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Gender Segregation in Regional Labour Market: Evidence from South Sumatra Province, Indonesia

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Abstract: This study aims to examine gender segregation and type of work to measure the overall of segregation and the segregation of several population subgroups, namely education, age, wages, working hours, and area of residence. The approach that used is the measurement of segregation Multi-group that refers to. Research finds that working women have relatively high contribution against the segregation of gender as a whole, in the case of the level of education shows female and male segregated by level of education. While it is for the subgroup (type of work) workers young and advanced age, workers with a group of wages high and workers part-time has contributed that high against segregation type of work as a whole

Keywords: Gender Segregation; Occupational Segregation; Local Segregation; Overall Segregation

Introduction

The policy of separation within a group in the social sphere, or commonly known as segregation. The perpetrators of negative segregation are the majority group which discriminates and makes minorities as victims by providing obstacles or detentions when they want to unite with the majority group, while positive segregation aims to give special attention to superior and special groups so that they can develop further, so why this group is separated by ordinary group. Segregation can occur legally if it is supported by official regulations and laws for development purposes, and illegally in the form of coercion due to stereotypes or stigma due to norms and rules that apply in society towards minority groups. One of the problems of negative segregation that has always been in the spotlight and still being sought for the best and most effective solution, is the gender segregation of women compared to men or it can also be called the phenomenon of gender inequality, which is one of the inhibiting factors for the development of a country. In the eighth point of the Sustainable Development Goals (SDGs), namely "Decent Work and Economic Growth",

which means increasing inclusive and sustainable economic growth, productive and comprehensive job opportunities, and decent work for all. It even mentions several employment indicators based on gender. This shows that gender equality, especially in the field of employment, has an important role in the national economy of each developing country, including Indonesia.

Women tend to face major barriers to employment and equal treatment in the world of work (ILO, Promoting Women's Access to Decent Work and Equality of Work in Indonesia, 2013). When discussing gender inequality in access to the labor market, of course, it cannot be separated from the constraints of norms, beliefs, regulations, and laws that apply in society. In almost every developing country the victims are women because of the general public's perception of the separation of roles, duties, and jobs that are considered suitable and reasonable for women to do. Women are identical with the domestic sector or those related to activities in the household, so that access to resources, such as education, training, social contacts, government services, and capital is limited. Not surprisingly, until recently in several countries, economic development is associated with the movement to improve the quality of life for women and girls, as well as gender equality.

Separation or segregation of work based on gender forces women to accept jobs that are less productive and are rarely involved in decision-making. This hampers the opportunities for young women to enter the labor market. Women workers are more concentrated in the informal sector, by working at home or working in micro and small enterprises. In developing countries, women workers tend to be restricted, especially in the formal sector.
Job segregation by gender is interesting to explore because it can explain the extent to which women and men benefit from the various job opportunities available. This segregation is still clearly visible in the labor market, where women find jobs with lower wages and career development prospects are more limited. The shift in women's work from agriculture to industry is the first step for women's equality in access to work. In the industrial sector, generally men are involved in work starting from the upstream to downstream sectors, while women are usually only involved in downstream or finishing industries.

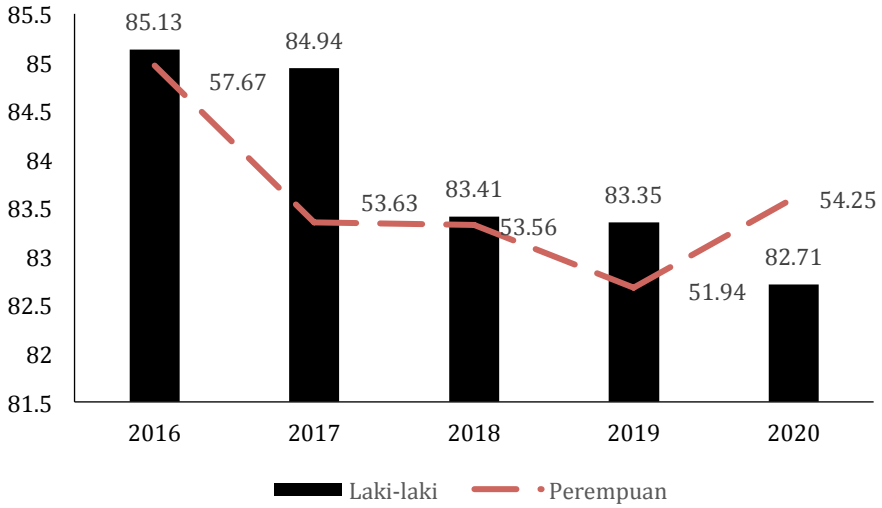
Segregation in the labor market gets a lot of attention in various spheres of the economy, the problem of segregation globally varies widely but most large studies focus on the case of two population subgroups such as black/white (as skin color) (Lippens et al., 2020; He et al. ., 2019; Gradin, 2018), social substratification (Gedikli, 2020), male/female (Fritsch et al., 2020; Gedikli, 2020; Kronberg, 2020; Bertogg et al., 2020; Freeland & Harnois, 2020; Agrawal, 2020; Baker & Cornelson, 2018), high/low wages (Agrawal, 2020; Khitarishvili et al., 2018; Strawinski et al. , 2018), part-time/full-time (Albanese & Gallo, 2020; Brülle et al., 2019) urban/rural (Yunisvita & Muhyiddin, 2020; Rastogi & Curtis, 2017).

However, this study looks at the segregation of male/female gender groups against the population sub-groups of education, age, wages, hours of work, and place of residence. The evolution of the development of segregation measures changed the segregation pattern to a multi-group approach (Agrawal, 2016; Alonso-villar, 2015;, 2017). This issue is interesting considering that the substance of segregation as a whole currently involves multi-group comparisons, especially labor market trends in local, regional and country contexts.

This particular relevance will measure overall segregation and involve comparisons of all groups and subgroups of the population being analyzed. Comparison of segregation issues locally and as a whole, both single sub-group and multi-group approaches can be applied specifically, especially in regional contexts. The substance of the analysis of this study emphasizes the segregation dichotomy in line with the distribution of groups throughout the population which is defined as segregation as a whole or in aggregate with various approaches, especially studies that refer to the segregation approach of gender (male/female) and type of work (Alonso-villar, 2015) which divides segregation as a whole into two sub-analyses, namely the vertical and horizontal dimensions as an issue of labor market segregation problems in the last decade.

Gender inequality in access to the labor market is reflected in the lagging participation of women compared to men, seen from the Labor Force Participation Rate (TPAK), Employment Opportunity Level (TKK), Employment to Population Ratio (EPR), Open Unemployment Rate (TPT), the rates of full-time, part-time, and underemployed workers. This condition shows that women's business opportunities to work and do business are much lower than men's. The following provides an overview of access to the labor market in Indonesia. Especially case studies on the labor market in the province of South Sumatra, where trends indicate a climate of gender disparity based on the Labor Force Participation Rate (LFPR) parameter.

Figure 1. **Labor Force Participation Rate (LFPR) Parameter Based on Gender in South Sumatra Province**



Source : (Indonesian Board of Statistik, 2020)

Figure 1 show that Labor market conditions in South Sumatra Province periodically in the period 2016-2020 experience fluctuating movements with a relatively high gap between male and female LFPR. The dominance of the male workforce can be seen from the overall trend of labor force participation across the time span. Women not working can be caused by social and cultural factors, such as taking care of the household, difficulty entering the formal sector, job discrimination for women, and the growing culture in society regarding the role and position of women. This fact can be an early indication of the problem of gender segregation so that it becomes a relevant analysis related to the measurement of overall segregation and local segregation. Measurement of local

segregation is very interesting considering that segregation analysis adapts according to varied labor market patterns (Blau et al., 2013) in various scopes such as demographics (Baker & Cornelson, 2018; Gedikli, 2020; Heymann, 2016; Mandel, 2018), Occupation (Agrawal, 2016; Qian & Fan, 2019; Lane, 2017; Borrowman & Klasen, 2020; Busch, 2020), wage differentials (Agrawal, 2020; Artz & Taengnoi, 2019; Campos-Soria & Ropero-García, 2016; Gradín, 2020; Herrera et al., 2019), gender inequality and employment distribution patterns (Busch, 2020), educational level (Busch, 2020; Rutledge et al. ., 2017; Vuorinen-Lampila, 2016).

Cultural stereotypes that grow and develop in society regarding the role of men as the main breadwinners are still the dominant factor that limits women from working. Advances in women's education should help increase women's participation in the labor market. Women are expected to be able to play a role in all sectors but still not forget their role in the household. A female worker or career woman has two main roles that must be balanced, namely working and taking care of the household. However, sometimes, the role of women workers is considered to be the cause of household breakdowns or the failure of their children because they don't spend enough time at home. Perceptions like this need to get attention and be straightened out in the community.

In terms of age group, in general, LFPR experienced a significant increase in certain age groups during youth and began to decline in old age as productivity decreased, both for men and women. Seen by gender, it appears that there are slight differences in the pattern of male and female LFPR. In the male population, LFPR continues to increase up to a certain age group and will remain stable. This is related to the age of marriage and the necessity of having a job to support a family for men. Meanwhile, for women, LFPR increased sharply from the pre-adolescent age group to the adolescent age group and tended to be stable until the adult age group. This is because in this age group many women are married and have children where many of them do not enter the labor market. Furthermore, LFPR increases slowly in the age range when the burden of taking care of children begins to decrease.

The regulation regarding the working hours of workers is one of the main focuses of attention in the preparation of the Manpower Act. Excessive working hours will have a negative impact on the health of workers and their families. Therefore, regulations related to working hours and employee holidays are regulated in such a way as to ensure that worker productivity remains high and that the physical and mental health of workers is maintained. Non-full workers are residents who work under normal working hours (less than 35 hours a week) consisting of part-time and underemployed workers.

The table above shows that there are still many female workers who choose to work non-full hours. Women in the labor force are mostly unemployed or underemployed, and many are informal and part-time workers, unpaid workers, or looking for work. This is understandable considering that a woman has multiple roles in the household. As part of a society that adheres to eastern customs, women workers in Indonesia will tend to prioritize their presence in the midst of their family and reduce working hours. From the 2015 Sakernas data, information was obtained that the percentage of women aged 15 years and over who spent the most time taking care of the household was 38.80 percent.

Education ideally aims to gain knowledge that can be applied in the field of work in the future. In addition, education data can be used by the government to make policies to create jobs that match the number of education graduates. However, the reality is that equitable education has not been able to help increase women's participation in the workforce. The persistence of the existing trend indicates that there is a need for a more active social program or policy to encourage the role of women in entering the labor market and engaging in work outside the home (ILO, Labor and Social Trends in Indonesia 2011-2015, 2015).

Literature Review

Local and Overall Measurement of Segregation

Gender segregation in the labor market is generally analyzed using the index of dissimilarity Conventional Blinder-Oaxaca Decomposition . The overall segregation index is based on the Gini coefficient and uses a multidimensional approach, namely vertical and horizontal (Gedikli, 2020). Yunisvita & Muhyiddin (2020) using the index of dissimilarity with empirical results that the level of segregation in rural areas is high, but this condition has not described the overall segregation evidence as revealed by (Agrawal, 2020) using the Conventional Blinder approach -Oaxaca Decomposition which found that in rural areas segregation was caused by n by education level while in urban areas it is caused by type of work in the labor market. Gedikli (2020) using a vertical and horizontal dimension approach reveals that women are consistently at a disadvantage compared to men and have higher inequality, the same approach was carried out by Vuorinen-Lampil (2016) based on the vertical dimension of women who working full time is more advantageous and women are disadvantaged in terms of job hierarchy.

In contrast to the measurement of local segregation which analyzes based on the target group (gender, race type of work, wages, age of education, working hours) in dealing with segregation problems in a multi-group context, it uses an assumption framework to analyze occupational segregation of each population subgroup (Qian & Fan, 2019). This measurement is carried out by comparing the distribution of the target group among categories (types of work) with the total distribution using the basic assumptions for the measure of local segregation (segregation across various target groups), segregation in the labor market explains that the target group is separated based on the distribution of all occupations across the structure employment. In addition, local segregation curves for each target group were analyzed based on a consistent local segregation index, following the approach taken (Agrawal, 2016).

Assume the economics activity is $J > 1,$ type of work which represents total of population is T which is distributed based on $t \equiv t_1, t_2 \dots t_j$ where $t_j > 0$ which represents amount of individual based on type of work $j(j = 1, \dots, j)$ and $T\ (j = \sum_j t_j)$. the multi-group equation is $c^g \equiv c_1^g, c_2^g \dots c_j^g$, group distribution that noted by $g = (1, \dots, G)$ which is $c_1^g \leq t_j$. Distribution of c^g is a component which related to women or any other groups which are analysed, such as wages, working hour, age, education, and residential area. Therefore the equation can be summarized into a matrix E which represents the number of individuals from each target group in each occupation, where the rows and columns correspond to the population and occupation subgroups respectively. Note that the total

number of individuals in each job type J is $t_j = \sum_g c_j^g$, and the whole individual of targeted group g is $c^g = \sum_j c_j^g$. To measure the segregation of the target group, the corresponding rows are compared, namely $(c_1^g \dots c_j^g)$ with the sum of column $(t_1 \dots t_j)$, both distributions are stated in a proportion. In another word distribution is $(\frac{c_1^g}{C^g} \dots \frac{c_j^g}{C^g})$ compared to $(\frac{t_1}{T} \dots \frac{t_j}{T})$.

$$E = \begin{matrix} G\ Subgroup \\ \\ \end{matrix} \begin{matrix} x\ j\ type\ of\ work \\ \end{matrix} \begin{bmatrix} C_1^1 & \cdots & C_j^1 \\ \vdots & & \vdots \\ C_1^g & \cdots & C_1^g \end{bmatrix} \rightarrow \begin{bmatrix} \sum_j c_j^1 = C^g \\ \\ \sum_j c_j^g = C^g \end{bmatrix} \quad (1)$$

The overall segregation measurement was measured using the Gini coefficient approach (Gedikli, 2020) describing the Gini coefficient calculation with the following equation:

$$G = \sum_{i=2}^{n} \left[\sum_{1}^{i-1} W_t/W \sum_{1}^{i} M_t/M - \sum_{1}^{i} W_t/F \sum_{1}^{i-1} W_t/M \right] \quad (2)$$

Where n is the total number of jobs i indicates the ith type of work and t indicates the types of work included in the cumulative total. Wi and Mi represent the number of women and men in job t, and so are Wi and M, representing women and men in job i, while W and M represent the total number of women and men in the population.

The Gini Coefficient measurement is simplified by Qian & Fan (2019) with a mathematical equation as follow :

$$G = [1/FM] \sum_{i=2}^{n} \left[\sum_{1}^{i-1} W_t \left(\sum_{1}^{i-1} (M_t + M_i) \right) - \left(\sum_{1}^{i-1} (W_t + W_i) \right) \sum_{1}^{i-1} M_t \right] \quad (3)$$

$$G = [1/FM] \sum_{i=2}^{n} \left(M_t \sum_{1}^{i-1} W_t - W_i \sum_{1}^{i-1} M_t \right) \quad (4)$$

The Gini coefficient formula can be interpreted as a description of two sets of male and female data based on the gender composition (female/male quality) of their type of work Based on the Gedikli Approach (2020) explained that C represents the number of all pairs ordered "consistently" and D represents the number of "inconsistent" pairs. In this case C includes all male and female pairs where the female type of work has a higher proportion of male workers than the female type of work. D includes all male and female pairs where female occupations have a higher proportion of female workers than male occupations. So the mathematical equation of the Gini coefficient became:

$$G = (C - D)/WM \quad (5)$$

where =

$$C = \sum_{i=2}^{n}\left(M_t \sum_{1}^{i-1} W_t\right) \; dan \; D = \sum_{i=2}^{n}\left(W_t \sum_{1}^{i-1} M_t\right) \quad (6)$$

Methods

The data to analyze Gender Segregation by type of Work is sourced from the 2019 South Sumatra Province Labor Force Survey (SAK19.AK) by following the Ques_SAK.19 question guidelines. This survey provides labor market information from a sample of households in South Sumatra and is generally used as a comparison of national and international data. This research takes Survey data in August 2019 or Quarter 2 following the rules of the 2002 Indonesian Standard Job Classification (KBJI) which includes 8 job categories, namely (1) Professionals, Technicians, and Similar/Professionals (2) Leadership and Management Personnel (3) Administrative Personnel (4) Sales Personnel (5) Service Business Personnel (6) Agriculture, Forestry, Hunting, and Fisheries Business Personnel (7) Production Personnel, Transport Equipment Operators, and Rough Workers (8) Other Personnel. The analysis sample is limited to individuals aged 15-64 years. The cluster analysis is divided into three groups, namely the female group of 3,556 individuals and the male group of 6,873 individuals, and the total group of 10,429 individuals. Statistical determination can be seen from the initial description of the proportion of women in this type of work with an average wage as follows.

Table 1. **Proportion of Women and Average Wages by Type of Work in South Sumatra Province**

Type of Work	**Average Wage (Rupiah/Month)**				
	Total (%)	**Women Proportion (%)**	**Men**	**Women**	**Total**
Proffesional, Technicians, and similar	9.8	6.5	3.768.963	2.380.693	2.845.256
Leadership and management	1.2	0.3	4.422.889	3.877.057	4.273.638
Administration	6.3	3.0	2.956.503	2.167.894	2.584.270
Sales	14.0	8.1	2.386.613	1.553.773	1.907.445
Services	4.0	6.00	2.159.150	1.100.749	1.441.619
Agriculture, Forestry, Hunting, and Fishery	32.8	7.7	1.513.833	1.023.711	1.398.114
Production, Transportation Operator, and Blue-collar workers	27.5	4.3	2.213.629	1.186.788	2.051.269
Others	2.4	0.1	3.144.849	4.450.000	3.176.048
Total	100	34.1	2.140.232	1.573.326	1.946.932

Source : South Sumatra Province National Work Unit, 2019 (Processed, 2021)

The highest average wages for both women and men are in the type of work category for Leadership and Management Staff at 4.27 million rupiah/month and Other Personnel at 3.18 million rupiah/month, while in all main types of work the average is Women's wages are lower than men's, which is 1.57 million rupiah per month with the proportion of women being 34.1 percent. Overall, men dominate the average wage in all types of work

with the highest average wage in the Leadership and Management Work category at 4.42 million rupiah/month and Professional, Technician, and Similar/Professional Staff at 3, 77 million rupiah / month. Based on the work category of Other Workers, women have the highest average wage in all types of work, which is 4.45 million rupiah/month. This condition illustrates that women have the highest wages compared to the average wages of men in which this type of work has the highest average wages compared to the average wages of men in all types of work.

Findings

Labor Market Condition

Descriptively, labor market conditions can be seen in the categorical average values including working hours, education, age and area of residence based on the main type of work which can be seen in Table 2:

Table 2. **Working Hour and Education Based on Main Work Type**

No	Type of Work	Working Hour[a]		Education[a]	
		Men	Women	Men	Women
1	Proffesional, Technicians, and similar	4.96	4.46	5.94	6.32
2	Leadership and management	5.48	4.80	5.47	5.71
3	Administration	5.46	5.26	5.36	5.61
4	Sales	5.77	5.29	3.43	3.08
5	Services	5.45	4.83	3.31	2.82
6	Agriculture, Forestry, Hunting, and Fishery	4.92	4.44	2.45	1.91
7	Production, Transportation Operator, and Blue-collar workers	5.81	4.90	3.08	2.69
8	Others	5.93	5.50	4.00	4.17
	Total	5.40	4.83	3.20	3.61

Source: South Sumatra Province National Work Unit, 2019 (Processed, 2021)

[a] is the average value. Working hours is a categorical variable with values 1 = 1-9, 2 = 10-14, 3 = 15-24, 4 = 25-34, 5 = 35-44, 6 = 45-49, 7 = 45-49, 8 = 50-54, 9 = 55-59, 10 = 60+. Education is a categorical variable with code 1 = No/Not yet in School, 2 = Elementary School, 3 = Junior High School, 4 = SMA, 5 = SMK 6 = DI/DII/DIII, 7 = University

Categorically, the main types of work for both women and men are based on working hours and education. Overall, the type of work shows that the average working hours of men and women are in category (5), namely 35-44 hours/week. Thus, the working hours of men and women as a whole are categorized as working full time > 35 hours/week. The average working hours categorically, male workers have full time working hours (full time) > 35 hours/week in all types of main work which in the working hours category is 50-54 hours/week (6) namely production workers, operators of transportation equipment and manual labor, other personnel and sales force, while for the 45-49 hours category (5), namely leadership and management staff, administrative staff, professionals, technicians,

and similar/professionals and agricultural business personnel , forestry, hunting, and fishing.

In contrast to women who have an average type of work with working hours for part-time workers (part time) < 35 hours, which is in the category of 25-34 hours/week (4), namely agricultural, forestry, hunting, and fishery business workers and professional staff, technicians, and the like/professional, while for the type of work women are categorized as full time (full time) > 35 hours with 35-44 hours/week working hours (5) namely leadership and management staff, administrative staff, business personnel sales and production personnel, operators of transportation equipment and manual workers, meanwhile for the category of working hours of 50-54 hours/week (6) are other workers. Based on the level of education, it shows a categorical average of the main types of work according to the level of education, where males are categorized at the junior high school education level (3) while women are categorized at the high school level (4) This proves that women have the main type of work with a higher level of education than men. Meanwhile, based on the main type of work seen from the categorical average of male workers having education at the DI/DII/DIII level (6), namely professionals, technicians, and similar/professional and for SMA (4) and SMK education levels (5) namely Leadership and Management Personnel, Administrative Personnel and Other Personnel.

The level of education of female workers in the main types of work is not much different from that of male workers, but what is interesting here is that women with professional, technician, and similar types of work/professional, leadership and management staff and administrative staff are categorized at the higher education level, namely University (6), while the types of work at the SMA and SMP education levels are on average concentrated in other workers, sales personnel, service and production workers, operators of transportation equipment and manual workers. Descriptive analysis was also carried out related to the main types of work of male and female workers based on age structure and area of residence which can be seen in detail in Table 3:

Tabel 3. **Age and Residential Area Based on Type of Work**

Type of Work	Age[a]		Residential Area[b]			
	Men	Women	Men		Women	
			Urban	Rural	Urban	Rural
Proffesional, Technicians, and similar	4.96	4.46	17.3	16.2	32.3	34.2
Leadership and management	5.48	4.8	33.6	39.1	10.9	16.4
Administration	5.46	5.26	31.2	21.6	29.0	18.2
Sales	5.77	5.29	25.8	16.6	30.6	26.9
Services	5.45	4.83	17.7	14.5	43.5	24.3
Agriculture, Forestry, Hunting, and Fishery	4.92	4.44	9.1	67.3	2.2	21.4
Production, Transportation Operator, and Blue-collar workers	5.81	4.9	45.6	38.6	8.2	7.6
Others	5.93	5.5	49.8	47.8	0.8	1.6
Total	5.40	4.83	25.5	40.4	15.0	19.1

Source : South Sumatra Province National Work Unit, 2019 (Processed, 2021)

[a]in average. Age is a categorical variable with the value of 1 = 15-19, 2 = 20-24, 3 = 25-29, 4= 30-34, 5 = 35-39, 6 = 40-44, 7 = 45-49, 8 = 50-54, 9 = 55-59, 10 = 60+
[b]Value in Percentage

Overall, based on the age structure, both female and male workers are categorized as an average age of 35-39 years (5). This condition can be concluded that the overall age category of workers in South Sumatra Province is classified in the middle-aged age group. Each type of main job, both men and women, belongs to the middle-aged age group, the main type of work for men is categorized at the age of 35-39 years (5), namely professionals, technicians, and the like/ professionals, leadership and management staff, administrative staff, service business personnel and agricultural, forestry, hunting, and fishery business personnel, while the main types of work categorized as 40-44 years old (6) are sales business personnel, production personnel, equipment operators -transportation equipment and manual labor and other workers. Unlike women, the main type of work has an age category of 30-34 years (4), namely professionals, technicians, and agricultural, forestry, hunting and fishery business personnel, for types of work age category 35-39 years (5) namely leadership and management staff, administrative staff, sales business personnel, service and production personnel, equipment operators transportation and manual labor, meanwhile for the age category 40-44 years (6), namely other types of workforce work.

The classification of the main types of work based on the area of residence was analyzed based on the highest concentration of women and men in the rural and urban areas. Based on the classification of the area where male workers live, it is concentrated in urban areas with a proportion of 40.4 percent. This condition contrasts with the distribution of female workers based on the main type of work as a whole which is concentrated in rural areas at 19.1 percent.

Occupational Segregation in South Sumatera

Segregation in the context of the dichotomy described in Figure 1 shows the segregation curves of the two target groups, namely males and females. The line in the male and female segregation curve shows the proportion according to each decile of the cumulative. The first cumulative decile represents 10% of the total employment, the second cumulative decile represents 20 percent of the total types of employment with the cumulative distribution of women being much lower than that of men and so on. Thus the local segregation curve shows the target group that is under-represented in the type of work described in each cumulative decile. This study shows that the local segregation curve of the distribution of male workers dominates, seen from the cumulative curve of men over women so that the segregation of female workers is higher than that of men.

Figure 2. **Local Segregation Curve Based Gender**

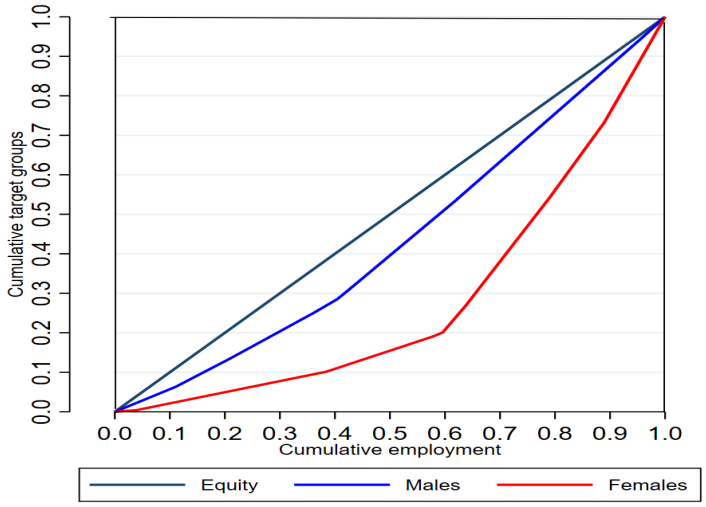


Table 3 shows the values of several local segregation indices (Measurement of female segregation and male segregation according to five local indices, three measures of overall segregation (gender segregation based on M,I_P and G calculations) and the contribution of male and female workers to overall segregation according to three that size :

Tabel. 4. **Local and Overall Segregation Index (2 Target Groups) and Labor Proportion**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D^g	G^g	Employment Share (%)
Male Segregation	0.0356	0.0344	0.0332	0.0312	0.119	0.1321	76.84
Female Segregation	0.401	0.3681	0.3451	0.3436	0.3949	0.4384	23.16
Overall Segregation			M		I_p	G	
Gender Segregation			0.1054		0.1829	0.203	
Male Contribution			0.2417		0.5	0.5	
Female Contribution			0.7583		0.5	0.5	

The results showed that all local segregation indices of women were higher than men. The value of female segregation is more than 10 times based on the value of ($\Phi_{0.1}$), meanwhile, the multiplier value can be seen based on (Φ_{α} dengan $\alpha = 0.5, 1,2$) see (del Río & Alonso-Villar, 2010). The condition explains that although female workers represent 23 percent of each main type of work, they contribute about 75 percent to the overall gender segregation according to the M index I_P and G. The difference in overall segregation results is consistent with (Agrawal, 2016; del Río & Alonso-Villar, 2010) which explains that the index Φ_1 have a relatively higher importance based on the type of work that is adjusted by gender especially women. This condition is in line with the case of South Sumatra Province where there are differences in the distribution of men and women in each type of work. Furthermore, an analysis based on a multi-group approach was carried out by considering specifically the education variable covering seven categories of education and supported by a segregation analysis based on age group and type of work, wage group and type of work, group of hours worked and type of work.

The research concentrates on cases of gender segregation based on education level in which male and female workers are classified into seven classes: Not/not yet graduated from Elementary School, Elementary School, Junior High School, Senior High School, Vocational School, Academy (Diploma I, II, III) and the University. The distribution of workers among the seven classes shows that female workers have a higher level of education than men based on Table 3.

Figure 3. **Local Segregation Curves by Gender and Education Level**

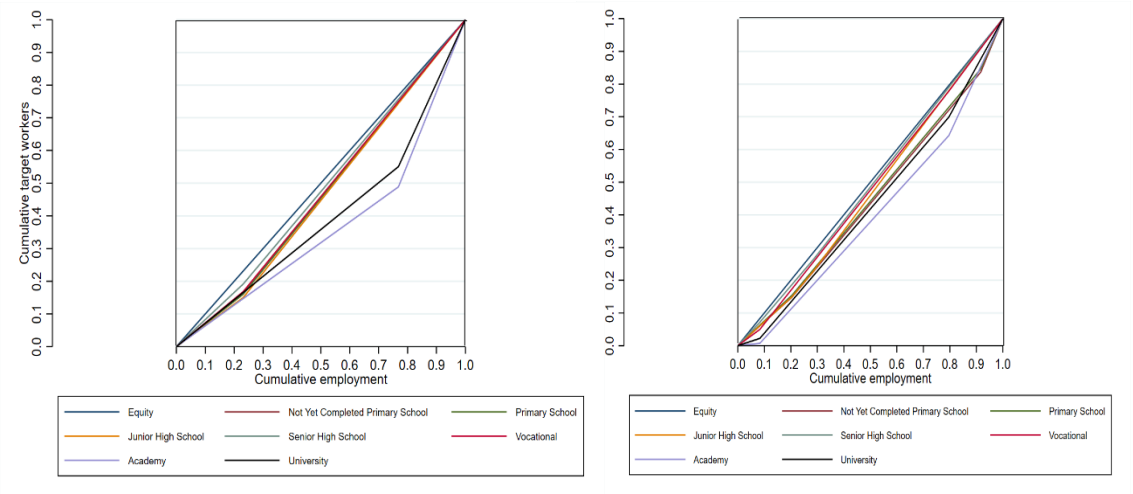


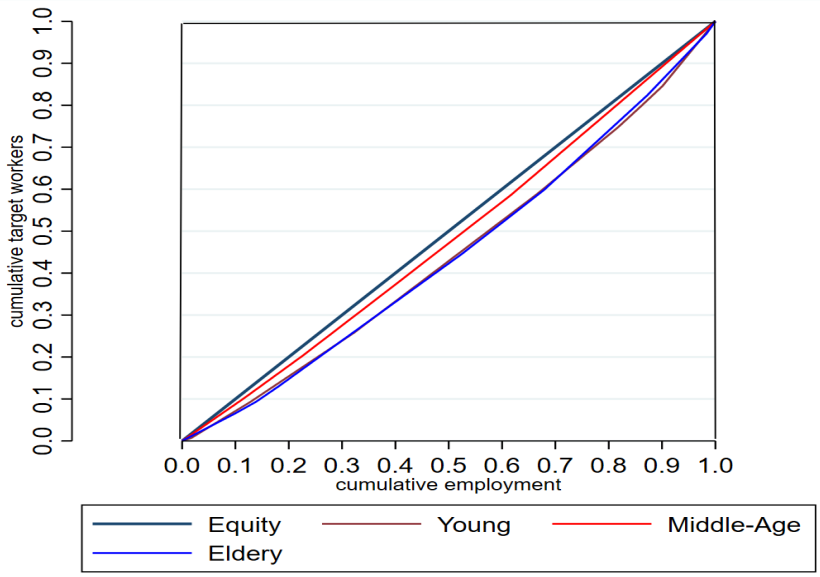
Table 5. **Local and Overall Segregation Index (14 Target Groups) and Labor Proportion**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D^g	G^g	Employment Share (%)
Male Workers							
Not Yet Completed Primary School	0.016	0.015	0.014	0.013	0.069	0.069	9.7
Primary School	0.017	0.016	0.015	0.014	0.071	0.071	17.5
Junior High School	0.023	0.022	0.021	0.019	0.081	0.081	11.4
Senior High School	0.005	0.005	0.005	0.004	0.040	0.040	15.5
Vocational	0.013	0.013	0.012	0.011	0.063	0.063	5.6
Academy	0.166	0.172	0.184	0.220	0.280	0.280	1.3
University	0.104	0.108	0.114	0.133	0.218	0.218	5
Female Workers							
Not Yet Completed Primary School	0.034	0.036	0.039	0.046	0.080	0.115	5.9
Primary School	0.027	0.029	0.031	0.036	0.070	0.102	7.9
Junior High School	0.011	0.011	0.011	0.010	0.057	0.061	4.1
Senior High School	0.001	0.001	0.001	0.001	0.021	0.023	6.3
Vocational	0.010	0.010	0.009	0.008	0.034	0.043	1.9
Academy	0.161	0.131	0.110	0.097	0.154	0.201	1.9
University	0.065	0.059	0.053	0.046	0.097	0.138	6.1

Based on Table 5 shows that overall the local segregation index of men based on higher education levels, namely universities and colleges, is higher than women. This condition describes the segregation of men based on higher education levels, based on scores ($\Phi_{0.1}$) the level of segregation of men is almost twice as high as that of women. This shows that segregation at the higher education level is dominated by men. Although the overall level of segregation higher education by value G^g both male and female are higher than other education categories. If you look at the contribution based on the level of higher education, it shows that women dominate the distribution of types of work, which is 6.1 percent compared to 5 percent for men. Thus this can be interpreted that women are more integrated based on the level of higher education, especially universities. This context is in line with Busch's research (2020) which proves that the segregation of women is much lower than that of men based on the context of higher education where the level of education will reduce the gender gap, where women with a higher education level tend to be integrated in types of work with lower wages higher even the type of work is the same as men.

The next analysis discusses segregation conditions based on age context by classifying young workers aged 15-29 years, middle-aged workers aged 30-44 years and elderly workers who are more than 44 years old. Based on most of the indices, the results of the study found that the elderly group had a higher level of segregation than the younger group. However, it shows that the segregation value of the young and elderly groups can be said to be almost the same. Workers based on the type of work are more integrated in the middle age group compared to the elderly and young age groups.

Figure 4. **Local Segregation Curve Based Age**



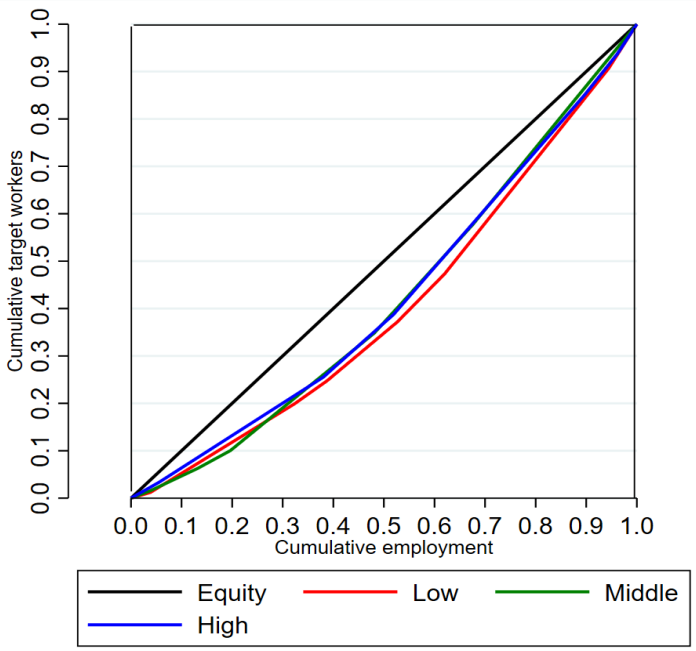
Tabel 6. **Overall Segregation: Age groups**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D^g	G^g	**Employment Share (%)**
Age Group							
15-29 years Old	0.0239	0.0238	0.024	0.0251	0.0773	0.1114	27.6
30-44 Years Old	0.0026	0.0026	0.0025	0.0025	0.0305	0.0388	1.4
> 44 years Old	0.0217	0.0216	0.0217	0.0222	0.0806	0.1118	8.0
Overall Segregation			M		I_p	G	
Young Contribution			0.4691		0.3663	0.3825	
Middle Ages Contribution			0.0772		0.2251	0.2072	
Elderly Age Contribution			0.4537		0.4086	0.4104	

The distribution of workers by youth age group represents 27.6 percent of each major type of work. Based on the M index, the contribution of young workers is 46.91 percent, but based on the measurement using the index I_P and G the contribution of the young age group decreased by 36.63 percent and 38.25 percent, respectively. Meanwhile, the distribution of workers in the elderly age category is 8 percent with a contribution to the overall segregation of types of work ranging from more than 40 percent based on the measurement (M,I_P and G).

Segregation conditions based on wage groups are classified into three classes, namely the low wage group (≥ IDR.800,000), the medium wage group (≥ IDR.1,500,000) and the high wage group (≥ IDR.2.600.000). Based on the context of wages, it shows that workers are segregated based on low wage groups. If you look at the segregation curve, which shows almost the same line between the high-wage group and the middle-wage group, the overall segregation of the middle-wage group is higher than that of the high-wage group.

Figure 5. **Local Segregation Curve Based Wage**



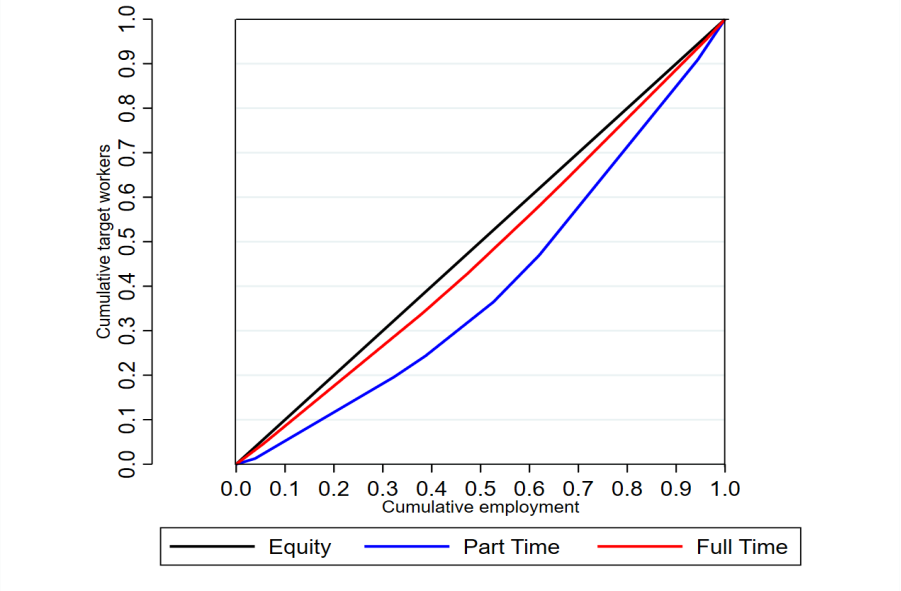
Tabel 7. **Overall Segregation: Wage Groups**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D^g	G^g	**Employment Share (%)**
Wage Group							
≥ IDR.800.000	0.0668	0.0642	0.062	0.06	0.1548	0.192	22.7
≥ IDR.1.500.000	0.0543	0.0514	0.0484	0.0442	0.1327	0.1624	27.1
≥ IDR.2.600.000	0.0437	0.043	0.0424	0.0418	0.1316	0.1573	50.2
Overall Segregation			M		I_p	G	
Low Wage Contribution			0.2905		0.262	0.2564	
Middle Wage Contribution			0.2709		0.2643	0.2623	
High Wage Contribution			0.4386		0.4737	0.4812	

Overall, the local segregation index based on the low-wage group has a higher segregation value than other wage groups in all types of work, however 50.2 percent of the distribution of workers is represented by workers in the high-wage group with a contribution of 43.2 percent based on the M index and experiencing an increase in the contribution based on the measurement of the I_p index by 47.37 percent and the G index by 48.12 percent. This illustrates a change in the increasing contribution of workers based on high-wage groups to the segregation of types of work. In contrast to the contribution of workers in the low and middle-wage groups, which shows that each measurement has consistently decreased. This proves that there are differences in the pattern of wages that are adjusted to the main type of work. Classification based on working hours is divided into two classes, namely part-time workers (<35 hours/week) and full-time workers (>35 hours per week). Based on the

local segregation curve, it shows that part-time workers are more segregated in each type of work than full-time workers.

Figure 6. **Local Segregation Curve Based Working Hours**



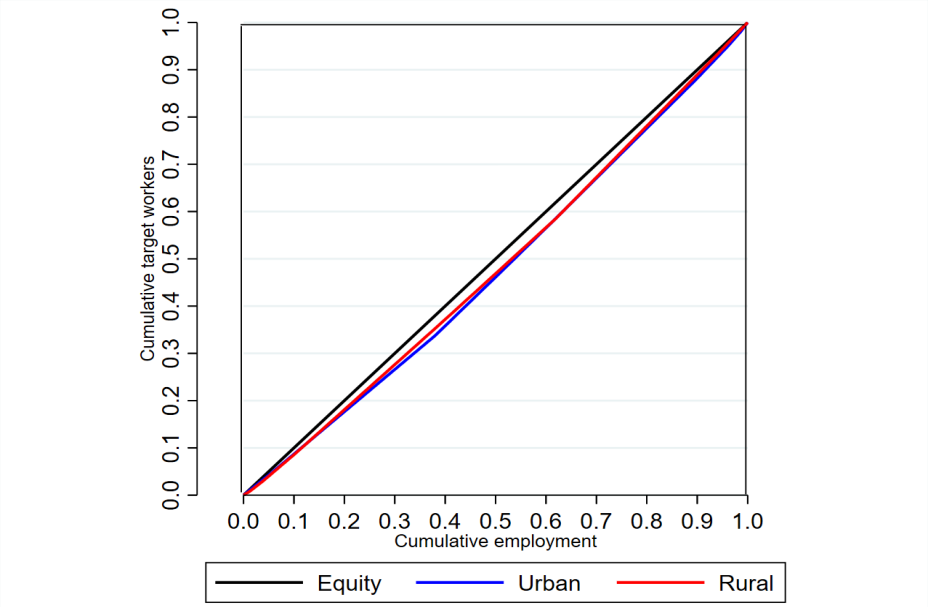
Tabel 8. **Overall segregation: Working Hours Group**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D^g	G^g	**Employment Share (%)**
Working Hours Group							
< 35 Hours/week	0.0692	0.0066	0.0664	0.0623	0.1617	0.1958	21.7
> 35 Hours/week	0.0666	0.0049	0.0048	0.0544	0.0499	0.0544	78.2
Overall Segregation			M		I_p	G	
Part Time Contribution			0.7873		0.500	0.500	
Full Time Contribution			0.2127		0.500	0.500	

The local segregation index based on all measures shows that part-time workers have higher scores than full-time workers, but based on $\Phi_{0.1}$ segregation values are not much different but based on measurementsD^g and G^g depicting a significant difference between part-time and full-time workers, the distribution of part-time workers represents 21.7 percent of the total types of work but contributes 78.73 percent to the overall segregation index. This contribution is reduced to 50% when using the index I_P and G, index Φ_1 have a relatively higher importance based on the type of work that is adjusted based on working hours, especially part-time workers.

The classification of residential areas is divided into two classes, namely urban and rural. Based on the local segregation curve, it shows that workers are integrated based on the area of residence, but the cumulative level of workers in urban areas is slightly higher which represents a higher level of segregation in urban areas.

Figure 7. **Local Segregation Curve Based Mobilty**



Tabel 9. **Overall Segregation: Residence Area Groups**

Local Segregation	$\Phi_{0.1}$	$\Phi_{0.5}$	Φ_1	Φ_2	D^g	G^g	**Employment Share (%)**
Mobility Group							
Urban	0.0051	0.0051	0.0051	0.0052	0.0426	0.0524	44.6
Rural	0.0038	0.0036	0.0035	0.0034	0.0344	0.0423	55.34
Overall Segregation			M		I_p	G	
Urban Contribution			0.5414		0.500	0.500	
Rural Contribution			0.4586		0.500	0.500	

Overall the local segregation index across all measurements shows a relatively low value, thus integration occurs based on the area of residence, especially in rural areas which have a lower value, in the distribution of rural workers representing 55.34 percent of the total types of work with a contribution to the overall segregation of 45.86 percent (index M). This contribution is reduced to 50% when using the index I_P and G, Φ_1 index consistently have higher scores based on the type of work based on the area of residence, especially workers in rural areas. This pattern looks the same where the distribution of workers in urban areas represents the total employment of 55.34 percent with a contribution to the overall segregation index of 45.86 percent.

Conclusion

Research is not only limited to examining the overall segregation but also the segregation of subgroups of the population. Thus, the distribution of the target group can be compared with the distribution of jobs as a whole across all occupations. This allows measurement not only of women's segregation but also of men's segregation (sub-group of education level) and segregation of types of work (sub-group of age, wages, hours worked and area of

residence). The results of the study found that female segregation explained 50 and 75 percent of the overall gender segregation (according to the segregation index measurement) even though the distribution of female workers was only 23.6 percent. Meanwhile, the results of the population subgroup based on education level show that the segregation value of men according to academic and university education levels is much higher than women gregation, this condition illustrates that there are differences in the value of gender segregation based on education level. Meanwhile, for the population subgroup based on the type of work, there are differences in the value of segregation based on age group, wages, hours of work and area of residence. These results emphasize that workers aged 30-44 years and > 44 years, workers with low and medium wages, part-time workers and workers in urban areas have a high contribution to the overall job segregation. Recommendations for further research should consider separate subgroups of the population of male and female occupations as well as a more detailed study related to part-time work and wage classifications.

Based on the local segregation curve, it shows that workers are integrated by area of residence, but the cumulative rate of workers in urban areas is slightly higher which represents a higher level of segregation in urban areas. More women work in rural areas, while men dominate jobs in urban areas. This means that women who live in cities and men who live in villages experience high segregation.
In conclusion, women's segregation towards education and place of residence in the labor market is categorized as low. However, there is a high level of segregation based on the level of wages because the majority get lower wages than men. Do not experience segregation based on age, as well as men. Based on the type of full-time and part-time work, women experience segregation due to the division of roles between work and family.

We recommend that empowering women through the right types of training and development can increase the participation of women workers to be absorbed in the same job opportunities as men. The government needs to continue to strive to increase women's productivity in the labor market through improving women's performance. Regulations on maternity leave, child care, working-hours arrangements, and other policies need to be heeded in order to improve women's qualifications and access to work outside the agricultural sector. This progress is expected to boost the productivity and performance of women workers, and in the end, gender equality in Indonesia can be achieved.

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