and confidentiality (Esu-Williams et al., 2005). While the example and experiences from Eskom lead the way for other companies, it becomes clear from the Horizons evaluation and other research that, workplace HIV programmes need continued attention and programme challenges need to be identified and addressed.

Bloom et al. (2001) speculate that loss of staff members through sickness has theoretical effects on a firm's stock of know-how and the morale of other workers, as well as imposing recruitment costs. As one Kenyan company manager puts it, "If you lose someone you have trained for twenty years, that is a great loss. Condoms and AIDS education cost peanuts." (Bloom et al., 2001 & UNAIDS, 1998).

The Thai Business Coalition on AIDS highlights poor morale as one factor facing businesses that fail to deal with HIV in the workplace (UNAIDS, 1998 & Bloom et al., 2001). Community involvement by a company can have a very positive effect on morale. As former Chairman Sir Allan Sheppard, of Grand Metropolitan has said, "Of all the aspects of corporate life which influence employees' attitudes and motivation, none is more important than the active contribution made by the company to the communities where it operates (Bloom et al., 2001).

Stigma, discrimination and intolerance towards workers with acute and chronic conditions at the workplace have a great impact on the morale and well-being of the infected worker (Population Council/Horizons 2002 & Maticka-Tyndale et al., 2002). Workplace programmes on HIV can play a key role in reducing these harmful practices, through policy formulation and implementation (including disciplinary actions). For successful implementation of any HIV workplace policy, the full involvement, commitment, and leadership from senior and middle management are crucial (UNAIDS, 1998, GBC, 2000 & Daly, 2000 & Bloom et al., 2001).

Central to many of the workplace responses is the establishment of non-discriminatory practices in relation to people living with HIV, coupled with the provision of confidential counselling. These are crucial factors in providing good working environments and for building knowledge about HIV amongst the workforce, making a positive impact on employees' morale. (Daly, 2000).

Methodology

Several approaches were used to gather information on the impact of HIV workplace programmes on employees and community members: literature review, informal discussions, focus group discussions, structured interviews using questionnaires, and observations.

A total of 12 focus group discussions were conducted at the seven GDA partners involved in this research, involving a total of 96 people, of whom only six were females. At each company, at least one focus group discussion was held, with five to six people per focus group discussion, comprised of permanent and non-permanent workers. Separate focus group discussions were held with migrant workers where applicable. All employees who participated in a focus group discussion were randomly selected by the researchers, often guided by the HIV Focal Person of the company.



Each focus group discussion took between 30 minutes and one hour, conducted by two researchers using guiding questions. All discussions were recorded, while notes were being taken by the researchers. Discussions were held in English mixed with the local language (Bemba or Nyanja), or local language only. As the researchers mastered the local languages, no translators were used, therefore, the chance of losing valid information was minimised. While the guiding questions were developed in English, the researchers translated the questions into the local language before travelling to the respective company.

All efforts were made to create a safe, comfortable environment, allowing the focus group discussion participants to speak freely. The discussions were held in a staff room or office on the company's premises and measures were taken so that others could not disturb the session.

In addition, structured interviews were conducted through questionnaires with purposely selected employees and non-employees from the community. At least five employees and a minimum of seven community members per company were interviewed. The team interviewed 48 employees and 43 community members using these structured questionnaires. Each questionnaire took about 15 minutes to conduct, and questionnaires were administered in various places: at market places within and outside the community, at homes and hostels, and within company buildings.

All focus group discussions have been transcribed and additional information from the researchers was captured, obtained through observations and informal chats with participants after the focus group discussion or interviews. For the purpose of analysis, themes were identified of the different impacts of HIV workplace programmes, and demonstrative (anonymous) quotes from participants were selected.

Ethical Issues

The research involved a broad range of people using a variety of techniques to collect data. Therefore, these are the following principles to which researchers adhered:

- Consultation: in each company the relevant persons and authorities were consulted, so that the guiding principles of the work were accepted in advance by all.
- Informed consent: participants were informed of the nature of the research prior to the interviews or the focus group discussions and what their involvement would entail. They were also given an indication of what would happen to the data, including its potential use in any reports or publications. The wishes of those who did not wish to participate were respected. Consent forms were signed by each participant prior to the interviews and the focus group discussions.
- Privacy, anonymity and confidentiality: participants were not asked to provide personal details. Supervisors were intentionally asked to stay away from the discussions, to allow participants to speak freely. Anonymity was guaranteed and time for questions from participants was allowed.
- Protection from harm: Participants were informed prior to the interview that they were not required to answer any questions which they felt uncomfortable discussing.



Limitations

Participants included permanent, non-permanent employees and community members. Some focus group discussions included peer educators as participants. Their presence in the focus group discussions influenced the conversations, but at that stage, once invited, it was deemed impolite to ask them to leave the discussion. To some extent, their presence may have limited the other employees' comfort to speak freely.

Findings

Employee Perceptions

The employees involved in this research come from diverse backgrounds. Their household sizes range from three to 11 members and most of them reside within the premises of their work places, others residing within walking distance. Their communities are generally not densely populated and most employees in this research have a medium level of education.

The employees in this research addressed how they perceive their company's response to HIV and the impact of the HIV workplace programmes. Most of the employees in the focus group discussions and interviews confirmed that the companies have implemented the HIV workplace programme and that most companies provide monetary assistance for funeral costs, to purchase the coffin, and food for the funeral house. Most often, the company will buy the coffin outright. The company further provides transport to and from the burial sites. These facilities do not apply only to permanent employees, but also to dependants who pass away. One employee alluded:

"When I get sick, whether from HIV or from other illnesses, I don't have to worry because I know that the company will assist me transport to go and seek medical attention from the clinic or the hospital and if all the cars are busy, maybe they are all in the field, the company often give us cash to cater for transport and medication. Not only that even when an employee dies or the dependant of that employee dies the company provides money and transport and some of the company staff are given maybe three to four hours to visit the funeral house. As a result feel more secured in my job."

While one of the respective companies has a clinic on its premises, employees interviewed stated that, when an employee is sick and cannot be treated at the company clinic, the manager goes so far as to take them to the hospital to which they have been referred. Other companies don't have in-house medical facilities, but refer sick employees to nearby clinics.

The researchers found that the respective workplace programmes have greatly benefited people's lives. One employee reported that the greatest benefit that the workplace program has offered is the gift of life:

"...the most important benefit is one's life. If you remember I said my CD4 count at one time was one, if this programme was not there a lot of people would have died..."

Employees noted the efforts by the respective companies around HIV workplace programmes:



“Twalimonapo inshinta kwati 2-3 times apo baitapo ibumba nakalimo lya ba CHAMP kwisa bombako umulimo wa VCT. Kwisa a fwilishako ukweba ati abantu beshibe status yabo, nga nabalwala atemwa tabalwele.” (On two or three occasions we have seen groups, probably from CHAMP, moving into this area and offering VCT services. They want people to know their status.)

“...those people that are spearheading that programme they go department by department to sensitize people about HIV. So the company has got a big role it is playing to sensitize people, at least make them awake that there is such a disease.”

Additionally, workers said they noticed lower death rates among employees. They reported that before the HIV workplace programme in a named company, at least one worker was lost on a monthly basis. Employees also observed that there has been an improvement in workers' productivity because of medical intervention provided by the company, such as free medication for both employees and their dependants.

Employees observed that seminars and workshops conducted in the workplace, which included workers and some community members, have helped change their practices:

“...so far I have lost two friends as a result of HIV which is a lesson enough to change my sexual behaviour.”

The most visible impact for employees of companies' workplace programmes is raising awareness of HIV. As one employee suggested; “Knowledge is power.” If employees can access adequate HIV information, this will not only help them understand what HIV is, but also assist them in protecting themselves and others from infection. One employee from an agricultural company stated:

“We have known HIV and AIDS from the NGOs like CHAMP, we live in the village where houses are far apart from each other and we receive HIV information in intervals.”

This indicates that communities in rural areas normally don't have adequate information about HIV, but it reaches them from the workplace programmes.

Employees reported that information on HIV was printed on their pay slips, so that the spouses could obtain health information there. It was, however, recommended to have the information available in the local languages and perhaps even with images, to pass on the information to illiterate spouses, or to those less capable of reading English.

Direct Benefits For Employees

Employees stated in both the focus group discussions and the individual interviews that the workplace programme provided vital health education. This includes knowledge about HIV transmission and prevention and services available, including VCT and PMTCT. Other employees also gave personal testimonies about how the HIV workplace programme has benefited them. Several employees gave statements about their HIV positive status and shared experiences from the time they were seriously ill.



With an HIV programme operating at their workplace, these employees are now fit after receiving medical attention from the hospital:

“...when I discovered that I am HIV positive and I had to inform my children and other family members about it. My children thought that I was going to die soon, they became more worried and their concentration at school was disturbed. However, with the availability of ARVs now I have been able to maintain good health and this has led to the improvement of children’s performance.”

The employees remarked that the companies are encouraging them to be peer-educators, which strengthens them to become active. Because employees feel that the knowledge they have acquired about HIV is very beneficial, several of them have become peer-educators, ensuring that their colleagues both within the company and in the communities can also acquire knowledge.

Negative Perceived Impacts Of Workplace Programmes

Despite the mainly positive effects of the HIV workplace programmes implemented by the respective companies, the research also revealed less positive points. One aspect that came out of the focus group discussions and interviews is that, some employees perceive the HIV workplace programme as threatening to their employment contracts. As one employee observed:

“Knowing your HIV status may threaten the employment contract. This is because when it comes to pruning of employees or termination of contract, the management often targets those employees that are HIV positive to avoid the cost of medication, hours lost for productivity and absenteeism. To us as employees, VCT works to our disadvantage, so we would prefer not go for VCT in order to safeguard our contract of employment.”

Whether or not this is true, this employee clearly feared termination of contract. It is a signal to the employees that greater clarity about the HIV policies within companies is needed.

A few employees worried about the perception that bad behaviour sometimes resulted from VCT. Some felt that those found HIV positive become sexually active after knowing their HIV status, to purposely spread HIV to those that are not infected. As one employee stated:

“This has threatened our lives. Because those that are infected with HIV know very well that they are going to die, so they feel that they should not die alone.”

The employee further explained that these people were having unprotected sex with other employees and members of the community¹⁶. When the researchers asked another employee whether one would take care not to infect somebody else, the employee replied:

¹⁶ It is possible such behaviour does not represent an actual change in behaviour - that the person having sex had unprotected sex previously. Rather, it is possible that people were more sensitive to such action when they knew (or felt they knew) that the person had tested positive. Thus, the testing itself might not be the impetus for the behaviour, but might have been the motive for observers to change their view of such behaviour.



“If I am to be found HIV positive, I wouldn’t take care to infect others because the person who infected me did not have sympathy for me.”

There is certainly a need for companies to be aware of these negative behaviours and perceptions and to try to address them through raising awareness by peer-educators and through information about positive living.

Impact Of HIV Workplace Programmes On Employees

Employees in this research confirm that HIV is having a negative impact on their lives, and also on their families and their communities. Employees expressed much worry about the spread of HIV. Their main concern was that they would contract HIV and eventually die. This would mean leaving their children as orphans without guarantees as to who would take care of them. One of the employees stated:

“Aah, coming to the issue of AIDS, it affects us in many ways and you would find that more especially with this family struck by this disease most family members you know will get to support this person so that he doesn’t feel out of place and also not loved by the family.”

Employees stated that the workplace programmes have caused behavioural changes. The knowledge that employees have acquired through the workplace programmes has made them realise the importance of condom use and faithfulness. The workplace programme activities at the respective companies are evidenced through various events or activities, but in order to have an effect, analysis is needed of how employees perceive the occurrence of such events and activities.

Table 10: Frequency of events reported by employees (N=39)

Event	Rate of occurrence			
	Happened a lot	Happened a little	Didn’t happen	Not sure
Discussion of info from peer educators (by fellow employees)	48.7%	38.5%	7.7%	5.1%
People go for VCT when staff are in area	41.0%	38.5%	2.6%	17.9%
Workplace program staff recognized	74.4%	20.5%	5.1%	-
Management support HIV network	74.4%	15.4%	5.1%	5.1%
Colleagues discuss peer education	61.5%	25.6%	12.8%	-
Workplace networks spreading information	66.7%	17.9%	2.6%	12.8%
People wait for workplace program services	66.7%	13.9%	8.3%	11.1%



The observed discussions among fellow employees of HIV-related information from peer-educators reveals that these peer-educators play a key role in passing on the necessary information about HIV to employees. Obvious findings from the research are that workplace programme staff is recognised and that the majority of employees interviewed reported awareness of management support to the HIV network.

Employees were also asked to state their perceived benefits of the respective HIV workplace programmes. Those mentioned included: learning about abstinence, faithfulness and condom use (ABC), free VCT services, ARV/PMTCT services, palliative care, reduction in stigmatization, openness about HIV related issues, behaviour change, and company intervention such as taking responsibility in case of employees' sickness.

Table 11: Benefits of workplace programmes to employees

Benefit mentioned:	Amount of Benefit				Total number (N)
	Benefited a lot	Benefited a little	No Benefit	Not sure	
Awareness/Knowledge	94.3%	5.7%	-	-	35
ABC (abstinence, be faithful and condom use)	60.0%	33.3%	-	6.7%	15
VCT	73.3%	16.7%	6.7%	3.3%	30
ARV/PMTCT	81.8%	-	4.6%	13.6%	22
Reduction of stigma	100%	-	-	-	5
Openness about HIV issues	87.5%	12.5%	-	-	8
Behaviour change	75.0%	25.0%	-	-	8
Company intervention	72.7%	27.3%	-	-	11

Table 11 shows that awareness, knowledge, and VCT services provided by the workplace programme are the most cited benefits for employees. Access to ARV and PMTCT are other employees' benefits that were often cited. This means that the most visible interventions have the most direct impact and benefit to employees, and are, therefore, more appreciated. Indirect changes such as behaviour change, openness about HIV-related issues and reduction in stigmatization are more difficult to observe and usually take longer to come about and as a result, are less visible as benefits. The research period was too short to capture these longer-term benefits to all employees. Changes might become more evident with an evaluation of the workplace programmes after one year of operation.



Although rated by a minority of people, the researchers found evidence that behaviour changes and openness related to HIV are already occurring amongst the employees, as the randomly picked discussants felt free to ask several questions concerning HIV. Some employees gave personal testimonies about their HIV status and about how HIV has impacted their families.

Further analysis of the benefits mentioned in the above paragraph shows that directly and indirectly, the workplace programme interventions by the respective companies have a substantial impact on employee morale.

Morale

From the focus group discussions and interviews, it was found that the companies' responses to HIV through the workplace programmes may be increasing employees' contentment. During the discussions employees indicated that they are happy with the companies' responses, especially the fact that the HIV workplace programme caters to their dependants as well. One employee stated:

"...it makes me feel a bit secure because I know my dependants, my family, is able to access medical services at the hospital because [company] pays for the medical expenses for their employees. Even if I am may be medically discharged due to HIV or any other issues [company] puts an employee for five years on free medication. It depends actually how I was medically discharged, if it was due to [company] I will have medical for life. So at least there I am secure because the policy clearly states the medical services, which are offered by the company."

Employees interviewed also raised the concern that there is a minority of employees who persist in working despite their illness, in a bid to continue providing for their families as breadwinners. This worsens their health status since, instead of being attended to at a health facility they choose to work to continue earning money. Employees indicated that this happens mostly by the prejudiced, misinformed workers, who, despite the fact that their company has a workplace programme with a policy of non-discrimination regarding HIV, they fear that management would dismiss them if they were discovered to be ill. This disturbing sign needs to be addressed by companies as they continue implementation of their workplace programmes, ensuring that all employees are fully and correctly informed about the company's policies and practices.

The research found, however, that the majority of employees know that they will not be dismissed on grounds of their HIV status, which motivates them to work even harder. It also alleviates employees' fears, knowing that their children are assured of continued education. In addition, employees state that children who are aware of their parents' HIV status are encouraged, knowing that their parents will continue with employment despite their illness.

Employees at several companies have free access to medical care which makes them feel more secure of their health and productivity at both work and family level. Dependants are also able to receive medical treatment from nearby hospitals or clinics. Although at some of the companies, sick employees are referred to other health care facilities for medication, this does not demoralize employees. The researchers found that for these employees it is enough to know that the company takes care of them. In addition, employees are reassured, knowing that VCT is offered to them, gratis. Another finding that



shows the positive impact of workplace programmes on employee morale is the observed reduction in stigmatization, which is a result of the HIV information that employees have acquired:

"...you know information is power. People were so much in the dark especially the employees..."

Employees from various companies stressed that stigma and discrimination among them have been overcome, due to the HIV awareness raising activities within the companies' workplace programmes.

While all companies involved recognise the importance of the communities surrounding their premises, the respective companies have different ways of dealing with them. For some companies, it is enough that information to the communities filters through via their employees. Others support their trained peer educators to go out in the communities to talk to people about HIV and distribute condoms, information, education, and communication (IEC) materials.

Planning

HIV was found to have a significant impact on the current and future plans of employees. They reported in focus group discussions and interviews that their plans are sometimes blocked because of the presence of a person living with HIV in the house or community. In particular, plans having financial implications are disturbed if the resources have to be diverted to medical care for the patient:

"Ikhudzidwa chifukwa pa family olo wadwalapo ndi m'modzi, that means the whole lot might be affected. Kayili nchito zonse za chitukuko zaima, m'zayamba ku dealing'ana na matenda yamene yaja... matenda aya ni yoipadi." (It [AIDS] affects us because even if only one person is sick in the family, everyone is affected. All developmental plans are halted and the focus is on the patient. This disease is bad.)

"AIDS niyo dandaulitsa kwambili chifukwa chakuti ibwelesa chitukuko kumbuyo. So ndife okwinyilila kwambili pa aya matenda osachilitsika. So tingoyesayesa chabe kuti mwina tingayeseyese kuti bana amene ali kubwela manje, kubathandiza, kubaphunzisa chilangizo chakuti mwina angapewe kuti basachitiwe involved m'matenda yamene aya." (AIDS draws us back in all our plans. This incurable disease is saddening. We will do what we can to prevent the next generation from contracting this disease.)

The employees indicated the importance of knowing one's HIV status, is an important element in making plans for the future. They are of the opinion that if one's status is known, one can know how to behave thereafter. For instance, if one tests negative, s/he could take the necessary precautionary measures so that test results remain negative. Others will take an extra effort to avoid infecting other people. On the other hand, if one tests positive, s/he could be advised by medical personnel on how to live positively, prevent re-infection, how to avoid infecting other people, and teach them the importance of adhering to a regime for those requiring drugs. One employee stated:

"...nga cakuti twapimisha twaishiba ati ine shilwelepo naba kashi bandi tabalwelepo nombamba apa plan iyala bapo yakweba ati mwe bakashi atemwa mwe balume tufwile uku ichindika aikona bumenso-menso. Nombamba icakuti twaisa ponena muli ubu



ubulwele... abana besu bakalaikala fye fimbifimbi... Nakuchilisha lintu tulebomba inchito, tulalusa sana nendalama ukwafwilisha balya indupwa shesu shilya ishilelwala. (If we test negative as a couple, we can strive to remain negative, but if we test positive the children will be badly affected. Worse still, a lot of money is lost through assisting our relatives who are ailing.)"

Other employees state that knowing one's HIV status has a negative side; once one tests positive, this may affect plans negatively, and s/he is no longer able to plan for the future.

"...it has the positivities and negativities. On a positive ground it's, if you know your status it's good because you will be able to plan nicely but, you know the negative aspect is that if you know again it will keep you stressful for a period of time and hence as you are worrying about your status before you recover so that you accept your condition. A lot of programmes would have been affected."

The feeling prevails amongst employees that once one tests positive, s/he is no longer able to plan for his future.

Employees also indicated that, coupled with insufficient income, HIV makes it even more difficult to plan. Salaries are not adequate enough to cover their household necessities as well as to take care of those who are ill within the families. It becomes worse when the breadwinner is the one who is infected. S/he may make plans for the family, but upon death, all plans are subject to change and there may be problems regarding the care of the dependants.

"...the HIV problem actually has a great hindrance and it has really affected our families. At times you find that the person who is affected by HIV is a bread winner and that's the person on which everyone depends on and then happens to die away which means these others will have nowhere to lean on."

"...I strongly believe that HIV can affect my family and planning in various ways. So if a family member or be it a neighbour or a fellow employee, it means a planning is disturbed on personal arrangements including on business arrangements."

Some of the challenges most employees faced in their planning are lack of time to sit and plan. Since most employees spend the whole day at work, decision-making by their wives becomes problematic, as they often need to consult with their husbands. It rarely happens that a wife (woman) makes a decision without consulting her husband.

This point is supported by additional input from employees, on the impact of planning at the household level. They indicated that there are certain instances when the employee (as head of the household) has to make a decision, but must wait since he spends a great deal of time at work, thus, upsetting programmes at home:

"...my responsibility at work actually affects my family members in terms of their planning also. There are certain decisions that they would prefer to consult me before they make it. In cases where they fail to get in touch with that means that programme is meant to hold on until I come back. So time factor it affects a lot of factors."



Yaah my job affects my plans because I go to work at 05h30, I am expected to go for lunch at 12h30, come back and knock off at 18h00. So any other programme that I would want to do I wouldn't do because I am 100% linked to my work. Because if you look at refuse it's every hour, every minute people are cleaning up their compounds and their gardens. So I need to be there 100%. So to do with my own programmes I can't, simply because of time limitation, unless at night."

Another critical finding from the research is loss of confidence in the job; once the employee becomes aware of his status, confidence in the job tends to be lost. Additionally, this affects team spirit at the workplace, especially those employees that work in teams or groups, as absenteeism increases. Once an employee's positive status is public knowledge there is little encouragement from family members to live positively with his/her status. Consequently planning suffers, especially long-term planning.

Absenteeism

There would be greater absenteeism if companies did not have HIV workplace programmes. Through the workplace programmes, people are aware of the VCT services available, go for tests, and take medication. This improves their health, reducing the period needed for sick leave. When this happens, the company is assured of higher productivity, less expenditure on eventual funeral grants, and subsequently less expenditure for training and recruitment. If employees who are currently taking ARVs were not taking them, death rates would be higher and this would have entail recruiting and training more people. As some employees stated:

"I think it would reduce absenteeism because they will be accessing treatment."

"When we have a work force that is okay, that is not sick, there will be productivity and the company will definitely gain."

"The company gains in the sense that production has increased, we are not at a loss as such."

Additionally, if a family member of an employee is sick, the employee may be the one to take care of them. When there are funerals the employees are required to be present, meaning they would need to take time off from their jobs. Besides, employees may be required to make contributions (financial or otherwise) for the funeral or the patient, further depleting their already meagre resources. In some instances, they may have to forfeit part of their salary for the time that they are away.

Impact Of Workplace Programmes On Communities

The research showed that HIV workplace programmes in the respective companies have been beneficial not only to the employees but also to their families and the surrounding communities.

Several communities surrounding the respective companies of the research would not have been able to receive information about HIV. The only time they received information on it was when the CHAMP mobile HIV unit visited the area for sensitization. As one community member alluded:



“Without CHAMP staff coming here to sensitize us about HIV, it means that we will not access any information about HIV in terms of demonstrations on how to use the condoms and access free VCT.”

Table 12: Frequency of events reported by community (N=43)

Event	Rate of occurrence			
	Happened a lot	Happened a little	Didn't happen	Not sure
Discussion of info from peer educators (by community members)	58.2%	30.2%	11.6%	-
People go for VCT when staff are in area	76.7%	18.6%	-	4.7%
Workplace programme staff recognised	65.1%	20.9%	9.3%	4.7%
Chiefs and headmen support HIV network	52.4%	19.1%	7.1%	21.4%
Community members discuss peer education	67.4%	25.6%	7.0%	-
Community networks spreading information	62.8%	30.2%	4.7%	2.3%
People wait for workplace programme services	67.4%	25.6%	2.3%	4.7%

Analysis of Table 12 shows that the majority of community members interviewed have been observing the different events under the workplace programme. A remarkable finding is that a large majority observed that people go for VCT when the workplace programme staff are in the area.

Community members were also asked to state their perceived benefits of the respective HIV workplace programmes, as with the employees.



Table 13: Benefits of workplace program to community members

Benefit	Amount of Benefit				Total number (N)
	Benefited a lot	Benefited a little	No Benefit	Not sure	
Awareness	89.2	8.1	2.7	-	37
ABC	66.7	33.3	0.0	-	18
VCT	81.8	15.2	3.0	-	33
ARV/PMTCT	72.7	13.6	4.6	9.1	22
Reduction of stigma	75.0	8.3	8.3	8.3	12
Openness about HIV issues	100.0	-	-	-	3
Behaviour change	60.0	40.0	-	-	5
Company intervention	80.0	20.0	-	-	5
Palliative care	64.3	28.6	7.1	-	14

Analysis of Table 13 indicates that out of the 43 community members who were interviewed, the majority indicated awareness as a benefit of workplace programmes. It is important to note that 14 community members (non-employees) mentioned palliative care as a benefit of the workplace programmes, while none of the employees had recognised it as such.

Employees were happy with the HIV workplace programmes, as they have substantially impacted people’s lives for the better. The programmes operate well and both employees and community members benefit from the services they receive:

“...the company through the community development has trained some peer educators around who are going, flood out into the township to sensitize the community at large. And also it is in the forefront of allowing certain organizations that are fostering the message or preaching AIDS, it has allowed several people to come to our company to sensitize its workers.”

“...it has enabled a lot of us to know exactly what HIV is, the treatment, the general information and also the community around us”

When an employee benefits from the workplace programme, it filters through to the family:



“Our children are also able to go school with a free mind like me am a mother and I am positive. I was at one time sick, but not very sick. But the fact that they came to know that I was HIV positive it affected their studies a lot. They thought I was going to die the following day. But fortunately, enough this programme was already in place, so I went for the treatment and here I am. They are happy, they have continued with their education and their results have improved even their performance, weekly performance has improved a lot.”

“When I discovered that I am HIV positive and I had to inform my children and other family members about it. My children thought that I was going to die soon, they became more worried and their concentration at school was disturbed. However, with the availability of ARVs now I have been able to maintain good health and this has lead to the improvement of children’s performance.”

Through the workplace programmes, employees and community members have been trained as peer-educators, who educate employees, as well as community members about HIV. In addition, the benefits that the employees enjoy also reach community members. The workplace programme also offers free VCT and PMTCT to community members and not only to employees.

“...both the company and the community benefits. When I talk about the community, I must agree here that yes we have seen that [company] has gone beyond even to the community to train peer educators.”

“We are actually reaching almost each and every member of this city as long as he has agreed to test.”

“...we have trained peer educators drawing them from community groups and church.”

The programme has made it possible for people to freely discuss sexual issues with their families and friends. As one participant said:

“I feel there is a lot of change; a long time ago people could not actually talk about HIV.”

If an employee’s family member is sick, the employee or any other family member has to take care of them. It is a societal expectation that a member of the family has to be present to take care of them even if they are attended by medical personnel. In the absence of a family member, members of the community have to take responsibility. The following narrative is from an individual who only has one child and a wife, but he is also taking care of three children whose parents died of AIDS. In spite of a meagre salary, he still must provide for them.

“AIDS itself has affected my family personally in many ways. One a lot of people who had their children have died and those children are now dependent on my small salary that I have. I have three, I have one child and my wife, we are three in total but now it comes to these others that keep in whose parents have died because of this AIDS thing, you find that my budget is squeezed. So it has affected really my family.”



The common jobs in the agricultural sector are time consuming. Employees work long hours and thus, spend less time with their families. The result of this, regarding the issue of HIV is that, although they may be well versed with information about HIV which they get from their workplace, they may not have adequate time to disseminate this information to their family members. In the process, while they will benefit from the HIV workplace programme, their families may not. Regardless, when employees' family members—who contract HIV due to ignorance—become sick, they will be affected and required to attend to them. One employee complained about the amount of time they are left with (by their demanding job) to spend with their families:

“You know when you are fully devoted to do the company job, that means that all the programmes that I have written down have come to a stand still. Because there is no time to attend to them and sometime you would find that during the weekend you also not have time to look into your programmes because you will be held up with job.”

Employees from one of the researched companies stated that the company had not (yet) extended its HIV workplace programme to the community, and there are few peer-educators to sensitize the community. These employees indicated the desire for the company to expand its programme and to facilitate collaboration between the company's social welfare department and peer-educators, enabling the dissemination of information about HIV to the surrounding communities.

As some communities can only access VCT services from a hospital far away, they expressed their view that the company should provide a VCT centre. VCT and other services should be confidential and conducted at a neutral place, not at one of the community members' houses, which is currently the case.

Some elderly people in the community have avoided taking part in HIV- related activities because the expression of human reproductive organs in English sounds insulting to them. Some of them have been pressuring peer-educators to express the human reproductive organs in the native language in order to show respect to them. However, the research also found that there is great commitment from local community leaders in other vicinities, combating the disease through sensitization and education of the youth. A community leader, aged 64, said:

“I educate the youths on the dangers of HIV and on how to use condoms if they are to survive and live to my age. Above all change of behaviour in youths which leads to abstinence is vital.”

Negative Impacts Of Workplace Programmes On Communities

While most people appreciate the work of the companies regarding HIV, some employees feel that the companies are not doing enough to help families that are affected with HIV:

“I think there the company is doing less but I think it can do more. Doing less in terms of help that is given, because recently the community development had a pilot programme of picking how many orphans and the like trying to bring them closer to the bread which is the company itself so that they might find a way of helping them. So that is just on paper as of now but I know it will come into effect as time goes by.”



In addition, in as much as VCT benefits many people to learn of their health status and provides knowledge about how to protect themselves from HIV infection, this service has, however, impacted negatively on some employees and community members. In one of the surrounding communities, people stated that there has been increasing numbers of divorce, which they attribute to VCT. One of the discussants stated:

“There has been increasing rates of divorce due to VCT. If one of the spouses discovers that he/she is HIV positive, especially the husband, then quarrel will ultimately begin in the home. This is because the husband accuses the wife that she is responsible of bringing the HIV in the home and the wife will argue vice versa. This creates tension between the two to the point where the husband divorces the wife. Thus, people in the compounds prefer not to go for VCT to avoid divorce and tension.”

Not all male employees who have access to counselling at their workplaces are sharing the information they receive concerning HIV with their spouses. One female community member stated:

“I don’t know whether our husbands go for VCT at the workplace. What I know, for example, is that my husband may surprisingly tell me that from today onwards we shall be using a condom every time we have sex without explaining to me why. It may be that he has been found with a disease but he does not want to tell me.”

Peer-educators requested to be up-dated with the latest HIV information about other related diseases such as STIs. They expressed the view that:

“We do not have a resource centre where we can do research and access HIV materials. Lack of this facility have contributed to people having scanty information about HIV in the community.”

Community members expressed the need to translate the brochures’ information about HIV from English to the local languages, which will help those who cannot read and understand English to have access to HIV information.

Besides the need for more information about HIV in general, the research found that several community members are not sure of the effects of ARVs, even though they receive them gratis. The communities need more information about the effects and efficacy of ARVs before people began taking them.

Other recommendations that community members made during the focus group discussions were that companies should stress the importance of confidentiality by peer-educators, as in some cases, they have disclosed the HIV status to other community members. It was also noted that female condoms are not readily available in the community. A constraint in accessing ARVs is the CD4 count, as employees and community members are forced to pay a certain amount of money to access the CD4 count, which is perceived as a barrier in view of the poverty levels. If such practical recommendations from community members could be implemented, this would improve and strengthen the efforts of the respective companies. It would not only support their employees, but also reach out to the surrounding communities in the fight against HIV.



Non-Permanent Employees

Zambia has a long history of economic migration. Zambian men and women workers have a fairly high level of mobility. Large mobile groups in Zambia include truck drivers, sex workers, fisherfolk and fish traders, seasonal agriculture workers, informal cross-border traders, miners, military personnel, prisoners, and refugees.

High population mobility in Zambia has been identified as one of the key drivers of the AIDS epidemic with the result that Zambia is one of the hardest hit countries in the SADC region. Although the AIDS epidemic in Zambia is generalized, particularly at-risk populations include sex workers, seasonal agricultural workers, long-distance truck drivers, mine workers, cross border traders, uniformed personnel and employees of the transport sector.

On large farms, men often leave their families to work for up to six months during the harvest season. A study conducted in Chirundu, a town situated on Zambia's southern border with Zimbabwe, reveals that farming communities have had a visible social impact on the social and sexual character of the town given the seasonal and migratory nature of their employment.¹⁷

This mini survey was designed to provide information on current programmes and future community needs with non-permanent workers on two survey sites: contract workers at a mine in north-western Zambia, and temporary workers at a commercial farm in central Zambia. The surveys were carried out during one week in July 2007. A structured questionnaire was used to survey 153 people at the Mine (13.9% of workforce). At the commercial farm, 165 people representing 100 per cent of available temporary workers during the off-season were interviewed. Approximately 12,000 temporary workers are present during peak season.

Informal sampling techniques were utilized. At the mine, convenience sampling of employees took place during their breaks at the company canteen. Off-season temporary farm workers were interviewed at the commercial farm. The surveys were interviewer-led, and the questionnaires used a combination of open and closed questions.

¹⁷ Family Health International: <http://www.fhi.org>



Demographic Information

Table 14: Demographic information

Characteristics	Mining Sites (N=154)	Agribusiness Sites (N=165)	Total (N=319)
Sex			
Male	140 (91%)	113 (68%)	253 (79%)
Female	14 (9%)	52 (32%)	66 (21%)
Age			
Under-24	33 (21%)	59 (36%)	92 (29%)
25-29	52 (34%)	45 (27%)	97 (30%)
30-34	27 (18%)	29 (18%)	56 (18%)
35-39	20 (13%)	14 (8%)	34 (11%)
40-44	9 (6%)	8 (5%)	17 (5%)
45+	13 (8%)	10 (6%)	23 (7%)
Marital Status			
Single - Never married	38 (25%)	31 (19%)	69 (22%)
Married	100 (65%)	117 (71%)	217 (68%)
Divorced	7 (5%)	8 (5%)	15 (5%)
Widowed	0 (0%)	6 (4%)	6 (2%)
Single - long-term relationship	9 (6%)	3 (2%)	12 (4%)
Staff Category			
Senior Manager	4 (3%)	0 (0%)	4 (1%)
Manager	2 (1%)	3 (2%)	5 (2%)
Supervisor	32 (21%)	10 (6%)	42 (13%)
Non-supervisory staff	113 (73%)	137 (83%)	250 (78%)
Other	3 (2%)	15 (9%)	18 (6%)

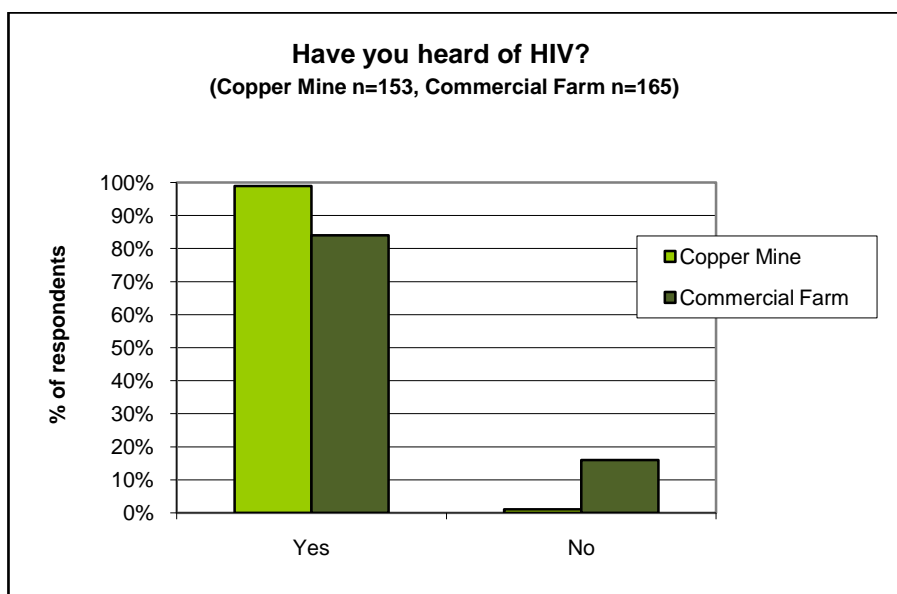


Mobility

Just over half of respondents (56% at the mine and 52% at the commercial farm) had dependents living outside of the district in which they work. However, at both sites, dependents living outside the work district were largely located in neighbouring districts.

HIV-Related Knowledge

Figure 8: Knowledge of HIV



One hundred and fifty-two (99%) respondents at the mine had heard of HIV. Only one (1%) had not. The high level of awareness is representative of the country in general, according to the Zambia Sexual Behavioural Survey (2003).

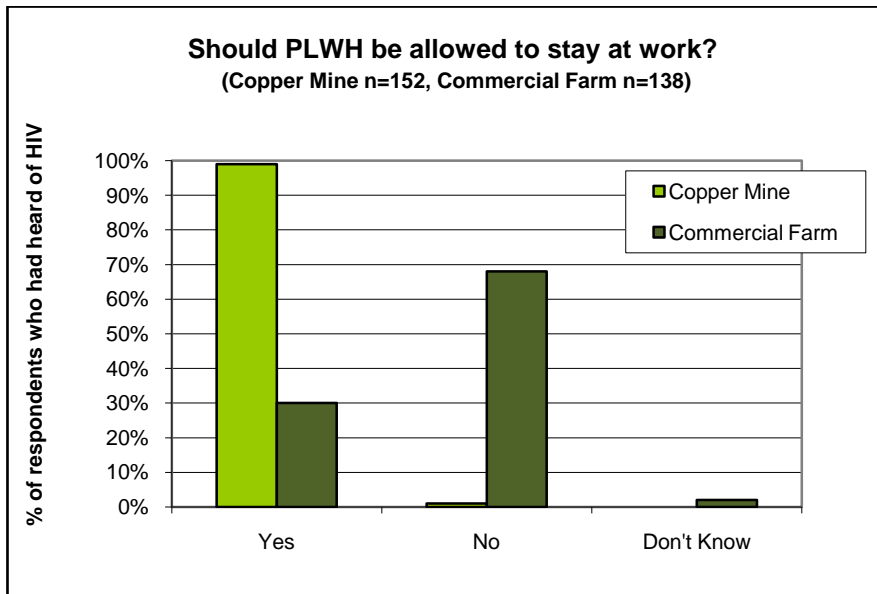
Slightly lower awareness levels were seen at the commercial farm, where 132 respondents (84%) had heard of HIV, and 27 (16%) had not.

When respondents were asked the open question, “What is HIV?” the most common responses were: it is caused by a virus; it is a disease which causes AIDS or is deadly; and it is a slimming illness. Zambians refer to HIV as a slimming illness due to the severe weight loss and gaunt appearance of HIV affected persons, largely due to opportunistic infections.



Attitudes

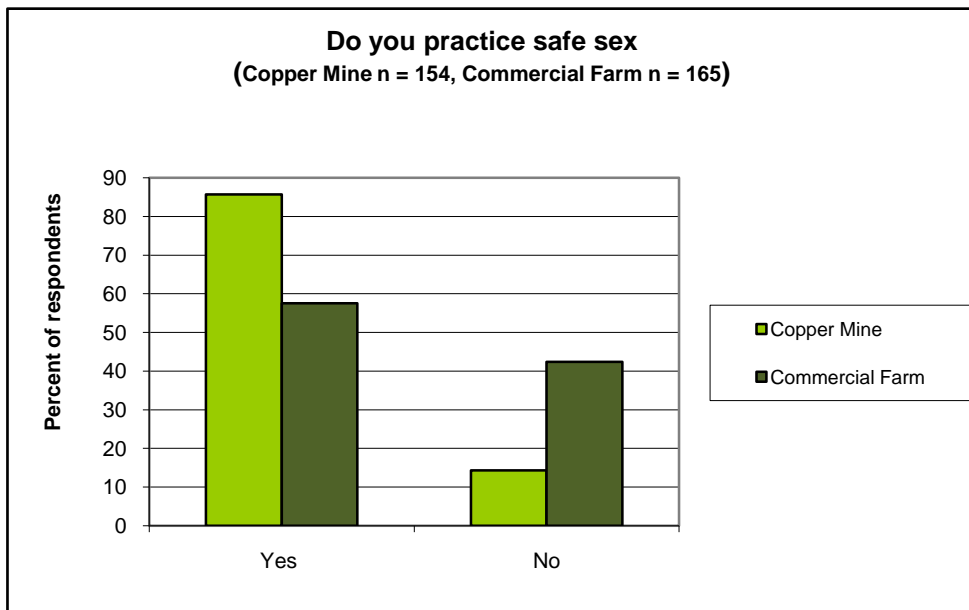
Figure 9: Attitudes towards PLWHA working



Of the respondents that had heard of HIV at the mine, 151 (99%) thought people living with HIV (PLWH) should be allowed to stay at work. At the commercial farm, 138 respondents had heard of HIV. Forty-two (30%) thought PLWH should be allowed to stay at work while 94 (68%) said they should not. Two respondents said they did not know.

Behaviours

Figure 10: Respondents reported use of safe sexual practice





At the mine, 132 (86%) of respondents said they practice safe sex and 22 (14%) said they did not. At the commercial farm 95 respondents (58%) state that they practice safe sex. Seventy (42%) said they do not.

An open question regarding condom use was asked to all respondents. When asked why they do not use condoms, the fact that condoms do not feel nice was the most frequent response (122). Twenty-one people said they always use condoms, another 15 claimed to be abstaining and 77 said they were being faithful. Sixteen people said they thought condoms cause disease or impotence. Thirty-three people may have wanted to use condoms but were refused by their partners.

Figure 11: Respondents reasons for not using condoms

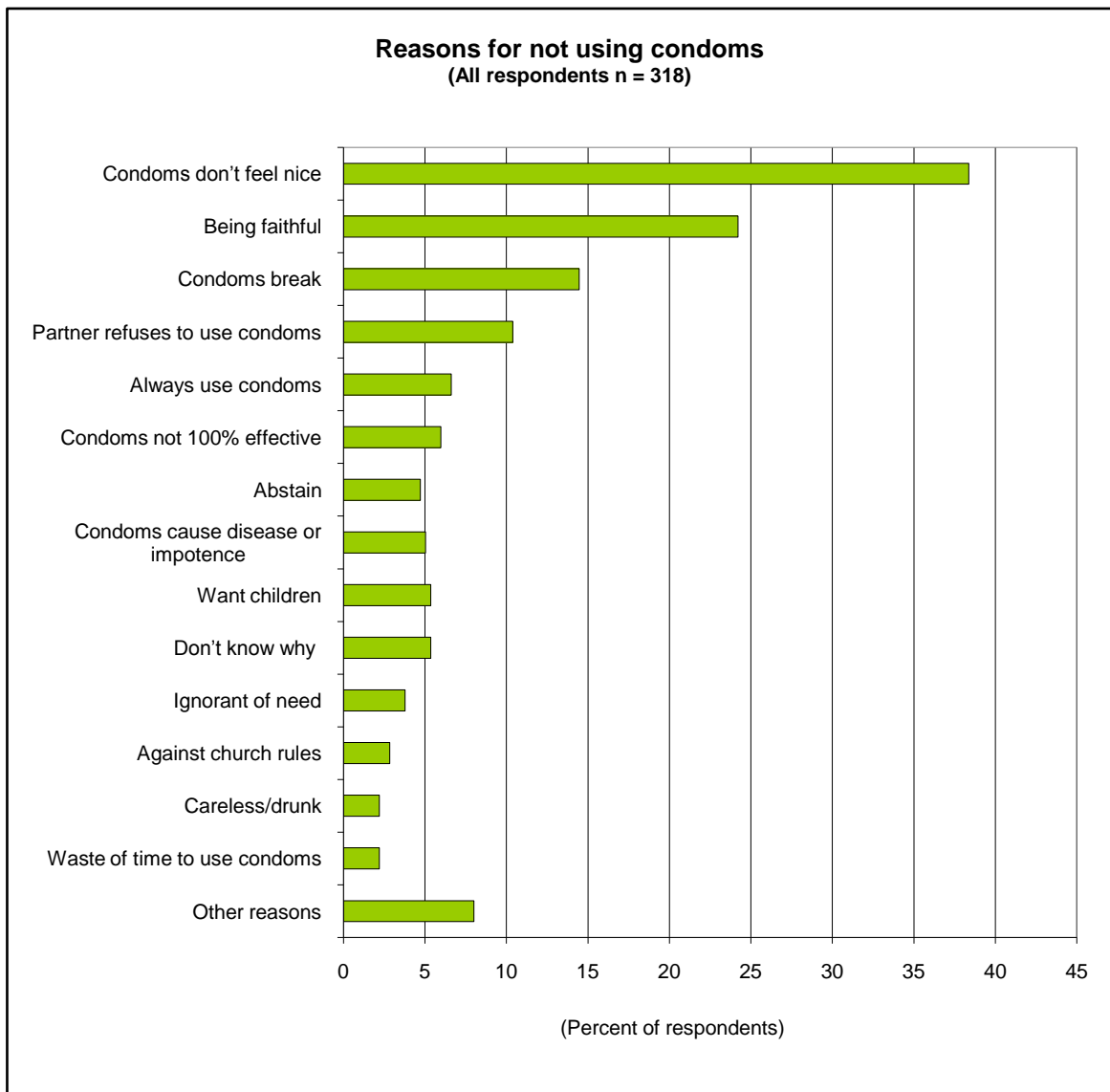
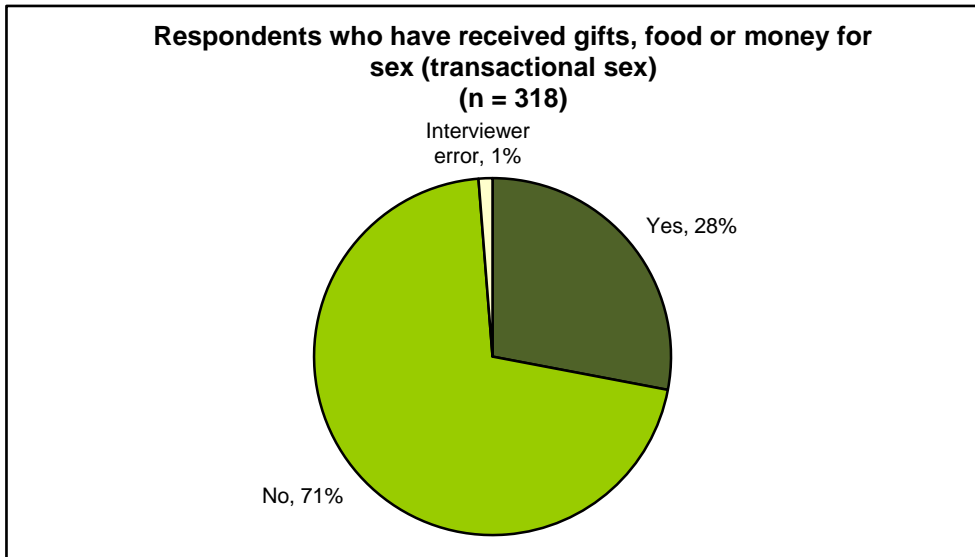




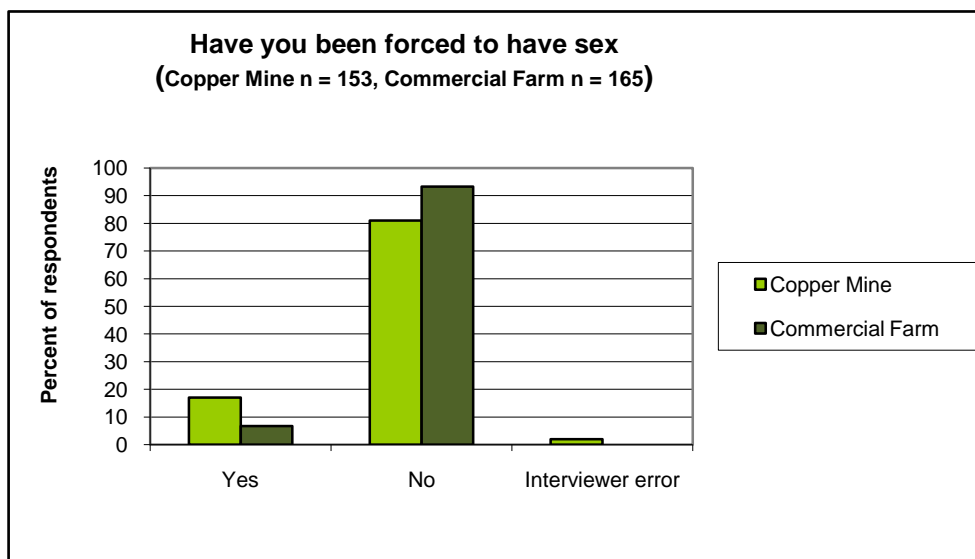
Figure 11 shows reasons respondents stated they did not use condoms. Approximately 8% of the sample gave other reasons for not using condoms. These reasons include: “embarrassed to ask for condoms”, “too expensive”, “don’t fit”, “hard to find condoms”, “don’t care about health”, “not natural”, “cause promiscuity”, “peer pressure”, and “want to infect others”. Several respondents refused to answer the question.

Figure 12: Respondents reporting transactional sex



Eighty-nine respondents (28%), male and female, from both sites claimed to have **received or exchanged** gifts, food or money for sex. The remaining 225 (71%) state they have not engaged in transactional sex.

Figure 13: Respondents reporting forced sex





At the copper mine, 26 respondents (17%) stated that they were forced to have sex at some point in their lives. Twenty four of the 26 were men claimed to have had forced sex. At the commercial farm, 11 respondents (7%) claimed to have had forced sex. Two were women, and 9 were men.

No further prompting was conducted on the interpretation of this question. It is unknown whether men were referring to themselves as the antagonist or as the victim.

Discussion

Knowledge Vs. Behaviour

At both sites basic knowledge about modes of HIV transmission was high. Most respondents had heard of HIV, could name at least one correct mode of transmission, gave correct answers for what HIV is (a disease, a virus) and showed few misconceptions about HIV transmission. There were high numbers of correct responses about causes and modes of transmission about STIs, the most common being sex without a condom, followed by having more than one partner.

However, this overall knowledge has not led people to employ standard prevention techniques or to adopt risk-lowering behaviours. Respondents show low levels of condom use combined with relatively high levels of multiple concurrent sexual partnerships. Levels of transactional sex - often an indicator of unequal gender dynamics in the wider community - were also high, with nearly a third of respondents at both sites stating that they had participated in such relationships. In the farms, there were high levels of stigma surrounding working with people living with HIV.

This discrepancy between knowledge and behaviour is consistent with existing research conducted with mobile workers in the region. Although more longitudinal qualitative research is needed at these sites to explain this, previous studies do offer explanations. These include environmental vulnerability factors – such as living and working conditions, lack of recreational options, and mobility itself (distance from families) - which workers state can affect their health-seeking behaviour. In focus group discussions with non-permanent or temporary employees, workers admitted that this distance from family leads to extra-marital sexual activity:

We are forced to live far away from our families and our wives for 8 months, and you know we are used to marriage so to some of us it becomes a temptation and as well as our wives, we don't know how she is behaving...so it's really a great temptation...

The trends indicate a need for a more holistic approach to prevention programmes, which focus on the wider community and address the environmental vulnerability factors of mobile workers.



Conclusion

Having a chance to look at several companies, examining them all for the same time period, and covering two major sectors of the Zambian economy, provided a unique opportunity to gain insights into the impact of HIV on the economy and how companies are dealing with the issue. Working in close collaboration with CHAMP as the GDA technical support partner, this research team had access to data not usually available: rates of testing for employees, dependents and community, estimates of employees and others on ARVs, types of training, and costs of the programme.

Equally valuable was accessing those who worked with the companies and in the programmes for their duration. Since an HIV employee's status is not always known to an employer, and data is not always linked to employment status (retirements, leave, etc.), models must be built around known parameters. Working closely with the companies and CHAMP, we found that we could modify models to fit the actual structure of the companies and programmes, getting closer to a likely reality.

As a result of this study there are a number of conclusions drawn. Below are those most salient, but certainly not all of them. Some may not even be of significant importance. What is obvious from this study is that HIV and AIDS have an enormous impact on all companies, big and small, low-skilled, and high skilled. Evidence proves the benefit of having an HIV workplace programme, but given the impact of the disease on company productivity and costs, just knowing that such a programme pays for itself really raises more questions than it answers. Which aspects of a programme have the largest impact, whether benefits outweigh costs, should the programme be expanded, and if so would benefits rise? When the impact of the disease is so pervasive and widespread, should companies work together in order to protect the country's industry as a whole? How has the availability of ARVs changed the nature of the disease's impact on the economy? It surely makes it less costly for industries to do business and to have a workplace programme, but how does it affect employees' willingness to be tested and treated?

Work With Companies To Get Accurate Cost Data

Companies frequently distance themselves from information regarding the health status of their employees in order to protect their confidentiality and to reduce the role that stigma can play in avoiding treatment. Companies are pressed in an increasingly global market and must make decisions on how to spend their time and energy. Most companies do not maintain program function accounts. They know how much their payroll, utilities, transportation, and machinery costs, but they do not know how much of this is devoted to their HIV workplace programme, much less the HIV costs to the company.

We visited companies for no more than a day at each site to collect data they and speak with employees and community members. Many companies had data ready for us and/or had informed the right personnel of our visit and they were waiting to work with us. We heard from several managers that they were impressed with the type of data we required. They did not keep their records in a format enabling them to readily answer our questions. In some cases, they could not provide the



required data. Many said that they now felt that they needed to begin to keep data so that they could keep track of programme costs and HIV impacts.

Knowing how expensive it is to create accounts that show both expenditures by categories and by use of money, the principal investigator neither encouraged nor discouraged this view. Ideally, all companies would keep track of expenditures in both ways. In reality, it is a decision that required weighing costs and benefits. At the end of this study, however, the principal investigator has changed her mind. This changed even with the knowledge that data are somewhat variable. Models leave a margin of error. Companies supplied data that might not match our definitions, as conclusions of results sometimes need to be tempered. But the data trends here were so clear and consistent that the same conclusion could be drawn even given a large margin of error. HIV is having a major impact on these companies in ways they often are unaware of, or are revealed only in casual conversations with managers and employees.

Most managers, for example, could cite examples of how funeral attendance was affecting productivity in real ways in recent times. Few thought of this productivity loss as a bona fide cost of HIV to the company. Line managers could readily guess how many employees in a shift reported to work feeling ill and could even estimate the loss of productivity during an ill day of one of these employees. Few had thought of this as an explicit cost of the disease. Many clinic doctors told us of the very real differences that ARVs were making in employees' health and hospital stays, but most thought of this as a cost reduction rather than a productivity gain for employees.

Surprisingly, not all employers could provide a count of deaths and/or retirements in the company. Those that could, generally had no idea how much was attributable to HIV. Part of this problem is because human resources, which is most likely to track such number, is not linked to the medical personnel who might be able to hypothesize as to cause. One company's medical staff did a monthly report of HIV related illnesses which included a count of deaths presumed to be caused by HIV related illnesses, but that report did not breakdown the numbers by employees, retirees, dependents, and contractors.

Keeping track of the impact of HIV which includes, but is not limited to the costs and benefits of the workplace programme is more than an accounting function for these companies. It is apt to be a strategic necessity. As the prevalence of the disease stabilizes in the country and given its known pattern of health, illness, and treatment for given populations, projections of impact are becoming increasingly more accurate. Combining these projections with company data of costs, healthcare, and benefits could provide strategic direction. For example, could a company providing monthly healthcare for employees benefit by providing for the cost of transport to and from local clinics once a month for affected employees? Would this provision discourage employees from seeking treatment? Would covering transport costs produce a net benefit to the company and help protect its market? How does the inclusion of neighbouring communities affect the health and well-being of employees? Given that the disease is a community-based, not necessarily a workplace-based disease, does educating, testing, and even treating community members have the same benefits as it does for workers?

Given the strategic importance of the economic impact of the disease on these companies, the poor quality of the data is sometimes striking. Researchers used models backed by known counts to project



the work life of employees on ARVs, those who were HIV negative, and those who were HIV positive, either tested or untested. All companies were able to account for their employees.

Equally, it is important to work with healthcare givers to attempt to get good estimates of ARV use, and testing and treatment rates categorized by workers, dependents, and community members. Why did we find one company with a known employee prevalence rate of 34 percent, currently testing with a rate of 11 percent? Do those who are positive know their status and that they are no longer part of the testing pool? Is there some reason why those who suspect they are positive stay away from testing? How much of the difference between expected (sometimes known) rates and prevalence rates of those currently being tested can be attributed to the success of the programme?

A major recommendation of this study, then, is that companies should look upon HIV as a strategic issue, design ways to keep track of costs, benefits and counts, and look upon these figures as central to company planning in the medium term.

Investigate Scope Of Individual Vs. Company Vs. Economic Sector

Although the programme's outcome of non-permanent workers was either a net benefit to the company or paid for itself, the investigation raised an important issue. Companies expressed concerns that, either their programme did not reap a net benefit for seasonal, low-wage, or small-scale contracted farmers, or that the industry's structure could not justify much expenditure on such employees. This concern turned out not to be well-founded. Assuming that these companies are rational, competitive, and often multinational operations, one could begin by assuming they would not spend large sums to their detriment. Yet, companies often insisted that such workers should be covered and, even without an economic justification, they would continue to be covered. Generally, managers understand the scope of their businesses and, even when they cannot create an explicit economic argument for an action, they know when it benefits the company. It is assumed that the insight of these managers combines compassion with good economic sense.

The literature, however, did not provide much guidance in this respect. Most cost-benefit studies of workplace programmes attempt to focus primarily, often exclusively, on those costs and benefits related to employee health and productivity. The changes in the industry that might occur because of HIV and the effects these may have on a company are not generally a part of the analysis. Most analyses focus either on the macro/sectoral perspective, or on the company perspective.

Long-term systematic depletion of a workforce has tremendous productivity implications. Replacement labour may be less skilled, have less knowledge, and be more distracted, less committed, more overworked, and less focused than original labourers. As the ratio of land or labour becomes thinner, the proportion of households which are labour constrained increases and so too does the impact on the industry in which they work. Costs rise, quality deteriorates, and industry competitiveness falls. Whole markets are put at risk. The major cost of HIV for some industries, then, might well be the loss of markets in the region or country.

Equally, the interactions between community and employees are rather artificially separated in this type of cost-benefit analysis. All of the companies reviewed here had extended their programmes to



surrounding communities and many covered dependents. Since HIV is not a workplace-based malady, unlike for example, industrial accidents, its mitigation, spread, and treatment involve families and their communities. An ill child affects the productivity and work life of a parent. An ill spouse means that the healthy spouse must spend more time doing other activities.

These interactions are not neglected in the literature, but their costs and effects are not generally modelled along with employee costs and benefits. It is difficult to do so without a multi-level analysis which is both expensive and requires fairly comprehensive and correct data to have accuracy in interpretation. Yet, simpler analyses are possible and would begin to paint a more comprehensive picture. Community effects on industry need to move beyond description or theory and into cost modelling, so as to assess their relative impact. At a minimum, such major effects need to be explicitly included in future studies.

Inevitability Of Estimates Based On Expected Prevalence

Results reported here are sensitive to the assumed rate of prevalence in the population. This rate, plus the actual rate of prevalence observed among employees currently being tested drove the estimates of changes—turnovers - in work life. Both the literature and experts in the field in Zambia felt that the 2001/2002 Demographic Health Survey (DHS) provided reasonable estimates of current HIV prevalence within the country. Nevertheless, this is just a best guess, not a verified fact.

The new DHS which is being conducted as of the writing of this report should provide new information. This can be looked to for current prevailing rates both nationally and within subpopulations. The survey should be used as a baseline for industries. Given that the impact of HIV for companies is only partially captured by a company-based examination, industry-based analysis is needed.

What is happening to whole markets of labourers? Are industries being threatened or, perhaps strengthened? Industries would do well to support careful analysis of this survey information, going far beyond its usefulness as baseline data that is generally reported nationally. Strategic questions can be answered with little cost since that data is already gathered, entered, and cleaned. Do workplace programmes affect whole communities? Do workplace programmes impact employees more than dependents? More than surrounding communities? What led the trend, the programme or the community?

Non-Permanent Workforce

Most companies view their HIV workplace programme from the lens of permanent workers. Many do not see how coverage of their seasonal workers necessarily benefits the company. Some include their seasonal workers in the programme because it is the right thing to do. They do not care to differentiate between seasonal and permanent workers when it comes to dealing with HIV and AIDS, and they see the costs of this coverage as relatively small. Managers who work regularly with such workers often know them personally and have a personal interest in their welfare. Yet, as one manager said, “As long as there is a steady supply of labourers, we really don’t see a financial benefit to HIV programmes for us among these workers.”



The view was that, whether fair or not, a seasonal worker who fell ill or quit could be replaced by another worker who was relatively healthy. Supply of such labour, in this case, seemed to work against an economic argument for a workplace programme for such workers.

Yet all three companies who had such workers included them in their programme, often seeing this coverage as low cost and a way of showing workers that the company cared about them. What was striking in our findings, then, was that there was a net benefit to covering such workers or, in one case, costs equalled benefits.

An extensive conversation with one manager was held in the field and similarly, a brief conversation with another manager indicated that their views went beyond the short-term, single, or multi-year perspective. They understood that the quality and quantity of their labour force was deteriorating. While there was not a visible financial impact at the moment, both were concerned that if workers continued to get sick and fall out of the labour market, the viability of their presence would be threatened.

This viewpoint is borne out by the literature and deserves mention. When there is a relatively large supply of unskilled labour in an industry that requires poorly educated labour or skilled labour in the usual sense, the supply of such labour cannot shrink past a certain point before the viability of the industry itself is threatened.

Table 15 is from research which specifically examined the interaction between agriculture and HIV for the Food and Agriculture Organization of the United Nations. The table is included here because it shows the relationships between the industry and labour, a different angle of this paper, which is the company and its labour.

Table 15: Conjectured impact of AIDS on use and cost of factors of production in agriculture

	Effect of AIDS on availability and cost of resources used in agriculture							
	Capital assets used in agriculture		Labour in agriculture		Land		Knowledge / skills used in agriculture	
	Supply	Cost	Supply	Costs	Supply	Cost	Supply	Cost
Hardest-hit countries: HIV prevalence > 20%	▼▼ R	▲▲	▼	▲	R		▼▼	▲
Countries with HIV prevalence between 5-20%	▼ R	▲	▼?		R		▼	▲

Key: ▲ = increase; ▲▲ = major increase; ▼ = decline; ▼▼ = major decline; R = redistribution from afflicted households to others; ? = depends on policy and availability of underutilized labour in the informal sector; - = no anticipated major impact.

Source: Jayne, S. et al (2004).



While redistribution (“R”) from afflicted households to non-afflicted households (i.e. substituting a healthy urban relative for one who is ill) may be viable in some instances, overall in both labour and knowledge/skills, redistribution is not a viable alternative to healthy original workers. The supply of knowledge, skills, and labour is at risk for these industries, raising costs and threatening viability.

The three agricultural firms did not miss this point, although they could not articulate their concerns in purely economic terms. Nevertheless, for industries that rely on a large, low-skilled labour force, in these companies well over half of all workers, HIV hits them hardest in terms of their industries’ viability for the region. In the short term, redistribution, substituting a healthy worker for an ill worker, may provide a productive labour force, but in the longer run, it will drive up the cost of production and make the industry and companies less competitive in a global market.

Employee And Community Impact

Information on HIV and AIDS should be delivered in local languages. Some employees have a difficult time understanding English, but, more importantly, information cannot easily be shared with spouses, family and community members if it is not in local languages.

Employers need to work harder to get the word out that getting tested and getting treated is looked upon favourably by the company. Many employees still perceive the HIV workplace programme as threatening to their employment contracts. This may involve increased openness about HIV-related issues but also takes an understanding that stigmatization usually take longer to take effect than do the benefits of medical treatment.

Employers will need to find a way to accommodate sick employees. Many work even when they are sick. This detracts from both the employee’s health and the productivity of the company. Identifying sick employees, encouraging them to get tested and rewarding them for getting treated rather than for working while sick may have financial benefits for both workers and companies.

Finally, companies should stress the importance of confidentiality by peer-educators, as in some cases, they have disclosed the HIV status to other community members. Many employees expressed to us their distrust of confidentiality and may, therefore, resist either testing or treatment.

For industries that rely on a large, low-skilled labour force, HIV hits them hardest in terms of their industries’ viability within a region. In the short term, redistribution, substituting a healthy worker for an ill worker, may provide a productive labour force, but in the longer run, it will drive up the cost of production and make the industry and companies less competitive in a global market. Thus, the benefits of HIV programmes need to be assessed across an industry as a whole as well as within a given company. Losing industry-wide competitiveness benefits no company.

Even the smallest of HIV interventions appear to have positive impacts for non-permanent workers and their companies. Protecting this workforce from depletion, lower quality substitute labour and costly replacement of workers from other communities means finding a stable means of getting them tested and treated year long. With the government picking up the major cost of treatment (drugs and,



sometimes other treatment), employers would do well to work together as an industry to find ways to help their temporary workforce to access year-round, stable medical care. Some efforts to assure that medical records and treatment are “portable” by the government may help. But there is a clear economic rationale for employers to work across an industry to help solve this problem.

Our preliminary findings indicate that communities are important factors in worker health. Across permanent, contract and temporary workers, the health of family and communities was a large factor in their continued health and productivity. Evidence suggests that much of the benefit of the HIV programmes was in prevention. Vigilance in extending the programmes to surrounding communities is likely to increase net benefits to companies and stabilize their productivity and industrial viability.

Many studies conclude by suggesting that more research needs to be done. This study has certainly revealed areas where research would benefit whole communities, companies and industries. But the need for specific research in this area is particularly compelling. Accurate projections of human resources, costs and risks may impact a company’s strategic plan more than exchange rate or raw material price fluctuations. The impact of successful programmes not only stabilizes workers, it increases productivity and, possibly, has secondary benefits as it maintains healthier communities and families. Temporary workers, long thought to be in surplus supply with little cost, it turns out, benefit from HIV programmes as do their employers. The methodology and data collection here were limited in breadth and scope but showed the weakness of good analytic data for understanding these problems. A concerted effort to collect, catalogue, analyze and report such information may well benefit the workers, employers, industries and nation. Targeted, thoughtful, strategic research is clearly a compelling need.



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