

# The Use of GIS in Mapping, Analysis and Evaluation of HIV/AIDS Occurrence Patterns

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## ABSTRACT

AIDS in full stands for Acquired Immune deficiency Syndrome. It is a disease that is caused by a virus known as Human Immunodeficiency virus (HIV). This virus attacks a person's immune system (white blood cells). This weakens the immune system and makes the person vulnerable to opportunistic diseases e.g. tuberculosis. HIV was first diagnosed more than twenty years ago and up to now there is no known cure for the disease.

The rate at which HIV is spreading in sub-Sahara Africa is so high that the future generation is threatened with extinction. Thousands of people are dying daily of AIDS while tens of thousands are being infected. Different techniques have been used in campaign awareness programmes. These include; the media (Television, Radio, newspapers), books, schools, churches, the administration, parents/relatives, workshops etc. However there has been little attempt to understand the society in which behavioural changes are made. HIV/AIDS has been explained in categories – that it is fuelled by poverty, migration, unemployment and illiteracy. However, AIDS has not been analysed.

The most common mode of transmission of HIV is through sexual relations. Other modes of transmission include transfusion of infected blood to a healthy person. This mostly occurs in hospitals where blood is not thoroughly screened. HIV can also be transmitted from an infected mother to child during birth when necessary precautions are not taken. The epidemic primarily affects young, working age, sexually active adults- people between the ages of 15 and 50. Both women and men become infected in similar numbers, but women tend to become infected at a younger age than men, reflecting the biological and social vulnerability of teenage women.

The basic preventive methods that have been stressed upon in fighting AIDS include; abstinence, being in a monogamous relationship, being faithful to one's partner and the use of condoms. However due to cultural, social, economic, political and other secondary influences, these campaign programs have not been effective up to the desired level. There is therefore a need to explore other strategies that can be incorporated alongside the laid down strategies or any other strategy so that the effectiveness of these methods can be evaluated before implementation.

Partly in response to the realisation that AIDS is a global disaster and the call for commitment to the partnership against AIDS and also in recognition of the severity of the epidemic, this paper has been written with the intention to bring forth a new and dynamic

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way in which the epidemic can be viewed and managed. It is known that due to the uniqueness of the backgrounds of people, different campaign methods have had different effects in different regions.

One of the most challenging and unexplored issues is the ability to determine the spread patterns, the ability to predict future spread patterns and the ability to evaluate the effectiveness of the methods that are used in curbing future spread patterns of HIV/AIDS.

The purpose of this paper is therefore aimed at introducing the technique of Geographic Information Systems (GIS) in activities that are undertaken by organisations with special emphasis on programmes that are put in place in the fighting of HIV/AIDS.

The world is divided in different continents and countries. Various organisations have carried out different programmes in these regions and a GIS is automatically an important tool for integrating these programmes and carrying out comprehensive analysis of the programme impacts. A GIS would present an integrated output that is effective in worldwide planning of intervention strategies.

The spread of the scourge across the world varies from one geographic region to another and this has been attributed to the cultural, social and economic variations in the respective regions. Different interventionary programs have been put in place in the respective regions to combat the spread of the scourge and as a result, different geographical regions have registered different feedbacks to these interventionary programmes.

In this respect, this paper will address its goal by identifying the significant effects of HIV through a scientific investigation and to demonstrate the usefulness of GIS techniques in analysing and mapping its spatial distribution patterns.

A project designed along these lines should fulfil particular fundamental objectives. This should be demonstrated by the project's ability to;

- Instantly show the occurrence of HIV/AIDS patterns in form of a map (digital/ hard copy) showing high risk and low risk areas.
- Instantly determine the geographic location of areas of highest demand for intervention programmes.
- Build questions and be able to obtain instant answers e.g.
- what is the pattern of occurrence of HIV/AIDS?.
- Easy and effective data manipulation

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