Chapter 4

Research Analysis

4.1 Introduction

The purpose of this chapter is to analyse the secondary and primary data and to interpret the findings of the research. The outline of this analysis is as follows:

4.2 An Overview of the secondary data

This section attempts to analyse the secondary data on reported HIV/AIDS cases and deaths related to the illness over the period of 1986 to 1993. The table below shows the reported cases of HIV/AIDS as well as the rate of HIV/AIDS.

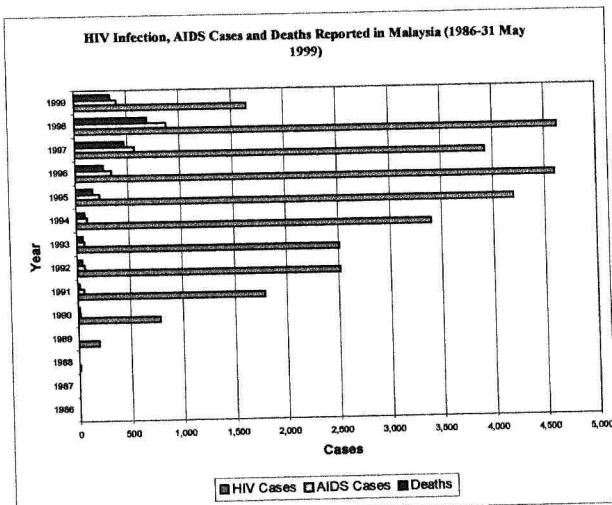
Table 1: HIV Infection, AIDS Cases and Deaths Reported in Malaysia (1986 – 1999)

Year	HIV Cases	AIDS Cases	Deaths	Rate of HIV	Rate of AIDS	Rate of Death
1986	3	0	0			
1987	2	0	0	-33%		
1988	9	2	2	350%		
1989	200	2	1	2122%	0%	-50%
1990	778	18	10	289%	800%	900%
1991	1,794	60	19	131%	233%	90%
1992	2,512	73	46	40%	22%	142%
1993	2,507	71	55	0%	-3%	20%
1994	3,393	105	80	35%	48%	45%
1995	4,198	233	165	24%	122%	106%
1996	4,597	347	271	10%	49%	64%
1997	3,924	568	473	-15%	64%	75%
1998	4,624	875	689	18%	54%	46%
1999	1,646	407	346	-64%	-53%	-50%
TOTAL	**30,187**	**2,761**	**2,157**			

Source: Ministry of Health Malaysia, 2000.

The rate of reported HIV shows a remarkable reduction, which could be due to good control, and preventive measures undertaken by the Ministry of Health. It can be seen that between 1988 and 1999, the rate of HIV transmissions have gone down by 64 percent. This could be possibly due to better awareness and better control and prevention measures in Malaysia. It could also be due to the recent economic crisis, which may have resulted in lesser indulgence in sex related entertainment abroad and fewer purchases of drugs due to the weaker currency exchange.

Figure 1:HIV Infections, AIDS Cases and Death Reported in Malaysia (1986-1999)



Source: Ministry of Health Malaysia, (2000)

Table 2 and figure 2 show the breakdown of reported HIV/AIDS in Malaysia for the same period based on ethnic groups. The highest incidence of the illness is among the Malays, which record a 73 percent of total HIV cases and 56.4 percent of total AIDS cases, followed by the Chinese 44.8 percent (HIV) and 30.6 percent (AIDS). Indians make up 9 percent of total HIV and 8.9 percent of total AIDS cases during

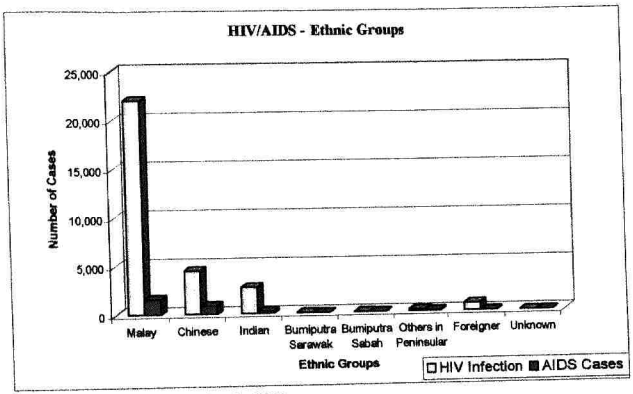
the period 1986-1999. Foreigners make up 68 cases or 2.5 percent of HIV and 33 AIDS cases or 1.3 percent. There is no further information who these foreigners are, whether migrant workers, expatriates or visitors.

Table 2: HIV/AIDS by Ethnic Groups between 1986-1999

Ethnic Groups	HIV Infection	%	AIDS Cases	%
Malay	22,023	73.0	1,557	56.4
Chinese	4,453	14.8	846	30.6
Indian	2,708	9.0	247	8.9
Bumiputra Sarawak	19	0.1	8	0.3
Bumiputra Sabah	22	0.1	2	0.1
Others in Peninsular	193	0.6	68	2.5
Foreigner	768	2.5	33	1.2
Unknown	1	0.0	0	0.0
TOTAL	**30,187**	**100**	**2,761**	**100**

Source: Ministry of Health, Malaysia (2000).

Figure 2: HIV/AIDS by Ethnic Groups Between 1986 -1999



Source: Ministry of Health Malaysia, 2000

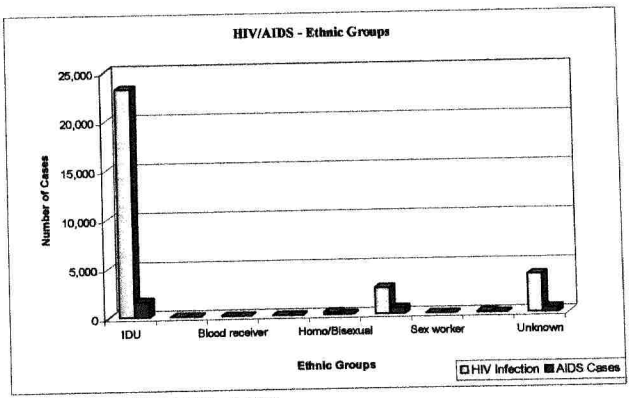
Table 3 and figure 3 show the methods of transmissions. The highest mode of transmissions is through IDU that is, 23,253 cases or 77 percent of total HIV cases between the years 1986 and 1999.

Table 3: HIV/AIDS – Transmission Mechanism Between 1986 -1999

Sector/Occupation	HIV Infection	%	AIDS Cases	%
IDU	23,253	77.0	1,597	57.8
Needle prick	0	0.0	0	0.0
Blood receiver	31	0.1	13	0.5
Organ receiver	0	0.0	0	0.0
Homo/Bisexual	250	0.8	51	1.8
Heterosexual	2,675	8.9	592	21.4
Sex worker	4	0.0	2	0.1
Mother to child (vertical)	114	0.4	35	1.3
Unknown	3,860	12.8	471	17.1
TOTAL	**30,187**	**100**	**2,761**	**100**

Source: Ministry of Health Malaysia, 2000

Figure 3: HIV/AIDS – Transmission Mechanisms between 1986 -1999



Source: Ministry of Health Malaysia 2000

Table 4: HIV/AIDS by Sector/ Occupation between 1986 -1999

Sector/Occupation	HIV Infection	%	AIDS Cases	%
Unemployed	3,357	11.1	402	14.6
Government staff	128	0.4	31	1.1
Student	26	0.1	12	0.4
Uniformed bodies	192	0.6	32	1.2
fisherman	1,242	4.1	101	3.7
Factory worker/Industry	1,632	5.4	135	4.9
Private sector staff	16	0.1	5	0.2
Sex worker	161	0.5	11	0.4
Housewives	227	0.8	34	1.2
Long Distance driver	450	1.5	46	1.7
Others	6,524	21.6	532	19.3
Unknown	16,232	53.8	1,420	51.4
TOTAL	30,187	100	2,761	100

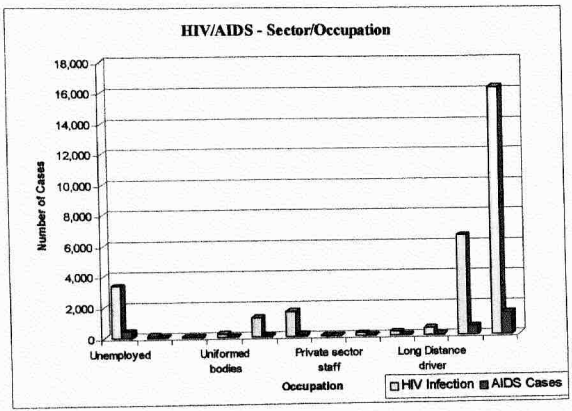
Source: Ministry of Health Malaysia, 2000

Table 4 and figure 4 show the HIVAIDS cases in Malaysia by Sector/Occupation. The highest incidence of HIV/AIDS cases recorded is among the unemployed who mainly would constitute the drug users.

Factory workers/industrial workers make up 5.4 percent of total HIV cases and 4.9 percent AIDS cases throughout 1986-1999.

11.1 percent of total HIV infected cases are unemployed. The Statistics also show that the highest number of HIV/AIDS come from the unknown category whereas 21.6 percent and 19.3 percent of HIV and AIDS belong to the others category respectively. This could be due to the difficulty in getting information, as HIV/AIDS is a highly stigmatized disease in this part of the world and also an indication of inconsistency and discrepancies in the reporting and collecting of data.

Figure 4: HIV/AIDS by sector/occupation between 1986 –1999



Source: Ministry of Health Malaysia ,2000

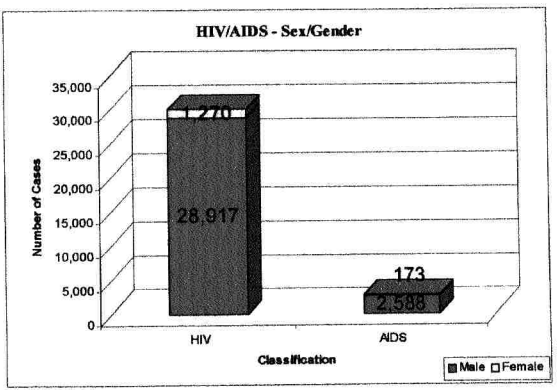
Table 5: HIV/AIDS by sex/Gender between 1986-1999

Classification	HIV Infection	%	AIDS Cases	%
Male	28,917	95.8	2,588	93.7
Female	1,270	4.2	173	6.3
TOTAL	**30,187**	**100**	**2,761**	**100**

Source: Ministry of Health Malaysia, 2000

Classification by gender as shown in table 5 and figure 5 show that 95.8 percent of HIV infection and 93.7 percent of AIDS is among the male whereas the female reported cases are 4.2 percent for HIV and 6.3 percent for the AIDS cases. This further suggests that the impact on the household could be disastrous as like most Asian economy, Malaysian households are economically male dominant.

Figure 5: HIV/AIDS by sex/Gender between 1986 -1999



Source: Ministry of Health Malaysia, 2000

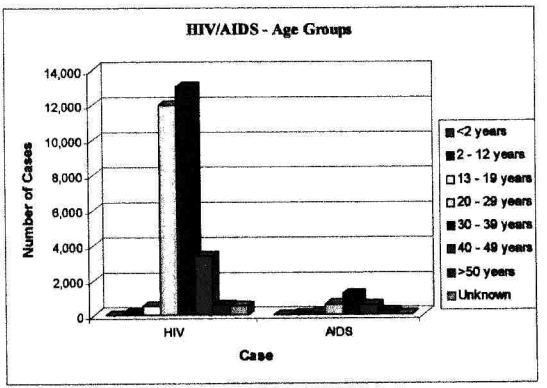
Table 6: HIV/AIDS by age groups between 1986 -1999

	HIV	%	AIDS	%
<2 years	11	0.0	2	0.1
2 - 12 years	132	0.4	41	1.5
13 - 19 years	523	1.7	138	5.0
20 - 29 years	11,989	39.7	595	21.6
30 - 39 years	13,059	43.3	1,195	43.3
40 - 49 years	3,393	11.2	557	20.2
>50 years	568	1.9	213	7.7
Unknown	512	1.7	20	0.7
TOTAL	**30,187**	**100**	**2,761**	**100**

Source: Ministry of Health Malaysia,2000

Table 6 and figure 6 show the categorization of HIV/AIDS cases according to age groups.43 percent of the total reported AIDS cases are among those in the 40-49 age groups, followed by 22 percent from the 20-29 year age group and 20 percent form the 30-39 year age group. We can see that 87 percent of the reported AIDS cases are of the prime age group of 20-49 years of age.

Figure 6: HIV/AIDS by Age Groups Between 1986-1999



Source: Ministry of Health Malaysia, 2000

4.3 An Overview of the Survey on the PWHAs.

We do not know how representative is the survey of the PWHA as the number of respondents interviewed was only 25.

Over 88 percent of the survey respondents were male and the remaining 12 percent were female. The mean age of the respondents was thirty-two years of age. The majority of the respondents were in their early HIV symptomatic stage of infection. Most of the respondents reported acquiring HIV through intravenous drug

use. The table below shows the composition of the respondents' transmission mechanism.

Table 7: HIV/AIDS – modes of transmission

Transmission Mode	No.
Heterosexual	6
Homosexual	3
IDU	11
Blood transfusion	0
Don't Know	5

Source: Survey, 2000.

4.3.1 Healthcare accessibility

The results confirm that the PWHAs continue to encounter extreme difficulty in obtaining and paying for health care. Clearly, the public health care systems are failing for PWHAs. Over half of the survey respondents reported that they are in need for financial assistance as most of them are unemployed or partially employed.

The need for accessibility to health care and adequate medicines seem to be the top priority need amongst those in the full time and part time employment This suggests that the health care and treatment costs are way too expensive for them and there is undeniably a serious need for financial assistance. The priorities of the PWAs are listed in the table below.

Table 8: Categorization of need by percentage

Categories of Need	Percentage
Financial Assistance	76
Access to Medicines	88
Transport	60
Housing	20
Personal	52
Marriage	34
Child care	8

Source: Survey, 2000.

Hence, it is clear that the health care systems in Malaysia does not seem to cover the financially better off as well as the poor and hence exposing the PWHAs to denial of medical care at the time when they need them the most. Although 80 percent of the people surveyed are living in drop-in centers that run primarily on funds from public donations and fund raising campaigns as well as NGO support, they are not able to provide full medical coverage for their inmates.

4.32 Educational Level

Out of the 25 respondents, only one is of the tertiary level education and the majority is in the lower and upper secondary educational level group (see table below)

Table 9: Educational Status among the HIV/AIDS Respondents

Educational Level	No.
Less than primary	6
Up to primary	10
Secondary	8
Graduate	1

Source: Survey, 2000.

This seem to suggest that educational plays an important role in creating awareness and avoiding risky behaviour patterns and hence avoiding contraction of HIV/AIDS. It could also mean that education can also instill higher self-esteem and therefore the tendency for risky behaviour can be controlled.

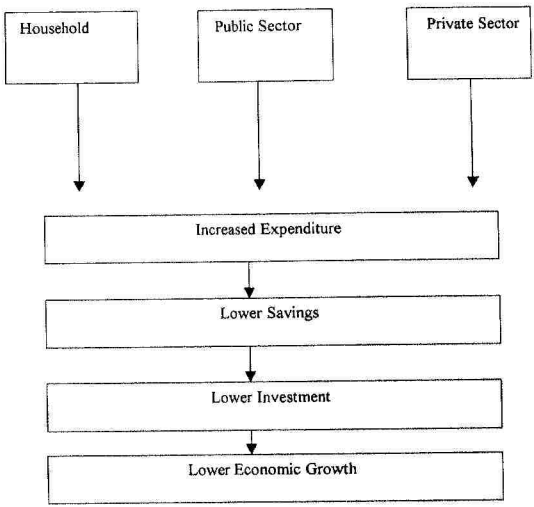
4.33 Employment Status

Out of the 25 respondents, 11 seemed to be holding a stable part time job as casual workers and salespersons, 5 are fully employed and the remaining 9 are unemployed. The average income of the working is RM 600.00 per month, which is almost half of the average income before their illness.

4.4 The Macroeconomic Impact

To examine the macroeconomic impact of the HIV/AIDS, the starting point will then be to examine the behaviour of the individual economic sectors such as the household, public sector and the government expenditure. The diagram below can illustrate this.

Figure 7: The Macroeconomic Impact of the HIV/AIDS



Source: Economic Impact of HIV Epidemic, Des Cohen, 1993

Table 10: Net Present Value of Total Costs Calculated for the Situation as at 1999

Cost Element	Medical Costs	Opportunity Costs	Total Cost
People with HIV (30,187)	(RM15, 000 x 30,187 x 5 years) x 4.156 {RM 409,287,900}	NPV of future loss of income (1/2 GNP) x 5years x 30,187 x 4.156 {RM 376,371,516}	**RM785, 659,416**
People with AIDS (2,761)	(RM 15,000 x 2761 x 1.5 years) x 2.225 {RM138, 222,562.5}	NPV of current and future loss of income (½ GNP) x 1.5 years x 2761 x 2.225 {RM5, 528,903.5}	**RM143, 751,465**
People who have died of AIDS (2,157)		Average age 30 Retiring age 60 Lost no. Years: 30 years 30 years x av. Income x 2157 {RM38, 825,000}	**RM38, 825,000**

Source: Ministry of Health Malaysia & Boston Consultation Group Analysis,1999.

Note: 1. Assume 5 years left to AIDS for all people with HIV at 1999 2.Assume 1.5 years left to death for all people with AIDS at 1999 3. Future income streams are discounted back at 6.5% rate

Table 11: A Breakdown of the Direct and Indirect Costs of HIV/AIDS

Cost Element	Value	Assumption
Direct Cost		
1. Medication	RM 15,000 per person per year	Average cost of medication for HIV/AIDS
2. Medical Consultation	RM 1666 per person per year	Average AIDS patient undertakes approximately 96 hrs per month for consultation/counseling Average rate of medical consultation is approximately RM17/hr
Indirect Cost 3. Loss of income during AIDS	RM 7200 per year per person	Average income is RM 1200 per month. Typical AIDS patient makes ½ GNP per Capita based on survey findings
4. Loss of income after death	15 years loss of income	Average age of HIV case is 30 years Average Age is 40 Retirement age is 55

Source: Ministry of Health, & Boston Consultation Group Analysis, 1997.

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Source: Ministry of Health, & Boston Consultation Group Analysis, 1997.

Table 12: Types and cost of treatment available in Malaysia

The 1st group of drugs used is called nucleoside analogues. It includes:

Name of Drug	Average Price
AZT (Zidivudine /Retrovir)	RM 550 per month
DDI (Didanosine /Videx)	RM 350 per 90 tablets
DDC (Zalcitabine / Hivid)	RM 458 per month
D4T (Stavudine /Zerit)	RM 447 – RM 556 per month
3TC (lamivudine/Epivir)	RM 550 per month

The 2nd group is called Protease Inhibitor. It includes:

Indinavir(Crixivian)	RM 900 per month
Ritonavir (Norvir)	RM 900 per month
Saquinavir (Invirase/Fortovase)	RM 900 per month

The 3rd group of drugs is called Non-Nucleoside analogues

Stocrin/Efa	RM 1140 per month

Source: Malaysian AIDS Council, 2000

These drugs are used in combination, hence the treatment is known as combination therapy and the drugs are also referred to as antiretroviral drugs.
The average costs of medication per month for a PWA is about RM 1400 to RM 1500 per month depending on which combination of drugs are used.

Due to the high cost of treatment the household with an AIDS infected case will experience a increased expenditure and a lower savings which in turn will result in a lower investment and a decreased capital accumalation. This will then lead to a lower or reduced economic growth rate.Similarly, the public sector will have to undertake the burden of providing treatment and other preventive measures to contain the spread of the disease, hence the government expeniture will increase rendering less funds for other development projects. This again will take a toll on the economic growth rate.

In the case of the private sector, the impact of HIV/AIDS could even more greater as this sector is highly dependent on labour productivity.The shortage of labour especially in the manufacturing sector makes it all the more difficult as there is a great dependence on foreign labour. HIV/AIDS among the immigrant workers will be seen as an increased cost for employers. Immigrants with HIV/AIDS will be sent back and hence the employer will have to hire new ones which involves hiring and training costs.The industiral sector suffered from acute shortage in the labor intensive and rapidly growing industries. The shortage imposed a severe constraint on the growth of these industries (Malaysian Government 1991a, p.132). Again, this will cause a decreased profit and hence a lower capital accumalation.

Another point worth considering is that as the majority of PWHAs in Malaysia as in other regions are from the prime age group of 20-40, there will be a high abseentism and loss of productivity . AIDS morbidity and mortality among this age group also suggests that there will be a decreased quantity of labour . This situation can further propound the already insuffient labour supply in the economy, hence contributing to a reduced economic growth.

4.5. Government's Expenditure and Effort in Controlling the Epidemic

The government through the Ministry of Health has taken a proactive role in the prevention and awareness measures to combat the disease . Although the first recorded case was in 1986, the government's budget allocation for th HIV/AIDs treatment and control measures were not taken up until 1993.

Below is a table containing the government expenditure for the HIV/AIDS since 1993.

Table 13: Government Budget Allocation for HIV/AIDS prevention/control and treatment for the year 1993 –2000

Year	RM
1993	24m
1994	40m
1995	44m
1996	42m
1997	42m
1998	20m
1999	20m
2000	22m

Source: Ministry of Health,2000.

From the table ,we can conclude that the government had viewed the situation as serious in the beginning as the budget allocation for the the HIV/AIDS control and treatment had increased by 66.6 percent from 1993 to 1994 . But in 1998,1999 and 2000, there is a reduction in the government budget allocation as this could be due to the economic slowdown .

To examine the significance of the government expenditure on HIV cases, a simple regression is carried out and the results are shown as follows:

Table 14: Simple Regression Output on government expenditure

Regression Statistics				
R Square	0.546244			
Adjusted R Square	0.298383			
Standard error	1197.006			
Observations	10			
ANNOVA	Coefficients	Std Error	T Stat	Lower 95%
Intercept	-1743.03	2597.692	-0.67099	-7733.33
X Variable	0.246443	0.133609	1.844513	-0.06166

Source: Appendix B(1).

Hence, a linear equation can be written as

$Y = -1743.03 + 0.246443X1$

Where Y is the number of HIV cases and X1 is the government expenditure in RM billion which means that as the number of HIV cases increase, the government expenditure increases by RM 0.2464 billion.this is due to the increased public expenditure on public health especially in the effort to contain the HIV/AIDS spread.

To test the signifcance of the HIV on government expendiure the following hypothesis is set:

Ho: there is a significant relatioship between HIV and government expenditure

Ha: there is no significant relationship between HIV and government expenditure

The Test

If t calculated is > than t critical,then HIV has a significant effect on government expenditure

t critical : 2.015

t calculated: 1.844513

Therefore, the test concludes that HIV has no significant effect on Government Expenditure

Table 15 : Breakdown of Government Expenditure on HIV/AIDS from 1993 to 2000

Treatment Costs	RM 105m
Testing/Confirmation/Research/Survey	RM 5m
NGO –outreach activities	RM 5.5m
Health education	RM 26m
Miscellaneous/Seminars	RM 2.3 m
Distribution to states	RM 110.2m

Source: Ministry of Health Malaysia, 2000

Dividing the treatment costs with the number of HIV cases in Malaysia as at 1999, which is 30,187 cases, we can conclude that each PWA is allocated RM3, 478 a year, which is truly insufficient, taking into consideration that the average cost of treatment per person is RM 1500 per month which adds up to RM 21000 per year.

4.6 To examine the relationship between GDP and HIV/AIDS

The relationship between the GDP and HIV/AIDS can be seen in 2 ways

1) How GDP affects HIV/AIDS
2) How HIV/AIDS affect the GDP

While there may not be enough evidence to conclude, there is empirical support for the existence of a strong positive relationship to suggest that sound economic conditions do bring about a higher prevalence of HIV/AIDS owing to the fact that HIV/AIDS is transmitted through purposeful behaviour rather than some rare occurrences as in the case of air-borne or water borne diseases or diseases like cancer which can be beyond the human control. With better economic conditions, there is likelihood that people visit sex workers for pleasure and indulge in drug usage, which are the main transmitters of HIV/AIDS.

Again this argument may seem rather inconclusive as poverty and poor economic prospects could also lead to high incidences to HIV/AIDS prevalence, as there will then be a need to migrate to look for earning prospects. Being in a foreign land can lead to loneliness and the risky behaviour becomes all the more prominent for such people. Besides that, in some countries like Thailand where the economic conditions are bad, women are forced into sex work to support their families and hence again this exposes them to the risk of contracting sexually transmitted diseases including HIV/AIDS.

Table 16: Simple Regression Output on GDP

Regression Statistics				
R Square	0.44408			
Adjusted R Square	0.37456			
Standard error	26145.93			
Observations	10			
ANNOVA	Coefficient	Std Error	T Stat	Lower 95%
Intercept	107062.2	21077.79	5.079386	58456.74
X Variable 1	16.35244	6.468642	2.527955	1.435711

Source: Appendix B(2).

The regression output above shows the linear relationship between the GDP and HIV where the dependent variable is GDP and the independent variable is the HIV.

A simple regression is written as follows:

Y =107062.2 +16.35244X1

For every one increase in HIV cases, GDP increases by RM 16.3524 billion. This interpretation does not support the logical reasoning of a negative impact on HIV on the economic growth. Again this equation is a bad equation as the adjusted R square is 0.374, which means that only 37 percent of the variation in the HIV figures cannot be explained by the variation in the GDP and the SEE records high.

The Hypothesis

Ho: there is a significant relationship between GDP and HIV

Ha: There is no significant relationship between GDP and HIV

The Test

t critical: 1.860

t calculated: 2.527955

t calculated being > t critical, hence there is a significant relationship between GDP and HIV rates.

Table 17:Simple Summary Output on HIV Cases

Regression Statistics				
R Square	0.000126			
Adjusted R Square	-0.19985			
Standard Error	23664.56			
Observations	7			
ANOVA	Coefficients	Std Error	T Stat	Lower 95%
Intercept	172463.4	29987.62	5.751154	95377.92
X Variable 1	21.6895	863.6144	0.025115	-2198.3

Source: Appendix B(3).

From this regression output table, we can derive the simple linear equation between HIV the dependent variable Y and the GDP (X variable), which is as follows:

$Y = 172463.4 + 21.6895X1$

Where, Y is the GDP level and X1 is the number of HIV cases.

This suggests that for every RM 1billion increase in GDP, HIV cases increases by on average by 21 cases.

The Hypothesis

Ho: There is no relationship between HIV and economic growth

Ha: There is a relationship between HIV and economic growth

To test whether there is a significant relationship:

If t calculated > t critical, then there is a significant relationship

t calculated: 0.9251

t critical: 2.015

Hence there is no significant relationship between HIV and economic growth

The adjusted R of this regression suggests that the equation is not a good equation as it indicates a negative figure and the SEE also records high difference between the estimated and the actual GDP.

Henceforth, the simple regression has failed to show any possible relationship between the HIV and GDP in Malaysia.