

## DAFTAR ISI

|                                                                               |       |
|-------------------------------------------------------------------------------|-------|
| HALAMAN JUDUL.....                                                            | i     |
| HALAMAN PENGESAHAN.....                                                       | ii    |
| PERNYATAAN BEBAS PLAGIASI .....                                               | iii   |
| HALAMAN MOTTO DAN PERSEMBAHAN.....                                            | iv    |
| KATA PENGANTAR .....                                                          | v     |
| DAFTAR ISI.....                                                               | vii   |
| DAFTAR GAMBAR .....                                                           | ix    |
| DAFTAR TABEL .....                                                            | x     |
| DAFTAR LAMPIRAN.....                                                          | xi    |
| INTISARI.....                                                                 | xii   |
| ABSTRACT.....                                                                 | xiii  |
| <br>BAB I PENDAHULUAN.....                                                    | <br>1 |
| 1.1 Latar Belakang .....                                                      | 1     |
| 1.2 Pembatasan Masalah.....                                                   | 4     |
| 1.3 Tujuan Penulisan.....                                                     | 4     |
| 1.4 Tinjauan Pustaka.....                                                     | 5     |
| 1.5 Metode Penulisan.....                                                     | 7     |
| 1.6 Sistematika Penulisan .....                                               | 7     |
| <br>BAB II DASAR TEORI .....                                                  | <br>8 |
| 2.1 Variabel Random.....                                                      | 8     |
| 2.2 Vektor .....                                                              | 12    |
| 2.3 Matriks dan Aljabar Matriks.....                                          | 13    |
| 2.3.1 Operasi matriks .....                                                   | 14    |
| 2.3.2 Matriks definit dan bentuk kuadrat .....                                | 15    |
| 2.4 Regresi Linear .....                                                      | 17    |
| 2.5 Keluarga Ekponensial.....                                                 | 17    |
| 2.6 Model Linear Tergeneralisasi ( <i>Generalized Linear Model</i> /GLM)..... | 19    |
| 2.7 Matriks Hessian .....                                                     | 21    |
| 2.8 Metode Estimasi Maksimum Likelihood.....                                  | 22    |
| 2.9 Fungsi Skor ( <i>score function</i> ).....                                | 24    |
| 2.10 Distribusi Poisson .....                                                 | 25    |
| 2.11 Regresi Poisson.....                                                     | 26    |
| 2.12 Estimasi Parameter Regresi Poisson.....                                  | 28    |
| 2.13 Overdispersi dan Underdispersi.....                                      | 29    |
| 2.14 Metode Optimasi .....                                                    | 31    |
| 2.14.1 Metode optimasi klasik.....                                            | 31    |
| 2.14.2 Metode optimasi numerik .....                                          | 31    |
| 2.14.2.1 Metode biseksi ( <i>bisection</i> ).....                             | 32    |

|                                                                                           |                                                                  |    |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------|----|
| 2.14.2.2                                                                                  | Metode Newton Raphson .....                                      | 33 |
| 2.14.2.3                                                                                  | Metode Fisher Scoring.....                                       | 35 |
| 2.15                                                                                      | Ukuran Ketepatan Model Regresi.....                              | 36 |
| 2.16                                                                                      | Uji Signifikansi Parameter.....                                  | 37 |
| 2.17                                                                                      | Autokorelasi Spasial .....                                       | 38 |
| 2.18                                                                                      | Multikolinearitas .....                                          | 40 |
| 2.19                                                                                      | Kriteria Pemilihan Model .....                                   | 40 |
| 2.19.1                                                                                    | <i>Akaike Information Criterion</i> (AIC) .....                  | 40 |
| 2.19.2                                                                                    | <i>Schwart's Bayesian Criterion</i> (SBC).....                   | 41 |
| <br>BAB III MODEL REGRESI CONWAY-MAXWELL-POISSON DENGAN<br>PARAMETERISASI RATA-RATA ..... |                                                                  |    |
| 3.1                                                                                       | Distribusi CMP .....                                             | 42 |
| 3.2                                                                                       | Distribusi $CMP_{\mu}$ .....                                     | 48 |
| 3.3                                                                                       | Optimasi nilai $\lambda(\mu, v)$ .....                           | 53 |
| 3.4                                                                                       | Model Regresi $CMP_{\mu}$ Dengan Tingkat Dispersi Tetap .....    | 54 |
| 3.5                                                                                       | Estimasi Parameter Model Regresi $CMP_{\mu}$ .....               | 55 |
| 3.5.1                                                                                     | Fungsi skor untuk $\mu$ .....                                    | 55 |
| 3.5.2                                                                                     | Fungsi skor $\beta$ .....                                        | 58 |
| 3.5.3                                                                                     | Fungsi skor untuk $v$ .....                                      | 60 |
| 3.6                                                                                       | Iterasi Fisher-Scoring.....                                      | 64 |
| 3.7                                                                                       | Uji <i>Goodness of Fit</i> Model Regresi .....                   | 65 |
| 3.8                                                                                       | Tahapan Estimasi Model .....                                     | 67 |
| <br>BAB IV STUDI KASUS .....                                                              |                                                                  |    |
| 4.1                                                                                       | Konsep Dasar .....                                               | 69 |
| 4.2                                                                                       | Jenis dan Sumber Data .....                                      | 70 |
| 4.3                                                                                       | Variabel Penelitian .....                                        | 71 |
| 4.3.1                                                                                     | Variabel dependen.....                                           | 71 |
| 4.3.2                                                                                     | Variabel independen .....                                        | 71 |
| 4.4                                                                                       | Sistem Pemrograman .....                                         | 73 |
| 4.5                                                                                       | Analisis Deskriptif dan Eksploratif .....                        | 73 |
| 4.6                                                                                       | Kajian Dependensi Spasial.....                                   | 75 |
| 4.7                                                                                       | Deteksi Multikolinearitas .....                                  | 77 |
| 4.8                                                                                       | Estimasi Model Regresi Linear .....                              | 78 |
| 4.9                                                                                       | Estimasi Model Regresi Poisson .....                             | 82 |
| 4.10                                                                                      | Tes Ekuidispersi Model Poisson .....                             | 87 |
| 4.11                                                                                      | Estimasi Model Regresi CMP Dengan Parameterisasi Rata-Rata ..... | 87 |
| 4.12                                                                                      | Interpretasi Model Regresi $CMP_{\mu}$ Terbaik.....              | 93 |
| <br>BAB V PENUTUP.....                                                                    |                                                                  |    |
| 5.1                                                                                       | Kesimpulan.....                                                  | 95 |
| 5.2                                                                                       | Saran.....                                                       | 95 |
| DAFTAR PUSTAKA .....                                                                      |                                                                  | 97 |
| LAMPIRAN.....                                                                             |                                                                  | 99 |