FORM F.SK05
BUKTI BIMBINGAN SKRIPSI

Nama Mahasiswa : Astry Asih

NIM : 222409002

Judul Skripsi : Pemodelan Faktor-faktor Yang Mempengaruhi Indeks Khusus Penanganan Stunting (IKPS) di Indonesia Tahun 2022 Menggunakan Analisis Regresi Spasial

Dosen Pembimbing : Artanti Indrasetianingsih, M.Si.

Materi Pembimbingan Proposal	Tanda Tangan Dosen Pembimbing
1. Konsultasi terkait perubahan variabel Stunting yang digunakan apakah sesuai atau tidak	
2. Konsultasi terkait langkah-langkah penggunaan metode spasial apakah sudah sesuai	
3. Konsultasi terkait hasil olah data metode analisis spasial apakah sudah sesuai	
4. Konsultasi penyusunan BAB IV	
5. Menyempurnakan BAB I dan BAB II sesuai hasil koreksi	
6. Konsultasi terkait penggunaan daftar pustaka	
7. Konsultasi terkait keseluruhan hasil analisis dan cara menyajikannya	
8. Konsultasi pelaksanaan seminar hasil skripsi	

FORM F.SK08

PERBAIKAN/REVISI SEMINAR DAN UJIAN SKRIPSI

Nama Mahasiswa : Astry Asih

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Judul Skripsi : Pemodelan Faktor-faktor Yang Mempengaruhi Indeks Khusus Penanganan Stunting (IKPS) di Indonesia Tahun 2022 Menggunakan Analisis Regresi Spasial

Dosen Pembimbing : Artanti Indrasetianingsih, S.Si., M.Si.

Materi Revisi Seminar dan Ujian Skripsi	Tanda Tangan Dosen Penguji
1. Penyusunan tinjauan pustaka terkait Asumsi IIDN agar disesuaikan dengan urutan pengujian asumsi yaitu Identik, Independen, Distribusi Normal	
2. Melengkapi literatur pemodelan Spasial pada BAB II (SAR, SEM dan SARMA)	
3. Memperkuat alasan penggunaan matriks pembobot modifikasi	
4. Memperbaiki narasi agar tidak memunculkan metode lain yang tidak dianalisa dalam pembahasan BAB IV	
5. Menambahkan penjelasan kondisi wilayah (provinsi) yang memiliki IKPS terendah atau tertinggi di Indonesia	
6. Melengkapi Lampiran hasil olah data	

Surabaya, Februari 2024

Pembimbing

Artanti Indrasetianingsih, S.Si., M.Si

NIDN. 0723037602

LAMPIRAN

Lampiran 1. Data Penelitian IKPS Tahun 2022 dan Indikatornya

Provinsi	Y	X1	X2	X3	X4	X5	X6
Aceh	69,70	53,40	82,40	89,70	77,50	81,70	34,20
Sumatera Utara	63,40	52,00	71,50	92,10	82,30	85,50	25,60
Sumatera Barat	68,10	55,40	92,90	85,20	69,30	87,80	31,20
Riau	64,20	58,60	86,90	90,10	84,10	74,80	25,10
Jambi	66,00	78,90	90,90	79,20	79,50	79,80	34,70
Sumatera Selatan	67,90	76,00	88,10	86,30	78,60	87,70	27,90
Bengkulu	68,80	76,60	84,80	73,10	79,60	80,60	29,70
Lampung	70,80	80,90	96,00	81,60	83,70	75,60	34,10
Bangka Belitung	66,50	75,20	78,50	81,00	91,60	74,70	35,70
Kepulauan Riau	67,40	47,30	78,00	91,80	87,70	81,20	31,80
Jakarta Raya	72,90	59,00	84,00	97,90	92,80	94,30	41,40
Jawa Barat	72,30	71,30	96,20	93,00	74,00	88,70	36,00
Jawa Tengah	77,20	70,00	98,40	93,30	84,40	79,40	51,60
Yogyakarta	83,30	60,10	96,40	96,50	96,20	77,50	70,00
Jawa Timur	76,40	76,00	87,10	95,00	81,10	82,90	58,00
Banten	70,10	72,70	89,60	92,70	85,10	95,90	30,70
Bali	73,20	60,70	83,10	98,40	95,90	87,10	32,90
Nusa Tenggara Barat	78,30	71,40	99,60	95,40	83,10	96,30	46,90
Nusa Tenggara Timur	70,40	48,20	98,20	86,80	73,70	77,10	36,10
Kalimantan Barat	62,50	76,70	90,80	80,40	77,40	68,00	22,50
Kalimantan Tengah	61,80	77,70	69,10	77,00	74,30	78,60	37,50
Kalimantan Selatan	72,60	84,10	80,70	76,20	82,60	92,60	48,40
Kalimantan Timur	67,90	64,70	95,70	87,10	90,30	73,00	30,00
Kalimantan Utara	67,20	51,30	98,40	90,00	82,20	61,60	36,30

Sulawesi Utara	70,40	75,10	78,90	94,10	84,00	89,60	34,20
Sulawesi Tengah	69,40	67,00	82,30	86,70	75,00	80,10	41,40
Sulawesi Selatan	73,20	58,30	94,80	92,00	92,20	82,00	34,00
Sulawesi Tenggara	68,10	53,60	77,10	94,60	87,10	71,40	37,00
Gorontalo	72,60	68,40	67,00	96,20	79,80	69,00	56,20
Sulawesi Barat	73,50	57,80	93,30	79,00	78,90	83,60	48,90
Maluku	57,40	42,80	74,50	92,10	76,50	47,20	33,70
Maluku Utara	60,20	57,60	86,00	88,10	79,40	48,80	42,30
Papua Barat	56,10	35,20	77,20	81,60	73,50	51,00	27,80
Papua	47,70	19,70	92,70	65,40	40,30	39,70	14,10

Keterangan

Y : Indeks Khusus Penanganan Stunting
X1 : Penggunaan Alat Keluarga Berencana (KB) Modern
X2 : Pemberian ASI Eksklusif
X3 : Air Minum Layak
X4 : Sanitasi Layak
X5 : Ketidakcukupan Konsumsi Pangan
X6 : Partisipasi Pendidikan Anak Usia Dini (PAUD)

Lampiran 2. Matriks Pembobot Queen Contiguity Modifikasi Antar Provinsi di Indonesia

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0,33	0	0,33	0,33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0,25	0	0,25	0,25	0	0,25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0,25	0,25	0	0,25	0	0	0	0	0,25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0,2	0,2	0	0,2	0,2	0	0	0,2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0,25	0	0,25	0,25	0,25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0,25	0	0,25	0,25	0	0,25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0,5	0,5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0,5	0	0	0	0,5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0,33	0,33	0	0	0	0,33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0,5	0	0	0	0,5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0,33	0	0,33	0	0	0,33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0,33	0	0,33	0,33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0	0	0	0,5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0,5	0,5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0	0	0,5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0	0,5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0	0,5	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,33	0	0,33	0,33	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0	0,5	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,25	0,25	0,25	0	0,25	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,25	0,25	0,25	0,25	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,33	0	0,33	0	0,33	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0,5	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0,5	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,5	0,5	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Lampiran 3. Output Analisis Regresi Berganda

```
> vif(anreg)
     X1       X2       X3       X4       X5       X6
2,183772 1,038730 2,243692 2,257068 1,976961 1,408886
lm(formula = Y ~ X1 + X2 + X3 + X4 + X5 + X6, data = data)
Residuals:
   Min      1Q  Median      3Q     Max
-3,3433 -0,8045 -0,1026  0,6753  3,5089
Coefficients:
            Estimate Std, Error t value Pr(>|t|)
(Intercept) 6,074911   4,742240   1,281    0,211
X1          0,003416   0,030471   0,112    0,912
X2          0,189495   0,033055   5,733 4,29e-06 ***
X3          0,085409   0,056156   1,521    0,140
X4          0,123288   0,045156   2,730    0,011 *
X5          0,220451   0,029820   7,393 5,95e-08 ***
X6          0,305048   0,031729   9,614 3,28e-10 ***
---
Signif, codes:
0 ‘***’ 0,001 ‘**’ 0,01 ‘*’ 0,05 ‘,’ 0,1 ‘ ’ 1
Residual standard error: 1,69 on 27 degrees of freedom
Multiple R-squared:  0,9495,        Adjusted R-squared:  0,9382
F-statistic: 84,55 on 6 and 27 DF,  p-value: 3,215e-16
```

Lampiran 4. Output Analisis Regresi Berganda Tahap 2 (Variabel signifikan)

```
lm(formula = Y ~ X2 + X4 + X5 + X6, data = Data_IKPS_Tahun_2022)
Residuals:
   Min      1Q  Median      3Q     Max
-3,2135 -0,6855  0,0376  0,9607  3,7171
```

C**Lampiran 4.** Output Analisis Regresi Berganda Tahap 2 (Variabel signifikan)

```
(Intercept) 10,29376    3,84758   2,675 0,012143 *
X2          0,18668    0,03338   5,593 4,89e-06 ***
X4          0,15954    0,03721   4,287 0,000182 ***
X5          0,22462    0,02484   9,042 6,16e-10 ***
X6          0,31764    0,02983  10,648 1,56e-11 ***
Residual standard error: 1,712 on 29 degrees of freedom
Multiple R-squared:  0,9442,        Adjusted R-squared:  0,9366
F-statistic: 122,8 on 4 and 29 DF,  p-value: < 2,2e-16
```

Lampiran 5. Uji Asumsi Klasik Analisis Regresi Berganda Tahap 2 (Variabel signifikan)

```
> bptest(anreg2)
        studentized Breusch-Pagan test
data:  anreg2
BP = 8,3206, df = 4, p-value = 0,08052
> dwtest(anreg2)
        Durbin-Watson test
data:  anreg2
DW = 2,1608, p-value = 0,6411
alternative hypothesis: true autocorrelation is greater than 0
> sisa2 <- residuals (anreg2)
> nortest::lillie,test(sisa2)
Lilliefors (Kolmogorov-Smirnov) normality test
data:  sisa2
D = 0,094279, p-value = 0,621
```

Lampiran 6. Uji Moran's I

```
>lm,morantest(reg,matbot,alternative="two,sided")
        Global Moran I for regression residuals
data:
model: lm(formula = Y ~ X1 + X2 + X3 + X4 + X5 +X6, data = data)
weights: matbot
Moran I statistic standard deviate = 1,6994,
p-value = 0,08925
alternative hypothesis: two,sided
sample estimates:
Observed Moran I      Expectation       Variance
    0,17205410      -0,10455267       0,02649344
> #global moran
> moran,test(data$Y,matbot,randomisation = FALSE)
        Moran I test under normality
data:  data$Y
weights: matbot
Moran I statistic standard deviate = 4,7219,
p-value = 1,168e-06
alternative hypothesis: greater
sample estimates:
Moran I statistic      Expectation      Variance
      0,76069971       -0,03030303    0,02806227
```

Lampiran 6. Uji Moran's I (Lanjutan)

```
> moran,plot(data$Y, matbot, labels = indonesia$NAME_1)
> moran,test(data$X1,matbot,randomisation=FALSE)
                Moran I test under normality
data:  data$X1
Moran I statistic standard deviate = 3,4371,
p-value = 0,000294
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation     Variance
      0,54547678       -0,03030303    0,02806227
> moran,test(data$X2, matbot, randomisation = FALSE)
                Moran I test under normality
data:  data$X2
weights: matbot
Moran I statistic standard deviate = 1,6787,
p-value = 0,0466
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation      Variance
      0,25091129       -0,03030303    0,02806227
> moran,test(data$X3, matbot, randomisation = FALSE)
                Moran I test under normality
data:  data$X3
weights: matbot
Moran I statistic standard deviate = 3,2753,
p-value = 0,0005277
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation      Variance
      0,51837324       -0,03030303    0,02806227
> moran,test(data$X4, matbot, randomisation = FALSE)
                Moran I test under normality
data:  data$X4
weights: matbot
Moran I statistic standard deviate = 1,3649,
p-value = 0,08615
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation      Variance
      0,19833479       -0,03030303    0,02806227
```

Lampiran 6. Uji Moran's I (Lanjutan)

```
> moran,test(data$X5,matbot,randomisation=FALSE)
                Moran I test under normality
data:  data$X5
weights: matbot
Moran I statistic standard deviate = 4,5174,
p-value = 3,13e-06
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation      Variance
      0,72644967       -0,03030303       0,02806227
> moran,test(data$X6, matbot, randomisation = FALSE)
                Moran I test under normality
data:  data$X6
weights: matbot
Moran I statistic standard deviate = 2,4048,
p-value = 0,008092
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation      Variance
      0,37253629       -0,03030303       0,02806227
```

Lampiran 7. Uji Uji Lagrange Multiplier (Queen Modifikasi)

```
> LM = lm,LMtests(reg, matbot, test = c("LMerr", "LMlag,"SARMA"))
> summary(LM)
Lagrange multiplier diagnostics for spatial dependence
data:
model: lm(formula = Y ~ X1 + X2 + X3 + X4 + X5 +
X6, data = data)
weights: matbot
      statistic parameter p-value
LMerr     0,986403         1 0,32062
LMlag     4,388607         1 0,03618 *
SARMA  4,438825         2 0,10867
---
Signif, codes:
0 '***' 0,001 '**' 0,01 '*' 0,05 ',' 0,1 ' ' 1
```

Lampiran 8. Uji Lagrange Multiplier (Invers Jarak)

```
> W_std_listw <- mat2listw(W_std, style = "W")
> LM <- lm,LMtests(reg, W_std_listw, test = c("LMerr", "LMlag", "RLM
err", "RLMlag", "SARMA"))
> summary(LM)
Lagrange multiplier diagnostics for spatial
              dependence
data:
model: lm(formula = Y ~ X1 + X2 + X3 + X4 + X5 +
X6, data = data)
weights: W_std_listw
      statistic parameter p,value
LMerr    0,76585         1  0,3815
LMlag    0,77640         1  0,3782
SARMA 2,28152         2  0,3196
```

Lampiran 9. Analisis Regresi Spasial

```
lagsarlm(formula = Y ~ X1 + X2 + X3 + X4 + X5 + X6, data = data,
   listw = matbot, zero,policy = TRUE)
Residuals:
     Min       1Q   Median       3Q      Max
-2,565404 -0,654009  0,032985  0,567265  3,019320
             Estimate    Std.Error   z value     Pr(>|z|)
(Intercept)  4,2838679  3,9408281  1,0870    0,2770158
X1          -0,0056298  0,0252192 -0,2232    0,8233539
X2           0,1641220  0,0291685  5,6267    1,837e-08
X3           0,0495263  0,0487590  1,0157    0,3097547
X4           0,1281515  0,0370041  3,4632    0,0005339
X5           0,1918808  0,0267696  7,1679    7,618e-13
X6           0,2845750  0,0271340 10,4878   < 2,2e-16
Rho: 0,15061, LR test value: 5,351, p-value: 0,02071
Asymptotic standard error: 0,063043
   z-value: 2,389, p-value: 0,016893
Wald statistic: 5,7075, p-value: 0,016893
Log likelihood: -59,4812 for lag model
ML residual variance (sigma squared): 1,9159, (sigma: 1,3841)
Number of observations: 34
Number of parameters estimated: 9
AIC: 136,96, (AIC for lm: 140,31)
LM test for residual autocorrelation
test value: 0,30137, p-value: 0,58302
```

Lampiran 10. Analisis Regresi Spasial (Variabel Signifikan)

```
> SARsig=lagsarlm(Y~X2+X4+X5+X6, data=data, matbot, zero,policy =
+ TRUE)
> summary(SARsig)
Call:
lagsarlm(formula = Y ~ X2 + X4 + X5 + X6, data = data, listw = matbot,
zero,policy = TRUE)
Residuals:
     Min       1Q   Median       3Q      Max
-3,098574 -0,702023  0,021325  0,682555  3,187027
Type: lag
Coefficients: (asymptotic standard errors)
             Estimate    Std.Error   z value    Pr(>|z|)
(Intercept) 6,231414   3,490474    1,7853    0,07422
X2          0,159854   0,029375    5,4419    5,273e-08
X4          0,146406   0,031483    4,6503    3,315e-06
X5          0,185878   0,024326    7,6410    2,154e-14
X6          0,286937   0,026709   10,7430   < 2,2e-16
Rho: 0,16977, LR test value: 6,9869, p-value: 0,0082108
Asymptotic standard error: 0,061621
   z-value: 2,7551, p-value: 0,0058667
Wald statistic: 7,5908, p-value: 0,0058667
Log likelihood: -60,33413 for lag model
ML residual variance (sigma squared): 2,0084, (sigma: 1,4172)
Number of observations: 34
Number of parameters estimated: 7
AIC: 134,67, (AIC for lm: 139,66)
LM test for residual autocorrelation
test value: 0,0543, p-value: 0,81574
```

Lampiran 11. Uji Asumsi Analisis Regresi Spasial (Variabel Signifikan)

```
> nortest::lillie,test(sisaSAR)
            Lilliefors (Kolmogorov-Smirnov) normality test
data:  sisaSAR
D = 0,095562, p-value = 0,5996
> bptest,Sarlm(SARsig)
            studentized Breusch-Pagan test
data:
BP = 7,0465, df = 4, p-value = 0,1335
```