Analysis of The implications of Land Use Changing of Paddy Fields into Residential Area on Sales Value of Taxable Object (NJOP) (Case Study: Gedebage District, Bandung City, Indonesia)

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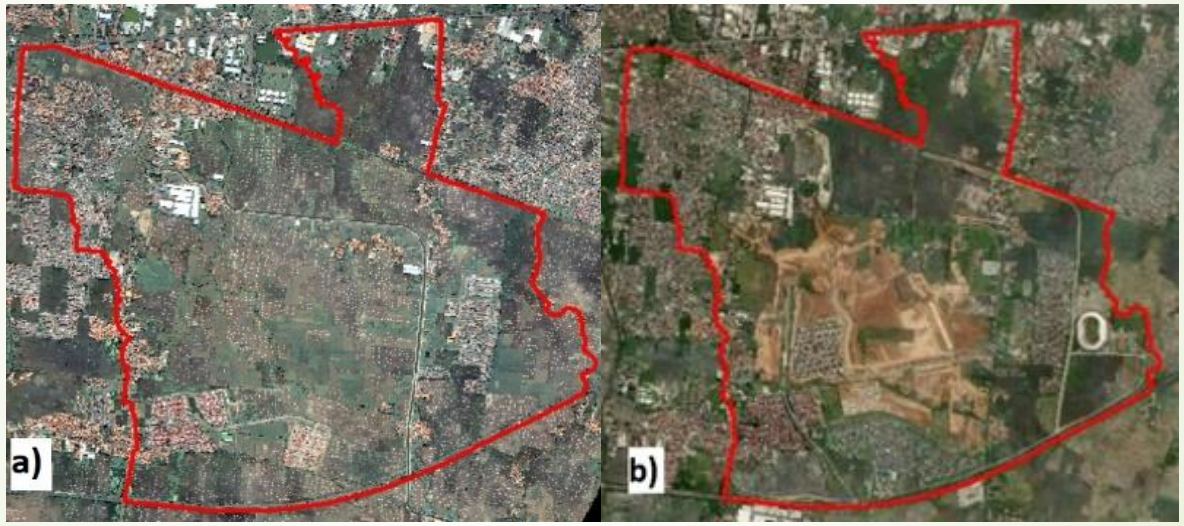
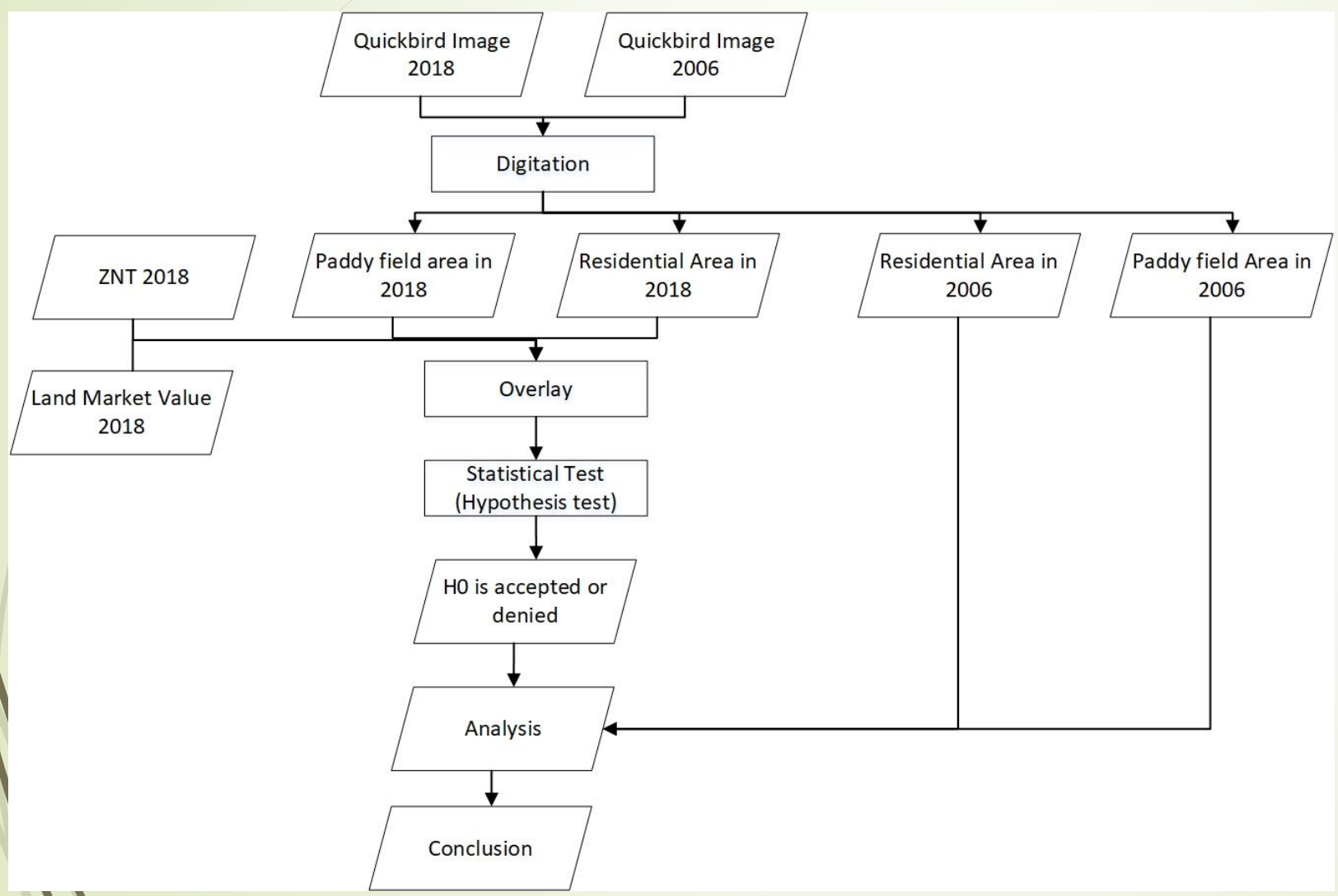
Background

Gedebage District, Bandung City, Indonesia, is an area that is currently developing into a residential area. Before this area developed into a residential area, land use in this area was in the form of paddy fields. This study aims to analyze the advantages or sufficient surplus value for the Regional Government of the City of Bandung by analyzing the change in use of rice fields to residential area



The paddy field area is ±774 Ha in 2006, meanwhile paddy field area is ±261 Ha in 2018. The paddy field area has been shrinking around ±513 Ha since 2006. This change must be in line with the change of The Sales Value of Taxable Object (NJOP), if the change of NJOP is not following, then local government would have potencial loss of income from Land and Building Tax (PBB) even though the GRDP is high

Methodology



- Statistical Test

Were Using:

a. Variance analysis
b. Assesment ratio

Variance Analysis (1)

$$SX_1 = \sqrt{\frac{\sum(X_1 - \bar{X}_1)^2}{n_1}}$$

$$SX_2 = \sqrt{\frac{\sum(X_2 - \bar{X}_2)^2}{n_2}}$$

$$Z_{value} = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{sx_1^2}{n_1} + \frac{sx_2^2}{n_2}}}$$

Where:

SX_1 = standard deviation of population of NJOP value in residential are

SX_2 = standard deviation of population of NJOP value in paddy field area

X_1 = NJOP value in residential area

$\overline{X_1}$ = average of NJOP value in residential area

$\overline{X_2}$ = average of NJOP value in paddy field area

X_2 = NJOP value in paddy field area

n = number of population

Z_{value} = z value

Variance Analysis (2)

The fisrt statistical test was to test the hypothesis whether land use change inflict the NJOP value. Therefore, the first hypothesis (H0) and second hypothesis (Ha) is described as follows:

H0: average of NJOP value in residential area = average of NJOP in paddy field area

Ha: average of NJOP value in residential area ≠ average of NJOP in paddy field area

The variance analysis is using normal distribution with confodence level 95%. Z value from Z table is defined ± 1,96. The result of Zvalue would determine the acceptance or rejection of hypothesis. H0 would be accepted, if Zvalue between -1,96 and +1,96 (-1,96 ≤ Zvalue ≤ +1,96. H0 would be rejected, if H0 > +1,96 or H0 < -1,96

Assesment Ratio (1)

$$SD = \sqrt{\frac{\Sigma(A/R - \overline{A/R})^2}{n}}$$

$$t_{value} = \frac{\overline{A/R} - U}{SD : \sqrt{n}}$$

$$A/R = X_1 - X_1$$

Where:

SD = standard deviation of A/R

A/R = deviation of NJOP value and market value

n = number of population

$\underline{U}$ = expected A/R (=1)

$\overline{A/R}$ = average value of A/R

t_{value} = t value

X_1 = NJOP value

X_2 =market value

Assessment Ratio (2)

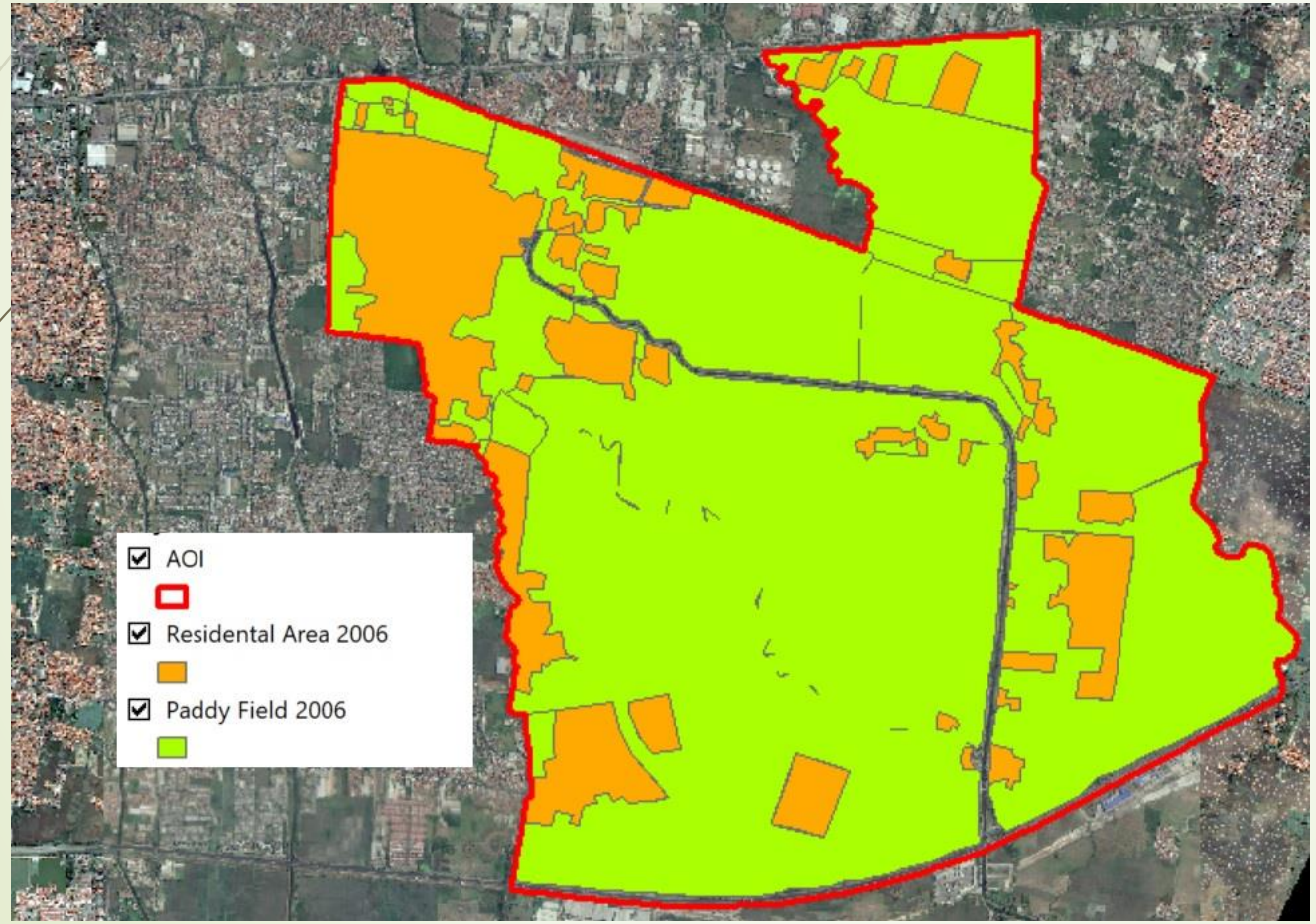
This statistical test is to test the hypothesis wheter the NJOP value based on market value. Therefore, the first hypothesis (H0) and second hypothesis (Ha) is described as follows:

H0 : average A/R = expected A/R

Ha : average A/R ≠ expected A/R

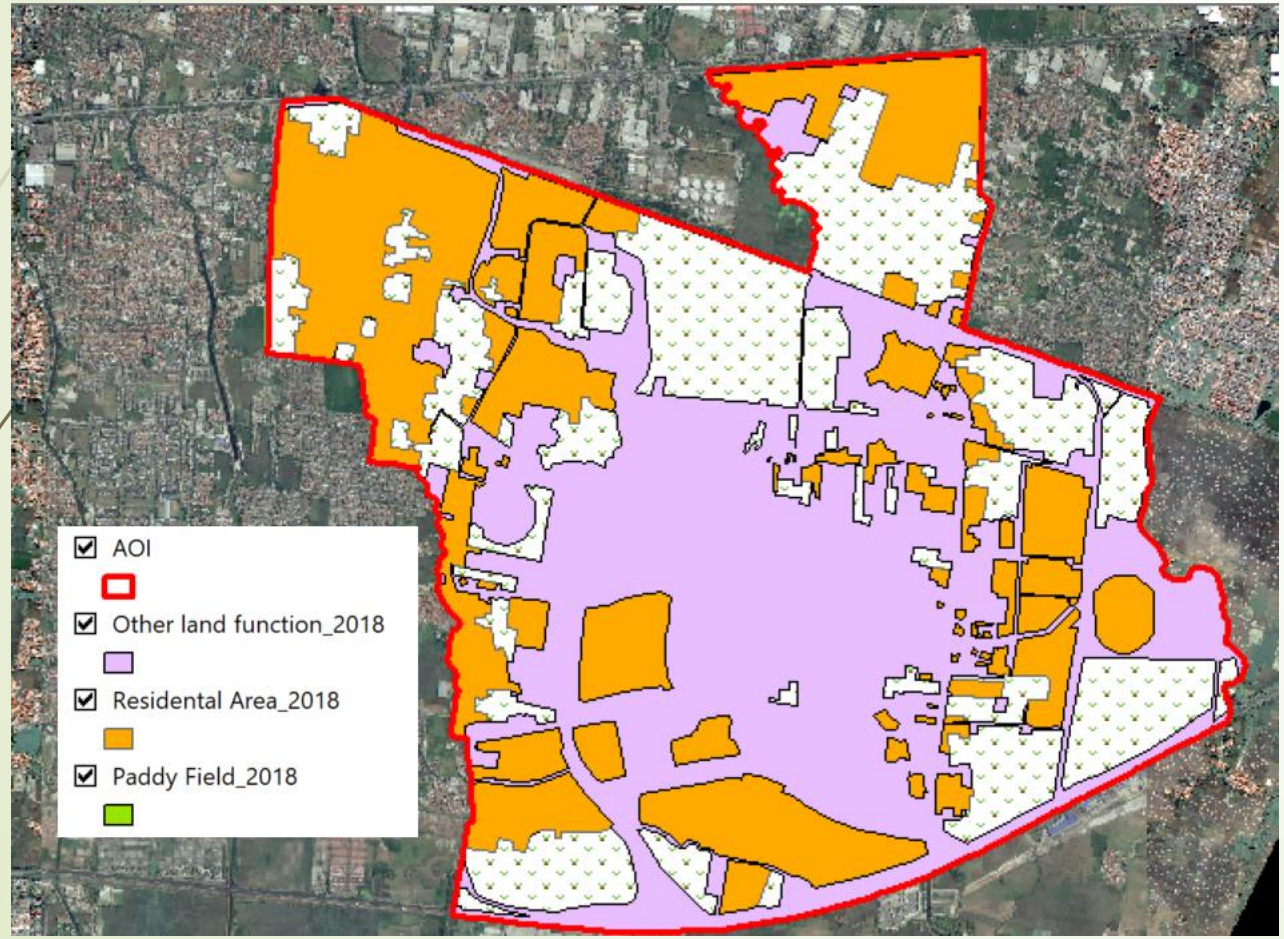
The assessment ratio is using student (t) distribution with confodence level 95%. t value from t table is defined ±2,000 for 96 number of population and ±1,96 for 141 number of population. The result of Zvalue would determine the acceptance or rejection of hypothesis. H0 would be accepted, if H0 between t values. H0 would be rejected, if H0 < t values or H0 > t values

Residential Area and Paddy Field in 2006



Total:
Residental area: 178,175 ha
Paddy field area: 774,720 ha

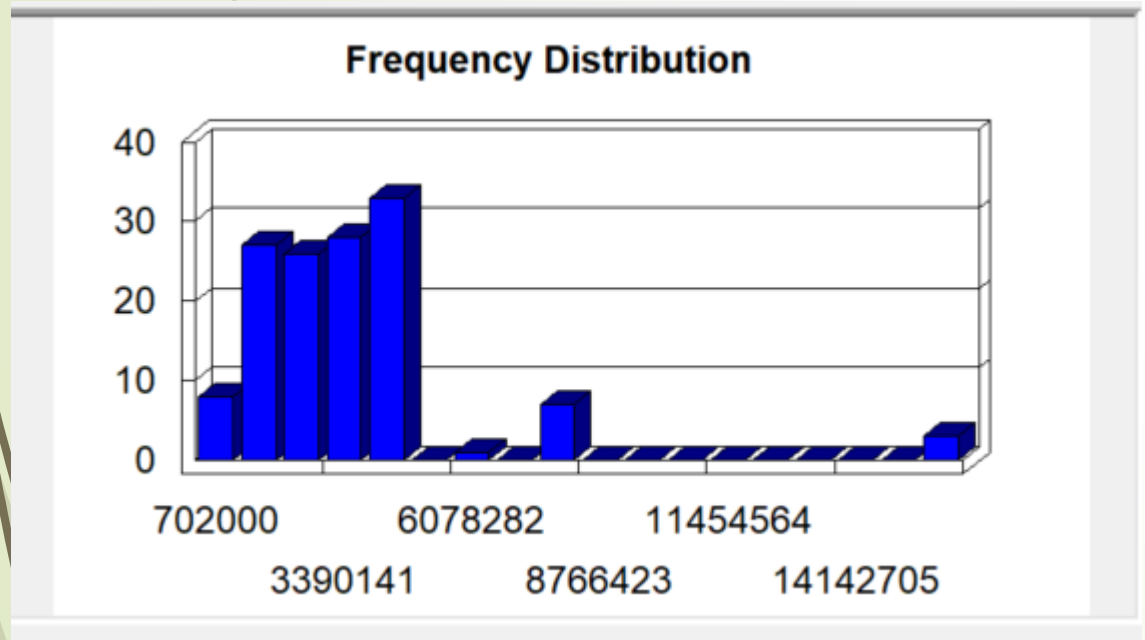
Residential Area and Paddy Field in 2018



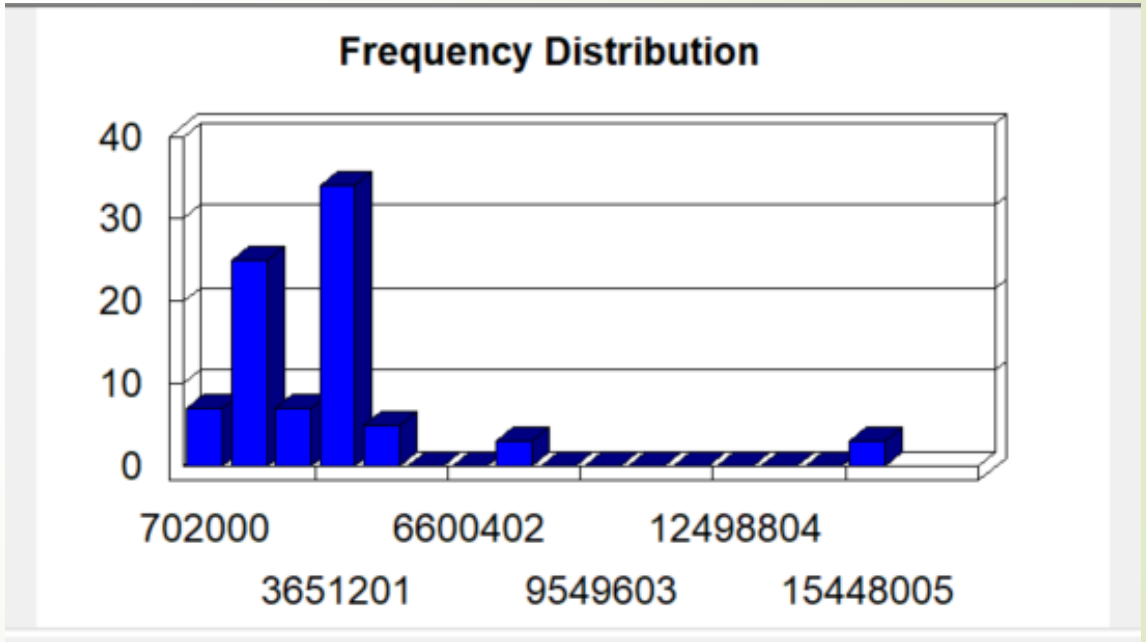
Total:
Residental area: 310,164 ha
Paddy field area: 261,287 ha

Distribution of NJOP Value (IDR)

https://www.atrbpn.go.id/Peta-Bidang-Tanah#



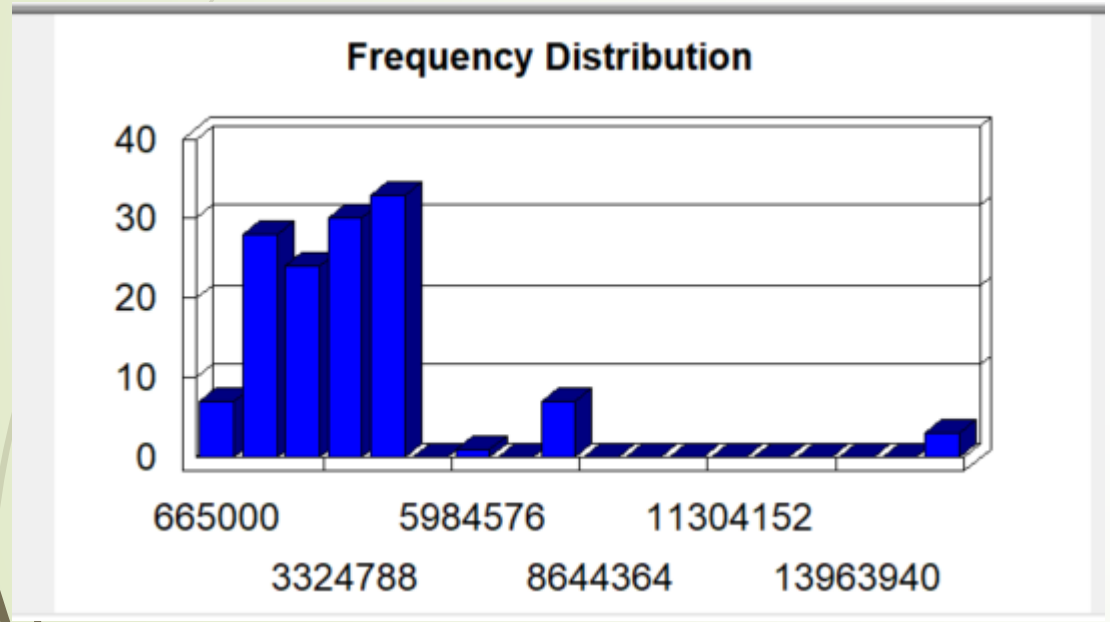
Distribution of NJOP value in residential area



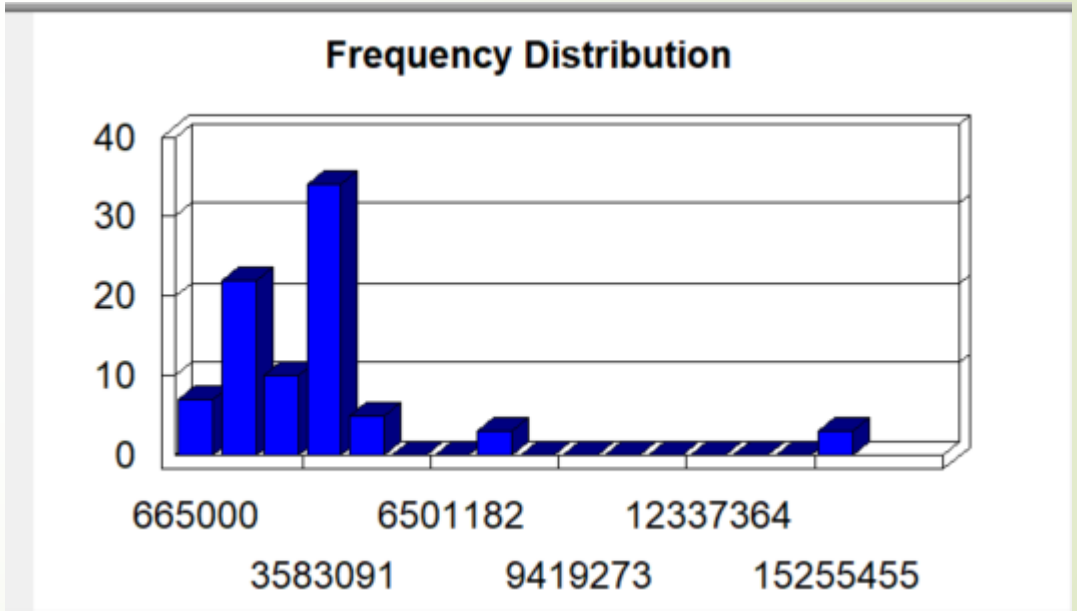
Distribution of NJOP value in paddy field

Distribution of Market Value (IDR)

Source: https://www.atrbpn.go.id/Peta-Bidang-Tanah#



Distribution of Market value in residential area



Distribution of Market value in paddy field

Result

- The average of NJOP value in residential area is Rp 3.808.524 and average of NJOP value in paddy field area is Rp 3.845.979. The standard deviation of NJOP value in residential area (SX1) is Rp 2.437.132 and standard deviation of NJOP value in paddy field area (SX2) is Rp 2.677.441. The Z value of this test is 0. So that, the H0 is accepted because the Z value is between ±1,96. This result indicates that NJOP value in residential area relatively same with NJOP value in paddy field area. This means that determination of NJOP value not consider the land use of taxation objects
- The average of A/R value in residential area is 1,255 and standard deviation of A/R in residential area is 1,120. The t value of this assessment is 2,704 where t value is greater than the t value with 95% confidence level. The result indicates that the determination of NJOP value in residential area is higher than market value. Meanwhile, the average of A/R value in paddy field area is 1,463 and standard deviation of A/R in paddy field area is 1,913. The t value of this assessment is 2,372 where t value is greater than t value with 95% confidence level. The result indicates that the determination of NJOP value in paddy field area is higher than market value

Conclusion

- The result of this research is the Z value of variance analysis is 0, which mean that local government haven't yet adjust the NJOP value based on the land use, especially in paddy field area and residential area. Meanwhile, the result of t value in assessment ratio processed is 2,74 and 2,372, which are greater than the t value in 95% of confidence level, which mean that the determination of NJOP value is greater than market value
- Based on this results, even though local government doesn't indicate having potential lost because NJOP value was greater than market value, the potential lost must be calculated based on the reception of taxation from community with the comparison when NJOP value is lower than market value or NJOP value was greater than market value. The NJOP value is gretaer than market value could make an impact which community has objection to pay the taxation