SPATIO-TEMPORAL MODELLING ON POVERTY CASES IN PROVINCE OF SOUTH KALIMANTAN

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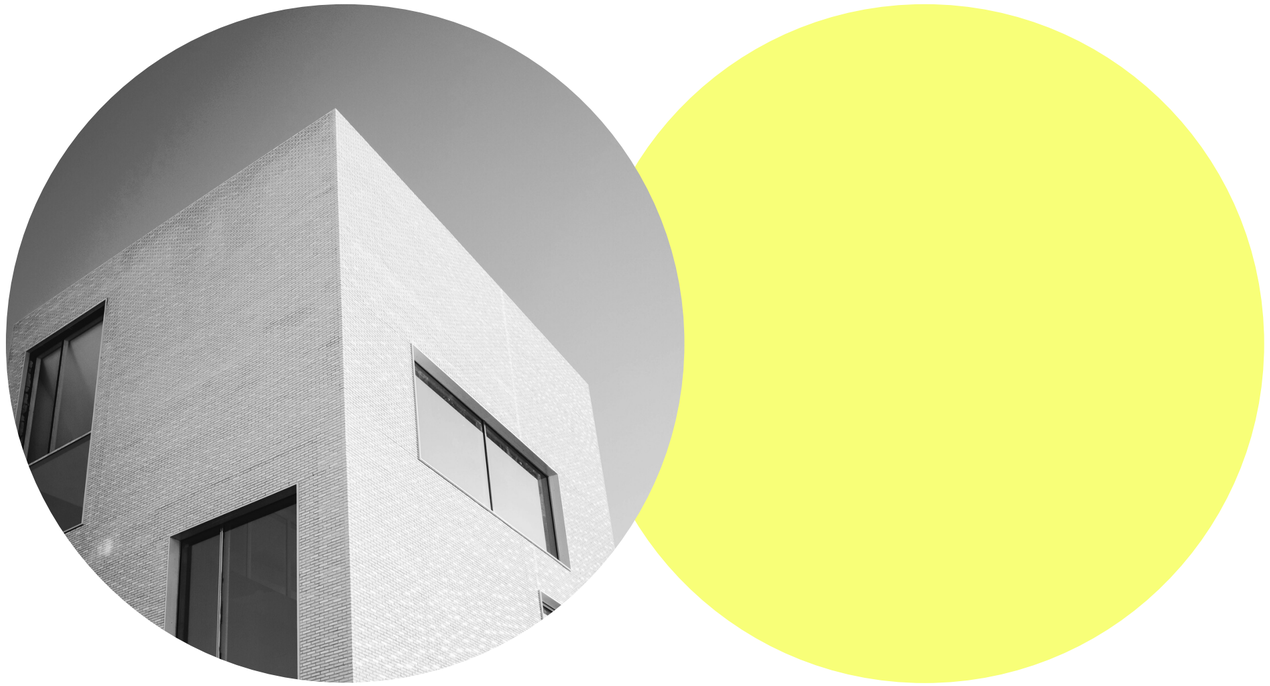
Preliminary



Poverty is a complex and multidimensional problem so that it becomes a development priority (Vijaya, 2014). The aspect of poverty is not only influenced by explanatory variables, but is also influenced by spatial effects (Zhou and Liu, 2019).

The Indonesian government realizes that national development is one of the efforts to create a just and prosperous society. For this reason, various development activities have been directed at regional development, one of which is the province of South Kalimantan.

Data

Data used are secondary data obtained from the BPS South Kalimantan website with the object of research in 13 districts/cities in 2013-2021.

Variables

1. Percentage of poor people (Y)
2. Human Development Index (X1)
3. Unemployement number (X2)

Research Stages

Q1

Descriptive Analysis

Q2

Spatial Autocorrelation Test

Q3

Model Selection

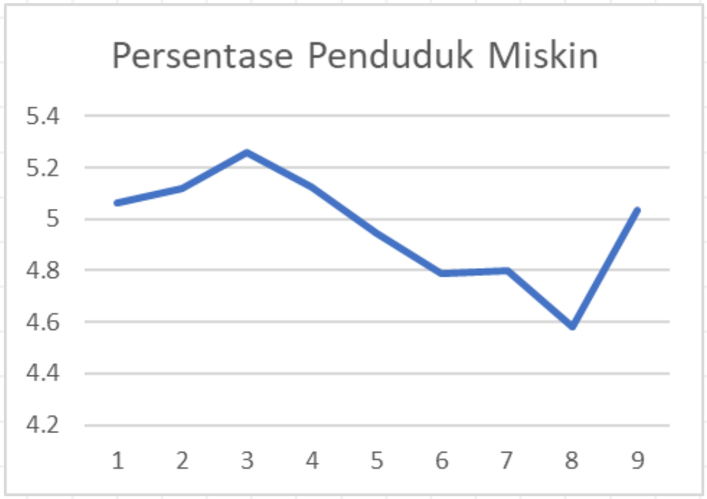
Q4

Model Evaluation

05

Forecasting

Result



From the graphics above we can conlude that :

1. Percentage of poor people has decreased in 2015 - 2020 but in 2021 it's increased significantly. It could have happened because of the current pandemic.
2. Human Development Index and Number of Unemployement increased during the time

Autocorrelation Test

Pengujian	Statistic	p-value
Moran ST	0.553275	0.000999001

Based on the results of table, the statistical value of the moran spatio temporal is 0.553275 with a p-value of 0.00099 which is smaller than alpha, 0.05. So it can be concluded that there is a spatial autocorrelation in the case of poverty in the province of South Kalimantan.

Model Selection

No	Model	DIC	R Square
1	Besag	45.07	0.9293467
2	BYM	51.42	0.923422
3	AR1	339.02	0.1518917
4	BesagAR1	23.02	0.9396214

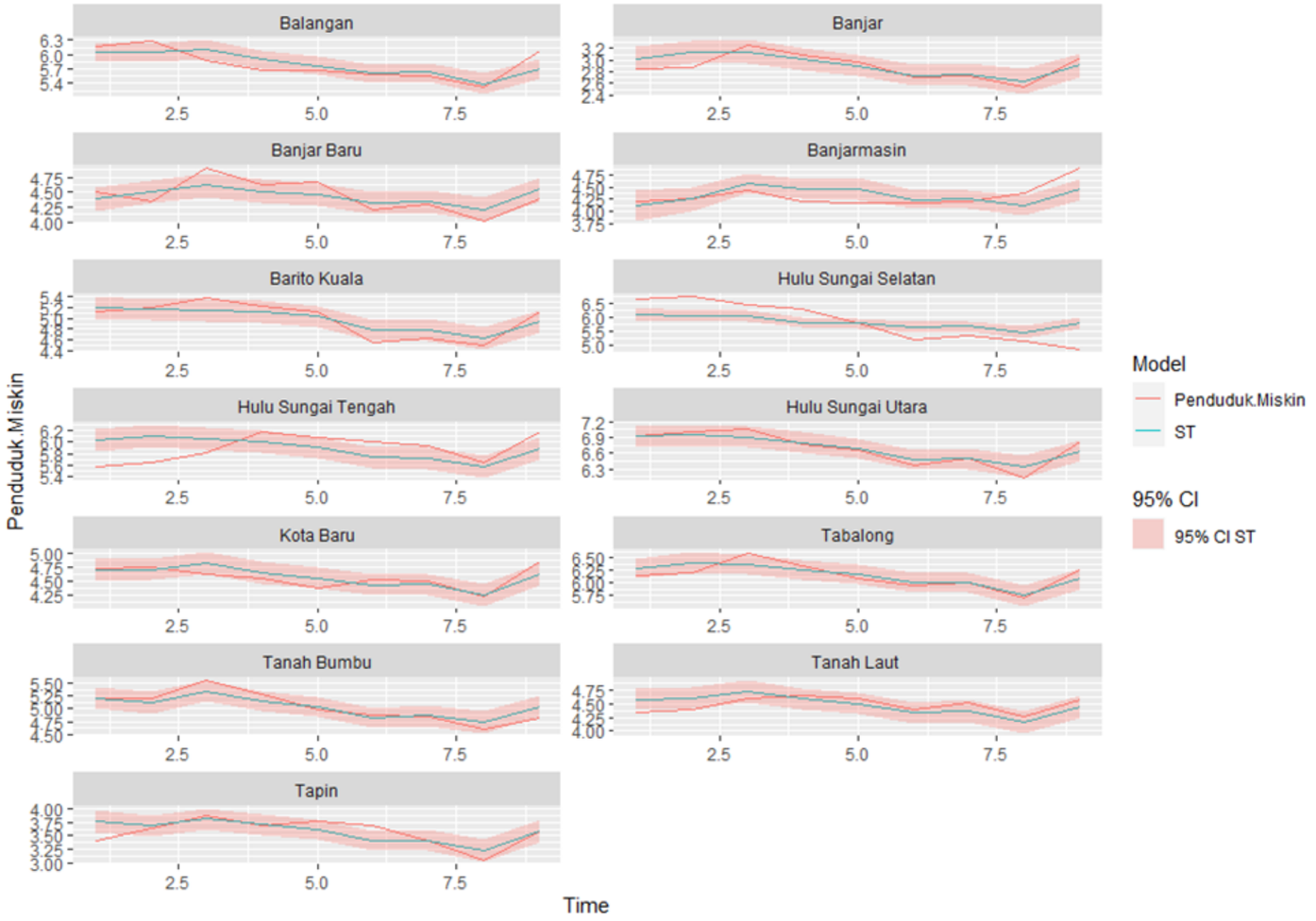
Based on table, it can be seen that the model that has the smallest DIC and the largest R square is the Spatio Temporal model with a DIC value of 23.02 and an R-square of 0.9396214.

Model Evaluation

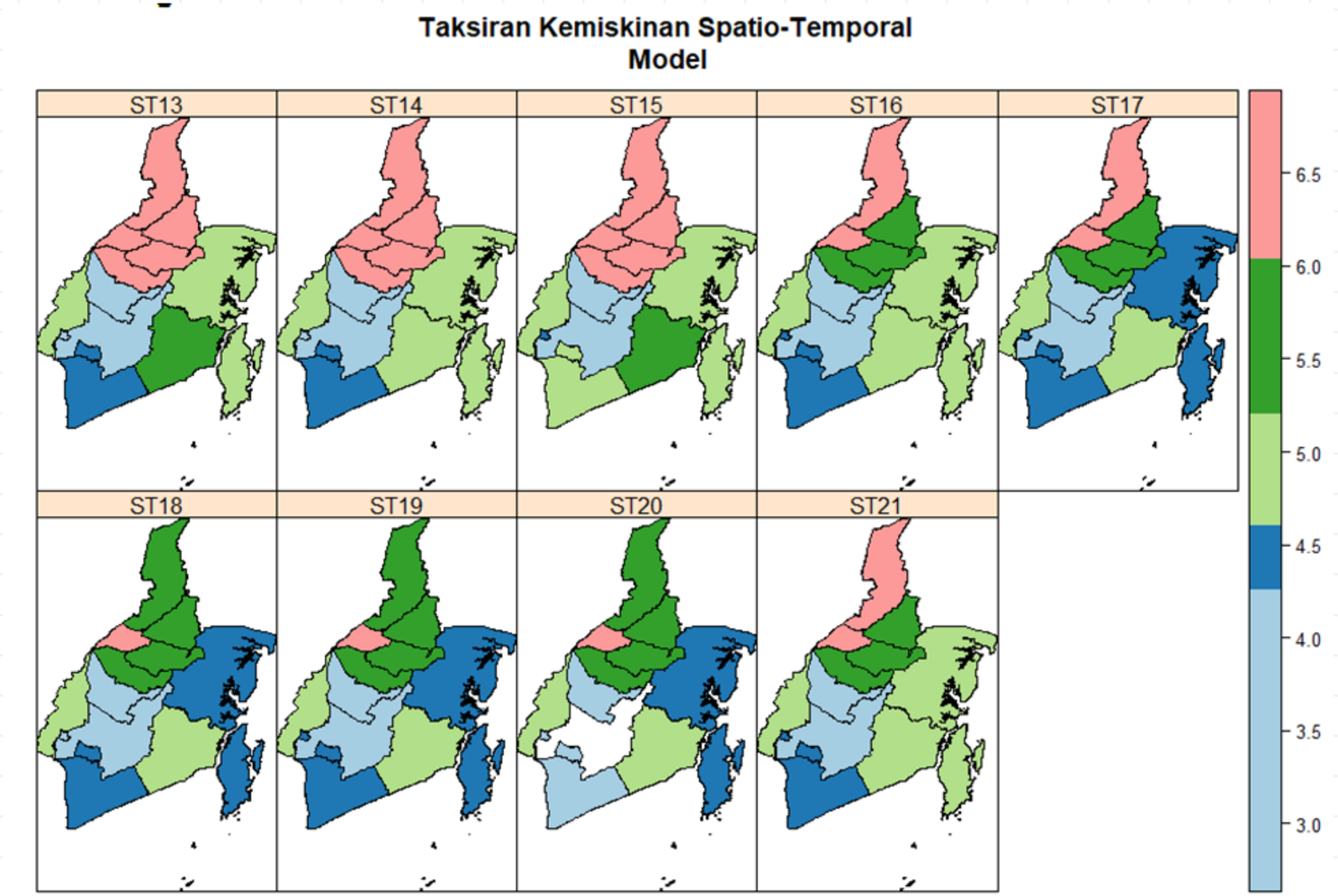
```
Fixed effects:
               mean    sd 0.025quant 0.5quant 0.975quant   mode kld
(Intercept)   9.060 1.731      5.655    9.060     12.462  9.060   0
IPM          -0.055 0.026     -0.106   -0.055     -0.004 -0.055   0
Pengangguran -0.042 0.018     -0.077   -0.042     -0.006 -0.042   0


Model hyperparameters:
                                          mean    sd 0.025quant 0.5quant 0.975quant
mode
Precision for the Gaussian observations 1.00 0.129      0.764    0.994       1.27
0.983
```

From the results of the output R above, it can be seen that in the response variables of HDI and Unemployment, the interval does not include a value of 0 which means that both variables are significant in explaining poverty in the province of South Kalimantan.

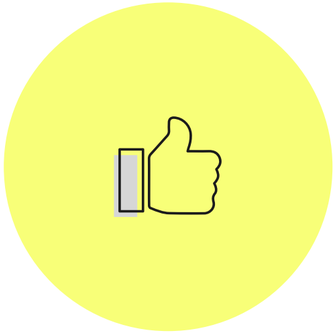
Forecasting



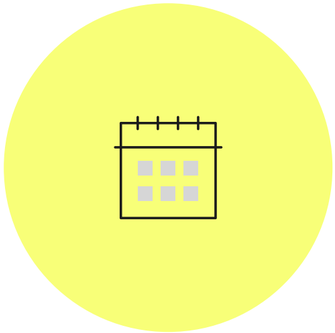
Forecasting



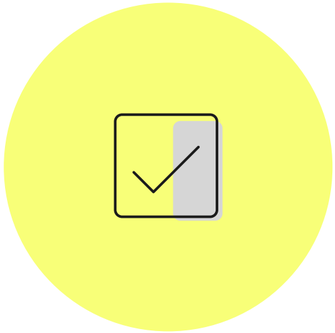
Conclusions



The Human Development Index and the number of unemployed have a significant effect on the level of poverty in the province of South Kalimantan



There is a link between regions in the poverty case



Judging from the smallest DIC value and the largest R-square, it leads to the conclusion that the spatiotemporal model is the best model to explain cases of poverty in the province South Kalimantan

Thank you!