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TESIS

PERPUSTAKAAN  
UNIVERSITAS AIRLANGGA  
SURABAYA

**MODEL PREDIKSI DAN PEMETAAN  
DAERAH RAWAAN KLB DIFTERI  
DI KOTA SURABAYA**



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**UNIVERSITAS AIRLANGGA  
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PROGRAM MAGISTER  
PROGRAM STUDI ADMINISTRASI DAN KEBIJAKAN KESEHATAN  
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TESIS

MODEL PREDIKSI DAN PEMETAAN  
DAERAH RAWAN KLB DIFTERI  
DI KOTA SURABAYA

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2. Arief Hargono, drg., M.Kes.  
3. Atik Choirul Hidayah, dr., M.Kes.  
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Dekan,

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Mengesahkan

Dipertahankan di depan Tim Penguji Tesis  
Minat Studi Manajemen Surveilans dan Informasi Kesehatan  
Program Studi Administrasi dan Kebijakan Kesehatan  
Fakultas Kesehatan Masyarakat Universitas Airlangga  
dan diterima untuk memenuhi persyaratan guna memperoleh gelar  
Magister Kesehatan (M.Kes.)  
pada tanggal 3 September 2012

PENGESAHAN

## Penulis

Surabaya, September 2012

Puji syukur penulis panjatkan kehadirat Tuhan Yang Maha Esa, atas Karunia dan Hidayah-Nya penyusunan tesis dengan judul "Model Prediksi dan Pemetaan Daerah Rawan KLB Difteri di Kota Surabaya" ini dapat terselesaikan. Tesis ini mengenai model prediksi dan pemetaan daerah rawan KLB Difteri berdasarkan prediksi yang sudah disusun. Hasil temuan diharapkan mampu meningkatkan kewaspadaan dini KLB difteri di Kota Surabaya.

Ucapan terima kasih yang tak terhingga saya sampaikan kepada Prof. Dr. Chatarina U.W., dr., M.S., M.PH. selaku Pembimbing Ketua sekaligus sebagai ketua minat studi MSIK program studi AKK Program Pasca Sarjana,FKM, Universitas Airlangga yang dengan kesabaran dan perhatiannya dalam memberikan bimbingan, semangat dan saran hingga tesis ini bisa terselesaikan dengan baik. Ucapan terima kasih yang tak terhingga juga saya sampaikan kepada, Arief Hargono, drg., M.Kes. selaku pembimbing kedua yang telah banyak meluangkan waktu untuk memberikan bimbingan, motivasi, dan saran.

Dengan terselesainya tesis ini perkenankan saya mengucapkan terima kasih yang sebesar-besarnya kepada :

1. Rektor Universitas Airlangga
2. Dekan Fakultas Kesehatan Masyarakat Universitas Airlangga
3. Ratna Dwi Wulandari, S.KM, M.Kes. sebagai ketua Program Studi Administrasi Kesehatan dan Kesehatan Pasca Sarjana,FKM, Universitas Airlangga
4. Dr. Windhu Purnomo, dr., M.S. sebagai ketua penguji dan atas kesediaan menguji serta membimbing dalam perbaikan tesis ini.
5. Ansaruli Fahrudda, drg., M.Kes. dan Alik Choirul Hidayah, dr., M.Kes. sebagai panita penguji dan atas kesediaan menguji serta membimbing dalam perbaikan tesis ini.
5. Kepala Dinas Kesehatan Kota Surabaya beserta Kepala UPTD Puskesmas se-Kota Surabaya
6. Lurah se-Kota Surabaya dan berbagai pihak yang membantu penelitian ini

Demikian, semoga tesis ini bisa memberi manfaat bagi diri kami sendiri dan pihak lain yang menggunakan.

## KATA PENGANTAR

**Predictive Models and Mapping of Prone Areas to Outbreaks of Diphtheria in Surabaya City**

**SUMMARY**

Surabaya City is a city with the highest incidence of diphtheria in the East Java Province. Even, the incidence of diphtheria has become an outbreak in Surabaya City. The impact of an outbreak of diphtheria are increased morbidity and mortality, influence public restlessness and economic disadvantages. Either step to control outbreak of diphtheria is identification the risk factors. The identified risk factors can be used as a basis for decision-making in determining the form of handling an outbreak of diphtheria. As early warning, we can do predictions the prone areas of outbreak. Interaction between risk factors and predictive of outbreak can be presented in a map that allows users to understand the information. The use of geographic information technology-based applications will help efforts Surabaya District Health Office to control outbreak of diphtheria. This was an observational analytic study with cross sectional design. The objective was to develop predictive models and mapping of prone areas to outbreaks of diphtheria in Surabaya City. The study was conducted from January to June 2012. The population and sample was whole village in Surabaya City (160 villages).

The data utilized were secondary data from primary healthcare centers, village and statistics center in Surabaya City. The technique for collecting data was observation data using a data collection sheet. Method of processing and data analysis were multiple logistic regression for the prediction and spatial analysis for the map.

The results showed that of the seven risk factors were suspected as risk factor for outbreaks of diphtheria, just 3 were eligible to develop predictive models of outbreak of diphtheria. The risk factors were risk population (children aged  $\leq 15$  years), the incidence in the previous year and booster immunization status. If a village had a number of children aged  $\leq 15$  years as much as 4315 or more, and there was an outbreak of diphtheria in previous year and diphtheria booster immunization status below the target of 95%, the probability of outbreak of diphtheria occurred at 80.90%. This models had predicted accuracy of 73.8%. When compared with the incidence of outbreaks of diphtheria in 2012, then from 27 villages (80.90% probability), 12 (44.44%) of them experienced an outbreak of diphtheria in 2012. The results showed that the risk factors of outbreak of diphtheria in Surabaya City tend to have a pattern of spread, but there was appears a route of transmission for the cross from north to south.

Conclusions: (1) factors that make prediction model is risk population (children aged less than or equal to 15 years), the incidence of diphtheria outbreak the previous year and a booster immunization status. (2a) If a village had a number of children aged  $\leq 15$  years as much as 4315 or more, and there was an

outbreak of diphtheria in previous year and diphtheria booster immunization status below the target of 95%, the probability of outbreak of diphtheria occurred at 80.90%. (2b) This models had predicted accuracy of 73.8%. (2c) A total of 44.44% of 27 villages with a 80.90% probability attacked outbreaks of diphtheria, so that concerned institution should increase vigilance against 15 other villages. (3) Risk factors, the incidence of diphtheria outbreak in 2009-2012 in the city of Surabaya tend to have a pattern of spread, but there was appears a route of transmission is across from north to south. This map can be presented in a web-based.