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# LAMPIRAN

**Lampiran 1.** Data Jumlah Kasus Malaria dan Faktor-faktor yang Memperngaruhi di Puskesmas Kota Makassar Tahun 2021

| Kecamatan | Puskesmas | Y | $X_1$ | $X_2$ | $X_3$ | $X_4$ |
|---|---|---|---|---|---|---|
| Ujung Tanah | Pattingalloang | 1 | 3949 | 9 | 1 | 25 |
| | Tabaringan | 1 | 3153 | 10 | 2 | 25 |
| Tallo | Ujung Pandang Baru | 0 | 5500 | 27 | 1 | 36 |
| | Rappokalling | 0 | 9047 | 28 | 1 | 25 |
| | Kaluku Bodoa | 1 | 15273 | 49 | 1 | 26 |
| Bontoala | Layang | 1 | 7199 | 17 | 1 | 37 |
| | Malimongan Baru | 1 | 3586 | 10 | 2 | 20 |
| Wajo | Tarakan | 2 | 3197 | 5 | 1 | 25 |
| | Andalas | 0 | 3386 | 34 | 2 | 19 |
| Ujung Pandang | Makkasau | 0 | 6243 | 28 | 5 | 21 |
| Makassar | Bara-baraya | 0 | 7869 | 13 | 1 | 34 |
| | Maccini Sawah | 5 | 5294 | 10 | 1 | 50 |
| | Maradekaya | 0 | 5100 | 28 | 1 | 20 |
| Mamajang | Mamajang | 0 | 4595 | 19 | 4 | 26 |
| | Cendrawasi | 0 | 9673 | 14 | 1 | 27 |
| Mariso | Dahlia | 0 | 4369 | 16 | 1 | 22 |
| | Pertiwi | 0 | 3932 | 17 | 1 | 39 |
| | Panambungan | 0 | 4712 | 17 | 2 | 30 |
| Tamalate | Tamalate | 0 | 13078 | 45 | 3 | 21 |
| | Jongaya | 0 | 10700 | 26 | 2 | 30 |
| | Barombong | 0 | 2942 | 26 | 1 | 18 |
| | Maccini Sombala | 1 | 7010 | 19 | 1 | 29 |
| Rappocini | Kassi-Kassi | 0 | 19772 | 45 | 3 | 22 |
| | Mangasa | 0 | 22988 | 18 | 1 | 22 |
| | Minasa Upa | 0 | 4590 | 12 | 2 | 25 |
| | Ballaparang | 0 | 8864 | 32 | 4 | 35 |
| Panakukang | Toddopuli | 0 | 3581 | 11 | 1 | 44 |
| | Pampang | 1 | 10398 | 20 | 2 | 23 |
| | Tamamaung | 1 | 14450 | 33 | 3 | 22 |
| | Karuwisi | 0 | 6181 | 30 | 2 | 23 |
| Manggala | Antang | 1 | 6396 | 30 | 1 | 33 |
| | Batua | 1 | 8942 | 25 | 2 | 25 |
| | Antang Perumnas | 2 | 4738 | 16 | 1 | 45 |
| | Tamangapa | 0 | 2839 | 20 | 1 | 24 |
| | Bangkala | 1 | 5784 | 26 | 1 | 20 |

**Lampiran 1.** Data Jumlah Kasus Malaria dan Faktor-faktor yang Memperngaruhi di Puskesmas Kota Makassar Tahun 2021 (Lanjutan)

| | | | | | | |
|---|---|---|---|---|---|---|
| Biringkanaya | Sudiang | 1 | 14463 | 61 | 2 | 20 |
| | Bulurokeng | 0 | 3293 | 13 | 2 | 19 |
| | Sudiang Raya | 1 | 11012 | 25 | 1 | 18 |
| | Paccerakkang | 0 | 12836 | 18 | 2 | 23 |
| | Daya | 2 | 4163 | 13 | 2 | 18 |
| Tamalanrea | Tamalanrea | 0 | 10023 | 25 | 1 | 27 |
| | Tamalanrea Jaya | 1 | 6935 | 21 | 1 | 19 |
| | Bira | 0 | 4517 | 24 | 1 | 23 |
| | Tamalanrea Indah | 1 | 7427 | 11 | 4 | 21 |
| | Kapasa | 1 | 4014 | 16 | 1 | 21 |
| Pulau Sangkarrang | Barrang Lompo | 0 | 2312 | 10 | 1 | 28 |
| | Pulau Kodingareng | 0 | 1003 | 6 | 1 | 25 |

**Lampiran 2.** Uji Kecocokan Distribusi

Mean 0,574468

| $Y$ | Frekuensi | $F_k$ | $F_n(Y)$ | $F_0(Y)$ | $\lvert F_n(Y) - F_0(Y)\rvert$ |
|---|---|---|---|---|---|
| 0 | 27 | 27 | 0,56300 | 0,57447 | 0,01146 |
| 1 | 16 | 43 | 0,88643 | 0,91489 | 0,02846 |
| 2 | 3 | 46 | 0,97933 | 0,97872 | 0,00061 |
| 3 | 0 | 46 | 0,99712 | 0,97872 | 0,01840 |
| 4 | 0 | 46 | 0,99968 | 0,97872 | 0,02095 |
| 5 | 1 | 47 | 0,99997 | 1,00000 | 0,00003 |

$D_{hitu} = 0{,}2846$

$D_{47;0,05} = 0{,}1942$

**Lampiran 3.** Tabel Kolmogorov-Smirnov

**Test de Kolmogorov-Smirnov**

| n | Nivel de significación α | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| n | 0.20 | 0.10 | 0.05 | 0.02 | 0.01 | 0.005 | 0.002 | 0.001 |
| 1 | 0.90000 | 0.95000 | 0.97500 | 0.99000 | 0.99500 | 0.99750 | 0.99900 | 0.99950 |
| 2 | 0.68337 | 0.77639 | 0.84189 | 0.90000 | 0.92929 | 0.95000 | 0.96838 | 0.97764 |
| 3 | 0.56481 | 0.63604 | 0.70760 | 0.78456 | 0.82900 | 0.86428 | 0.90000 | 0.92065 |
| 4 | 0.49265 | 0.56522 | 0.62394 | 0.68887 | 0.73424 | 0.77639 | 0.82217 | 0.85047 |
| 5 | 0.44698 | 0.50945 | 0.56328 | 0.62718 | 0.66853 | 0.70543 | 0.75000 | 0.78137 |
| 6 | 0.41037 | 0.46799 | 0.51926 | 0.57741 | 0.61661 | 0.65287 | 0.69571 | 0.72479 |
| 7 | 0.38148 | 0.43607 | 0.48342 | 0.53844 | 0.57581 | 0.60975 | 0.65071 | 0.67930 |
| 8 | 0.35831 | 0.40962 | 0.45427 | 0.50654 | 0.54179 | 0.57429 | 0.61368 | 0.64098 |
| 9 | 0.33910 | 0.38746 | 0.43001 | 0.47960 | 0.51332 | 0.54443 | 0.58210 | 0.60846 |
| 10 | 0.32260 | 0.36866 | 0.40925 | 0.45562 | 0.48893 | 0.51872 | 0.55500 | 0.58042 |
| 11 | 0.30829 | 0.35242 | 0.39122 | 0.43670 | 0.46770 | 0.49539 | 0.53135 | 0.55588 |
| 12 | 0.29577 | 0.33815 | 0.37543 | 0.41918 | 0.44905 | 0.47672 | 0.51047 | 0.53422 |
| 13 | 0.28470 | 0.32549 | 0.36143 | 0.40362 | 0.43247 | 0.45921 | 0.49189 | 0.51490 |
| 14 | 0.27481 | 0.31417 | 0.34890 | 0.38970 | 0.41762 | 0.44352 | 0.47520 | 0.49753 |
| 15 | 0.26589 | 0.30397 | 0.33750 | 0.37713 | 0.40420 | 0.42934 | 0.45611 | 0.48182 |
| 16 | 0.25778 | 0.29472 | 0.32733 | 0.36571 | 0.39201 | 0.41644 | 0.44637 | 0.46750 |
| 17 | 0.25039 | 0.28627 | 0.31796 | 0.35528 | 0.38086 | 0.40464 | 0.43380 | 0.45540 |
| 18 | 0.24360 | 0.27851 | 0.30936 | 0.34569 | 0.37062 | 0.39380 | 0.42224 | 0.44234 |
| 19 | 0.23735 | 0.27136 | 0..30143 | 0.33685 | 0.36117 | 0.38379 | 0.41156 | 0.43119 |
| 20 | 0.23156 | 0.26473 | 0.29408 | 0.32866 | 0.35241 | 0.37451 | 0.40165 | 0.42085 |
| 21 | 0.22517 | 0.25858 | 0.28724 | 0.32104 | 0.34426 | 0.36588 | 0.39243 | 0.41122 |
| 22 | 0.221I5 | 0.25283 | 0.28087 | 0.31394 | 0.33666 | 0.35782 | 0.38382 | 0.40223 |
| 23 | 0.21646 | 0.24746 | 0.2749tl | 0.30728 | 0.32954 | 0.35027 | 0.37575 | 0.39380 |
| 24 | 0.21205 | 0.24242 | 0.26931 | 0.30104 | 0.32286 | 0.34318 | 0.36787 | 0.38588 |
| 25 | 0.20790 | 0.23768 | 0.26404 | 0.29518 | 0.31657 | 0.33651 | 0.36104 | 0.37743 |
| 26 | 0.20399 | 0.23320 | 0.25908 | 0.28962 | 0.30963 | 0.33022 | 0.35431 | 0.37139 |
| 27 | 0.20030 | 0.22898 | 0.25438 | 0.28438 | 0.30502 | 0.32425 | 0.34794 | 0.36473 |
| 28 | 0.19680 | 0.22497 | 0.24993 | 0.27942 | 0.29971 | 0.31862 | 0.34190 | 0.35842 |
| 29 | 0.19348 | 0.22117 | 0.24571 | 0.27471 | 0.29466 | 0.31327 | 0.33617 | 0.35242 |
| 30 | 0.19032 | 0.21756 | 0.24170 | 0.27023 | 0.28986 | 0.30818 | 0.33072 | 0.34672 |
| 31 | 0.18732 | 0.21412 | 0.23788 | 0.26596 | 0.28529 | 0.30333 | 0.32553 | 0.34129 |
| 32 | 0.18445 | 0.21085 | 0.23424 | 0.26189 | 0.28094 | 0.29870 | 0.32058 | 0.33611 |
| 33 | 0.18171 | 0.20771 | 0.23076 | 0.25801 | 0.27577 | 0.29428 | 0.31584 | 0.33115 |
| 34 | 0.17909 | 0.21472 | 0.22743 | 0.25429 | 0.27271 | 0.29005 | 0.31131 | 0.32641 |
| 35 | 0.17659 | 0.20185 | 0.22425 | 0.25073 | 0.26897 | 0.28600 | 0.30597 | 0.32187 |
| 36 | 0.17418 | 0.19910 | 0.22119 | 0.24732 | 0.26532 | 0.28211 | 0.30281 | 0.31751 |
| 37 | 0.17188 | 0.19646 | 0.21826 | 0.24404 | 0.26180 | 0.27838 | 0.29882 | 0.31333 |
| 38 | 0.16966 | 0.19392 | 0.21544 | 0.24089 | 0.25843 | 0.27483 | 0.29498 | 0.30931 |
| 39 | 0.16753 | 0.19148 | 0.21273 | 0.23785 | 0.25518 | 0.27135 | 0.29125 | 0.30544 |
| 40 | 0.16547 | 0.18913 | 0.21012 | 0.23494 | 0.25205 | 0.26803 | 0.28772 | 0.30171 |
| 41 | 0.16349 | 0.18687 | 0.20760 | 0.23213 | 0.24904 | 0.26482 | 0.28429 | 0.29811 |
| 42 | 0.16158 | 0.18468 | 0.20517 | 0.22941 | 0.24613 | 0.26173 | 0.28097 | 0.29465 |
| 43 | 0.15974 | 0.18257 | 0.20283 | 0.22679 | 0.24332 | 0.25875 | 0.27778 | 0.29130 |
| 44 | 0.15795 | 0.18051 | 0.20056 | 0.22426 | 0.24060 | 0.25587 | 0.27468 | 0.28806 |
| 45 | 0.15623 | 0.17856 | 0.19837 | 0.22181 | 0.23798 | 0.25308 | 0.27169 | 0.28493 |
| 46 | 0.15457 | 0.17665 | 0.19625 | 0.21944 | 0.23544 | 0.25038 | 0.26880 | 0.28190 |
| 47 | 0.15295 | 0.17481 | 0.19420 | 0.21715 | 0.23298 | 0.24776 | 0.26600 | 0.27896 |
| 48 | 0.15139 | 0.17301 | 0.19221 | 0.21493 | 0.23059 | 0.24523 | 0.26328 | 0.27611 |
| 49 | 0.14987 | 0.17128 | 0.19028 | 0.21281 | 0.22832 | 0.24281 | 0.26069 | 0.27339 |
| 50 | 0.14840 | 0.16959 | 0.18841 | 0.21068 | 0.22604 | 0.24039 | 0.25809 | 0.27067 |
| n>50 | $\frac{1.07}{\sqrt{n}}$ | $\frac{1.22}{\sqrt{n}}$ | $\frac{1.36}{\sqrt{n}}$ | $\frac{1.52}{\sqrt{n}}$ | $\frac{1.63}{\sqrt{n}}$ | $\frac{1.73}{\sqrt{n}}$ | $\frac{1.85}{\sqrt{n}}$ | $\frac{1.95}{\sqrt{n}}$ |

**Lampiran 4.** Uji Multikolinearitas

```
> library(car)
> model_lm<-lm(Y~X1+X2+X3+X4, data=malaria2)
> vif(model_lm)
   X1    X2    X3    X4 
1.522 1.603 1.102 1.095 
```

**Lampiran 5.** Uji Overdispersi

```
> library(AER)
> model<-glm(Y~X1+X2+X3+X4, family="poisson", data=malaria2)
> model_glm
Call:  glm(formula = Y ~ X1 + X2 + X3 + X4, family = "poisson", data =
malaria2)

Coefficients:
(Intercept)           X1           X2           X3           X4
  -1.279067     0.000023    -0.023640    -0.121968     0.044072

Degrees of Freedom: 46 Total (i.e. Null);  42 Residual
Null Deviance:       54.3
Residual Deviance: 46.9   AIC: 100
> D<-model_glm$deviance
> db<-model_glm$df.residual
> Psi<-D/db
> Psi
[1] 1.118
```

**Lampiran 6.** Estimasi Parameter Model ZIPIG

```
> summary(m1<-gamlss(Y~X1+X2+X3+X4,data = malaria2, family = ZIPIG, met
hod = RS(100)))
Family:  c("ZIPIG", "Zero inflated Poisson inverse Gaussian")

Call:  gamlss(formula = Y ~ X1 + X2 + X3 + X4, family = ZIPIG,
    data = malaria2, method = RS(100))

Fitting method: RS(100)

------------------------------------------------------------------
Mu link function:  log
Mu Coefficients:
              Estimate Std. Error t value            Pr(>|t|)
(Intercept)  2.3117801  0.9375150    2.47               0.018 *
X1           0.0012501  0.0000169   73.81 <0.0000000000000002 ***
X2          -0.4424008  0.0154597  -28.62 <0.0000000000000002 ***
X3          -3.3508840  0.2191655  -15.29 <0.0000000000000002 ***
X4           0.0082559  0.0241824    0.34               0.735
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

------------------------------------------------------------------
Sigma link function:  log
Sigma Coefficients:
               Estimate  Std. Error t value            Pr(>|t|)
(Intercept) -0.21130733  0.00000486  -43452 <0.0000000000000002 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

------------------------------------------------------------------
Nu link function:  logit
Nu Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   -1.491      0.542   -2.75   0.0084 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

------------------------------------------------------------------
No. of observations in the fit:  47
Degrees of Freedom for the fit:  7
      Residual Deg. of Freedom:  40
                      at cycle:  83

Global Deviance:     188.6
            AIC:     202.6
            SBC:     215.5
******************************************************************
```

**Lampiran 6.** Estimasi Parameter Model ZIPIG (Lanjutan)

```
> summary(m3<-gamlss(Y~X1+X2+X4,data = malaria2, family = ZIPIG, method
= RS(100)))
Family:  c("ZIPIG", "Zero inflated Poisson inverse Gaussian")

Call:
gamlss(formula = Y ~ X1 + X2 + X4, family = ZIPIG, data = malaria2,
    method = RS(100))

Fitting method: RS(100)

------------------------------------------------------------------
Mu link function:  log
Mu Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) -1.081215   2.432240   -0.44   0.6589
X1           0.000727   0.000288    2.53   0.0153 *
X2          -0.213862   0.075799   -2.82   0.0072 **
X4           0.075668   0.078843    0.96   0.3426
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

------------------------------------------------------------------
Sigma link function:  log
Sigma Coefficients:
            Estimate Std. Error t value    Pr(>|t|)
(Intercept)     3.72       0.56    6.65 0.000000031 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

------------------------------------------------------------------
Nu link function:  logit
Nu Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)    -1.22       0.55   -2.22    0.031 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

------------------------------------------------------------------
No. of observations in the fit:  47
Degrees of Freedom for the fit:  6
      Residual Deg. of Freedom:  41
                      at cycle:  76

Global Deviance:     123.5
            AIC:     135.5
            SBC:     146.6
******************************************************************
```

**Lampiran 6.** Estimasi Parameter Model ZIPIG (Lanjutan)

```
> summary(m6<-gamlss(Y~X1+X2,data = malaria2, family = ZIPIG, method =
RS(100)))
Family:  c("ZIPIG", "Zero inflated Poisson inverse Gaussian")

Call:
gamlss(formula = Y ~ X1 + X2, family = ZIPIG, data = malaria2,
    method = RS(100))

Fitting method: RS(100)

-------------------------------------------------------------------
Mu link function:  log
Mu Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.723785   1.101497    0.66   0.5145
X1           0.000703   0.000267    2.63   0.0117 *
X2          -0.216513   0.068409   -3.16   0.0028 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

-------------------------------------------------------------------
Sigma link function:  log
Sigma Coefficients:
            Estimate Std. Error t value    Pr(>|t|)
(Intercept)    3.479      0.524    6.64 0.000000032 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

-------------------------------------------------------------------
Nu link function:  logit
Nu Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   -1.394      0.597   -2.34    0.024 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

-------------------------------------------------------------------
No. of observations in the fit:  47
Degrees of Freedom for the fit:  5
      Residual Deg. of Freedom:  42
                      at cycle:  72

Global Deviance:     123.2
            AIC:     133.2
            SBC:     142.4
*******************************************************************
```

```
> summary(m13<-gamlss(Y~X2,data = malaria2, family = ZIPIG, method =
RS(100)))
Family:  c("ZIPIG", "Zero inflated Poisson inverse Gaussian")

Call:
gamlss(formula = Y ~ X2, family = ZIPIG, data = malaria2, method = RS(1
00))


Fitting method: RS(100)

------------------------------------------------------------------
Mu link function:  log
Mu Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   0.1591     0.6729    0.24     0.81
X2           -0.0341     0.0257   -1.33     0.19

------------------------------------------------------------------
Sigma link function:  log
Sigma Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)    1.262      0.559    2.26    0.029 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

------------------------------------------------------------------
Nu link function:  logit
Nu Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)      -36      14586       0        1

------------------------------------------------------------------
No. of observations in the fit:  47
Degrees of Freedom for the fit:  4
      Residual Deg. of Freedom:  43
                      at cycle:  7

Global Deviance:     100.5
            AIC:     108.5
            SBC:     115.9
******************************************************************
```