DECLARATION

I, Elias Namosha declare that this report is my work. It is being re-submitted for the degree of Master of Science in Medicine (Population-Based Field Epidemiology) at the University of the Witwatersrand, Johannesburg, South Africa. The award of the degree is subject to minor corrections to be made to the satisfaction of the Head of Department.

The 24th day of August, 2009

In memory of my late mother

Esiong Namosha (1982),

You will always be remembered.

I also would like dedicate this work to my father, Namosha W. Gigia,

late Yamoa Gigia (uncle), late Dawanan Zumputs (brother) and late Tomda Batayapun

(brother in law) and all immediate family members.

ABSTRACT

***Background*:** Cluster detection analysis could be an appropriate approach to identify critical AIDS mortality locations for public health intervention.

Methods: GIS and Kulldorff's spatial scan statistic was used to investigate statistically significant AIDS mortality clusters ($p \leq 0.05$). SaTScan was used to perform the spatial analysis scanning while MapInfo was used as a visualizing tool. Mortality data between 2000-2006 were analyzed.

Results: AIDS exhibit strong spatial clustering tendencies as measured by the Kulldorff's spatial scan statistic method.

Conclusion: Further work is needed to understand the underlying mechanisms responsible for the spatial clustering.

ACKNOWLEDGEMENTS

I would like to thank a few people and organizations for their support and contribution towards the completion of this study. Firstly, my special thanks go to my supervisors Dr. Frank Tanser (Africa Centre HDSS) and Benn Sartorius (Wits University, School of Public Health). I also would like to acknowledge that the financial support for this work and training was provided by the UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Disease (TDR). I am also grateful to Dr Ivo Mueller, Professors Moses Bockarie and Peter Siba and the Wosera HDSS (Papua New Guinea). Last but not the least I would like to thank the management and staff of the Africa Centre HDSS for the logistical support during my field attachment at the site and also for using their longitudinal data for the purpose of this research.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES