PEMILIHAN MODEL PRIOR *CONDITIONAL AUTOREGRESSIVE* (CAR)
UNTUK ESTIMASI RISIKO RELATIF (RR)
PENYAKIT DEMAM CHIKUNGUNYA
DI KOTA BANDUNG

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TESIS
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ABSTRAK

Judul Tesis	: Pemilihan Model Prior *Conditional Autoregressive* (CAR) Untuk Estimasi Risiko Relatif (RR) Penyakit Demam Chikungunya di Kota Bandung
Kata Kunci	: 1. Chikungunya,
	2. *Conditional Autoregressive*
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Abstrak

Pemetaan penyakit sangat berguna dalam studi epidemiologi untuk mengidentifikasi daerah yang berisiko tinggi terhadap penyebaran penyakit di suatu daerah. Permasalahan utama dalam pemetaan penyakit yaitu menentukan ukuran risiko relatif (RR). RR adalah perbandingan antara jumlah kasus dengan jumlah kasus yang diharapkan terjadi di daerah tersebut. Penelitian ini akan menaksir RR kasus Penyakit Chikungunya di 30 kecamatan Kota Bandung tahun 2012 – 2014 dengan memperhatikan ketergantungan spasial. Salah satu penaksir dari RR adalah *Standarized Incidence Ratio* (SIR). Akan tetapi ketika ukuran populasi kecil penaksir SIR akan menghasilkan varians taksiran yang besar, sehingga perlu dilakukannya pemulusan. Metode *Hierarchical Bayesian* (HB) dengan *Conditional Autoregressive Model* (CAR) merupakan salah satu metode penaksiran parameter yang paling tepat dalam menaksir RR penyakit Demam Chikungunya, karena mempertimbangkan interaksi spasial antar area kecil dari suatu daerah. Ada beberapa model CAR prior diantaranya: model *Intrinsic* CAR (ICAR), Convolution (BYM), dan *Leroux*. Pemilihan model CAR prior diperlukan untuk menghasilkan ukuran taksiran RR yang tepat. Hasil penelitian menunjukkan bahwa model BYM memiliki ukuran kebaikan model yang lebih baik dengan nilai *Deviance Information Criteria* (DIC) terkecil dibandingkan

model CAR prior yang lain. Daerah yang mempunyai ukuran risiko relatif kasus Chikungunya yang tinggi adalah Wilayah Bandung Utara (Coblong, Cidadap, Cicendo, dan Bandung Wetan) dan Wilayah Bandung Timur (Cibiru dan Arcamanik) dengan kecamatan risiko tertinggi adalah Kecamatan Coblong.

Abstract

Mapping disease in epidemiology study will be very useful to identify high risk area of spread of diseases in one region. Main problem in mapping disease is to determine the measurement of relative risk (RR). RR is ratio between numbers of cases with number of cases expected to happen in the area. This study will estimate RR of Chikungunya disease cases in 30 sub-districts of Bandung city year 2012-2014 by taking into account spatial dependence. One of the estimators of RR is Standardized Incidence Ratio (SIR). Nevertheless, when the number of population is small SIR estimator will generates a large variance of estimation; therefore it is necessary to do smoothing. Hierarchical Bayesian (HB) Method with Conditional Autoregressive (CAR) model is one of the most appropriate parameter estimation methods in estimating RR of Chikungunya fever disease, considering spatial interaction between small areas in a region. There are several models of CAR Prior that is: Intrinsic Model CAR (ICAR), Convolution (BYM), and Leroux. CAR prior Model election is needed to generate the proper measure of RR estimation. The study result show that BYM model have appropriate measurement model which is better with the smallest Devianece Information Criteria (DIC) values than the other CAR prior model. Areas which have high relative risk of Chikungunya diseases are north of bandung area (Coblong, Cidadap, Cicendo, and Bandung Wetan) and East of Bandung area (Cibiru and Arcamanik) with Coblong is the higher relative risk.

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