# Exploration of the Relationship between Age of Marriage and Income on the Level of Child Stunting in Tasikmalaya City

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## ABSTRACT

This study specifically aims to examine the impact of income and age of marriage on the prevalence of stunting. The use of these two variables is associated with the influence of poor family income on inadequate family purchasing power to meet the needs of their children, as well as individual immaturity in terms of their mental readiness to marry. This study uses a mixed methods approach that integrates quantitative and qualitative research methodologies. This study was conducted in Bungursari District, specifically in three health centers: Bungursari Health Center, Sukalaksana Health Center, and Bantar Health Center. The research methodology used is a convergent parallel design. The findings of the study indicate a favorable correlation between income and child stunting in Tasikmalaya City. The findings of this study were proven by comprehensive interviews, which revealed a negative correlation between parental income and the amount of time spent with children. As a result, this dynamic gives rise to unfavorable parenting practices, while the age at which individuals marry does not have a favorable impact on child stunting. The findings of this study can be valuable information for those involved in addressing and reducing the problem of stunting in Tasikmalaya City.

## INTRODUCTION

Stunting is a prevailing health issue that has garnered significant attention from governmental authorities. The concept of stunting, in itself, is established on Presidential Regulation Number 72 of 2021 concerns disruption of children's growth and development due to chronic malnutrition and recurrent infections. This presents a significant risk to the younger generation, who are integral to the nation's future and may perhaps impede the realisation of the 2045 Golden Indonesia initiative. Hence, the national government has implemented certain legislation as a framework to expedite the mitigation of stunting in Indonesia, particularly Presidential Regulation Number 72 of 2021 concerning the Acceleration of Reducing Stunting. The promulgation of this law serves as a means of incentivizing the prioritisation of stunting management as a national programme by the federal government.

Despite a decline in the stunting rate from 24.4% in 2021 to 21.6% in 2022, the prevalence of stunting in Indonesia remains quite high, as indicated by the results from the 2022 Indonesian Nutrition Status Survey (SSGI) conducted by the Ministry of Health. The government's urgent attention to addressing stunting is a reflection of its significant importance in the current context. Consequently, expediting the implementation of measures to combat stunting is a logical course of action. Stunting is a multifaceted health issue that can arise from various factors, such as insufficient parental knowledge, particularly among mothers, inappropriate parenting practises, inadequate nutrition, low birth weight in infants, and economic vulnerability resulting from low income and subsequent poverty. These factors significantly contribute to the occurrence of stunting in children (Yanti, Betriana, & Kartika, 2020).

According to a study conducted by Mugianti et al. (2018), empirical evidence suggests that several factors contribute to the occurrence of stunting in children aged 25-60 months in Sukorejo District, Blitar City. These factors include inadequate energy consumption, with a prevalence of 93.5%. Additionally, the study found that disease infection was a significant factor, affecting 80.6% of the children. Furthermore, low protein consumption was identified as a contributing factor, accounting for 45.2% of the cases. The study also revealed that not providing exclusive breastfeeding (ASI) was associated with 32.3% of the cases. Lastly, the study found that parental or maternal employment, leading to a lack of attention and care, was a factor in 29.0% of the cases. In addition to this, the occurrence of stunting may be attributed to parents' limited understanding on the need of ensuring adequate and well-rounded nutritional intake. The primary determinant of stunting is the educational attainment of parents, particularly women, accounting for 48.4% of the variance, while dads contribute to 32.3%. This educational deficit leads to insufficient understanding of optimal dietary practises. Furthermore, male individuals are disproportionately affected by variables contributing to stunting, accounting for 64.5% of cases.

The educational attainment of parents, particularly mothers, remains relatively low, resulting in a lack of understanding among parents, particularly mothers, regarding the significance of providing adequate nutrition for their children. This lack of understanding is evident in the failure to exclusively breastfeed infants and the delayed introduction of appropriate complementary foods, which are not in accordance with the child's developmental stage.Factors such as low birth weight (LBW), a previous history of acute respiratory infections and diarrhoea, inadequate sanitation, and economic constraints leading to insufficient nutrition for children are known to

contribute to cases of stunting in children (Ariani, 2020). Therefore, in order to effectively address the issue of stunting, it is crucial to identify and prioritise the primary or most influential causal factors. This will enable the government to implement targeted policies and programmes aimed at reducing stunting cases, with the ultimate goal of achieving optimal reduction in stunting prevalence. Based on previous studies that examined the relationship between income and age of marriage, this study focuses on the location of Tasikmalaya City which is a rural to urban transition area, so that in terms of marriage orientation and community income, it is in a transition period.

Tasikmalaya City, situated in the West Java Province, is among the several areas in Indonesia. Presently, the Tasikmalaya City Government is actively engaged in efforts to mitigate the prevalence of stunting within its jurisdiction. In 2021, the incidence of stunting in Tasikmalaya City amounted to 6,234 cases (Data Tasikmalaya, 2021), however, according to statistics obtained from the Tasikmalaya City Central Statistics Agency (BPS), the poverty rate among the residents of Tasikmalaya City in 2021 was recorded at 13.13%. This figure surpasses the poverty rate of 8.40% in the West Java Province and the national average of 10.14%. Tasikmalaya City in West Java Province is considered the most impoverished area due to its significant population of individuals with low income. In 2021, the number of individuals living below the poverty line in Tasikmalaya City was recorded at 3.33 thousand people, accounting for 0.16 percent of the total population. This figure represents an increase from the previous year, where the number of individuals living in poverty was 86.13 thousand people, equivalent to 12.97 percent of the populat (Data Tasikmalaya, 2021).

The findings of Sihite and Chaidir (2022) have substantiated the correlation between poverty resulting from inadequate income and the occurrence of stunting. This relationship can be attributed to the limited access to proper nutrition experienced by children born into economically disadvantaged households. Rahmad and Miko (2016) conducted a research that underscores the challenges faced by economically disadvantaged families in providing enough nutrition for their households. Prolonged exposure to this condition can have detrimental effects on children, perhaps leading to stunting. According to a study conducted by Sari and Sulistianingsih (2017), there exists a correlation between inadequate family income, leading to poverty, and serving as one of the contributing reasons to the occurrence of stunting in children.

Tasikmalaya City, situated in West Java, not only exhibits the lowest socioeconomic status within the region but also demonstrates a notable prevalence of early marriages among those below the age of 19. According to data provided by the Tasikmalaya City Government, there were a total of 195 weddings involving individuals under the age of 19 in Tasikmalaya City in the year 2021 (Data Tasikmalaya, 2021). Marriages under 19 years old are of course very risky for the survival of the family both from economic and health aspects. Article 7 paragraph 1 of Law Number 16 of 2019 concerning Amendments to Law Number 1 of 1974 concerning Marriage, provides a condition that marriage is only permitted if the man and woman have each reached the age of 19 years. The National Population and Family Planning Agency (BKKBN) provides recommendations for the age of marriage to the public, according to the BKKBN the ideal age for a person to marry is at least 21 years for women and for men at least 25 years (CNN Indonesia, 2022).

The implementation of age restrictions on marriage serves the explicit purpose of safeguarding the ongoing progression of familial growth subsequent to marriage, particularly with regard to the advancement of one's health (Preda, et.al, 2020; Berger & Carlson, 2020). In instances where individuals enter into matrimony without attaining the requisite age, a multitude of issues may arise, with health concerns being one among several potential complications. One of the health issues that emerges is child stunting, which can be attributed to inadequate marriage age in terms of its impact on an individual's mental well-being. Insufficient maturity hinders cognitive abilities, consequently influencing parenting practises when the individual becomes a parent (Isfatayati, Nur, et al., 2022). One additional consequence associated with early marriage, namely marriages occurring before the age of 19, is the potential for stunting in children. Consequently, it is imperative to raise awareness about the hazards of early marriage or marriage before the age of 19 as a means of mitigating the occurrence of stunting in offspring (Metasari, et al., 2022). Early marriage, defined as marriage before the age of 19, not only violates legal and BKKBN recommendations, but also carries the risk of producing offspring with stunted growth due to the lack of mental preparedness on the part of the parents. Therefore, it is imperative that the general public be educated about the importance of avoiding early marriage or marriage before the age of 19 (Nisa & Sari, 2022).

This research examines and analyzes two phenomena that occur in Tasikmalaya City, namely income level and marriage age on child stunting, which will be carried out in the area with the highest stunting cases in Tasikmalaya City, namely Bungursari District which has three health centers (Bungursari, Bantar, and Sukalaksana).

## METHOD

Based on research needs, to answer research problems, the framework for this research steps refers to a mixed method research perspective, namely combining qualitative and quantitative research. This combined research method uses a divergent parallel research design. This divergent parallel design works by combining two methods (quantitative and qualitative) at the same time (Yin, 2006). This study uses two perspectives, namely qualitative which examines stunting cases in Tasikmalaya City using interviews, observations, and documentation. Then, the quantitative perspective sees that stunting in Tasikmalaya City is caused by various factors, which in this study use income and age of marriage.

The advantage of parallel divergence is that there is mutual confirmation between data collection techniques, so that the data obtained has a high level of validity. In a quantitative context, this research uses secondary data based on income, stunting and early marriage data reports in Tasikmalaya City during 2016-2022. The sample used is a saturated sample, which means the entire population is used as the research sample. In the context of qualitative data, this research used informants from the community health center and the Department of Population Control, Family Planning, Women's Empowerment and Child Protection of Tasikmalaya City.

## RESULTS AND DISCUSSION

Understanding the influence of income and age at marriage on child stunting in Tasikmalaya City needs to be done using a quantitative perspective, so that the results obtained are free from subjective values and interpretations. In an effort to complement

the quantitative results, it is necessary to carry out qualitative research to deepen the causal research results. On that basis, the presentation in this section comprehensively discusses the mix method with divergent parallel design.

### a. Normality Test

The Normality Test is a statistical procedure conducted to evaluate the distribution of data within a dataset or set of variables, specifically determining whether the distribution adheres to a normal distribution or deviates from it. The subsequent findings present the outcomes of the normalcy test.
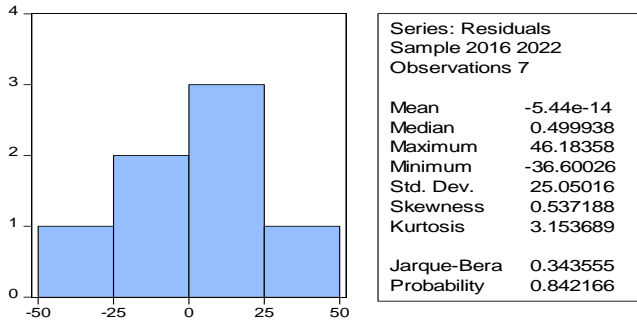


**Figure 1.** Normality Test

Determining the normality of the residual may be accomplished by comparing the estimated JB Probability (Jarque-Bera) value with a significance threshold of 0.05 (5%). If we consider the probability. If the computed Jarque-Bera (JB) statistic exceeds the significance level of 0.05, it may be inferred that the residuals follow a normal distribution. Conversely, if the JB statistic is below the significance level, there is insufficient evidence to support the claim that the residuals are normally distributed. The concept of probability holds significant relevance in academic discourse. Based on JB's calculations, it can be inferred that the value of 0.343555 above the threshold of 0.05. Consequently, this finding suggests that the residuals conform to a normal distribution, thereby satisfying the fundamental premise of normality.

### b. Multicollinearity Test

The purpose of this multicollinearity test is to assess the presence of a significant correlation, either high or perfect, among the independent variables inside the regression model. The subsequent findings present the outcomes of the multicollinearity examination conducted in this research.

**Table 1.** Multicollinearity Test

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| C | 10046.00 | 74.71001 | NA |
| marriage | 0.003322 | 48.16903 | 1.244387 |
| income | 2.62E-09 | 82.89004 | 1.244387 |

The outcomes of the multicollinearity assessment are observable inside the table's Centred VIF column. The Variance Inflation Factor (VIF) values for all variables do not exceed 10. Based on the observation that neither variable exhibits a VIF value over 10, it may be concluded that there is an absence of multicollinearity between the two independent variables. According to the traditional principles of linear regression using ordinary least squares (OLS), an effective linear regression model

is characterised by the absence of multicollinearity. Therefore, the aforementioned model is devoid of multicollinearity.

### c. Autocorrelation Test

The purpose of the autocorrelation test is to examine if a linear regression model exhibits a link between residual errors in period t and errors in the prior period, t-1. When a correlation is seen, it is referred to as an autocorrelation issue. The subsequent findings pertain to the autocorrelation examination conducted within the scope of this study.

**Table 2.** Autocorrelation Test

| | | | |
|---|---|---|---|
| F-statistic | 8.944519 | Prob. F (2,2) | 0.1006 |
| Obs*R-squared | 6.296095 | Prob. Chi-Square (2) | 0.0429 |

The research findings indicate that the probability value (Prob. F(2,2)) of 0.1006 above the predetermined significance threshold of 0.05 (5%). Consequently, the null hypothesis (H0) is accepted, suggesting the absence of autocorrelation.

### d. Heteroscedasticity Test

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another. The following are the results of the heteroscedasticity test in this study.

**Table 3.** Heteroscedasticity Test

| | | | |
|---|---|---|---|
| F-statistic | 1.749659 | Prob. F (2,4) | 0.2845 |
| Obs*R-squared | 3.266327 | Prob. Chi-Square (`2) | 0.1953 |
| Scaled explained SS | 2.636813 | Prob. Chi-Square (2) | 0.2676 |

The decision whether or not heteroscedasticity occurs in the linear regression model is to look at the Prob value. F-statistic (F count). If the value of Prob. The calculated F is greater than the alpha level of 0.05 (5%) then H0 is accepted, which means that heteroscedasticity does not occur, whereas if the value of Prob. The calculated F is smaller than the alpha level of 0.05 (5%) then H0 is rejected, which means heteroscedasticity occurs. Prob value. The calculated F of the research data shows 0.2845 which is greater than the alpha level of 0.05 (5%) so that, based on hypothesis testing, H0 is accepted, which means that heteroscedasticity does not occur.

### e. Linearity Test

The purpose of the linearity test is to ascertain the presence of a linear association between the dependent variable and each independent variable under consideration. If a model fails to satisfy the assumptions of linearity, it is not appropriate to employ the linear regression model. The subsequent section presents the linearity test employed in this study.

**Table 4.** Linearity Test

| | Value | df | Probability |
|---|---|---|---|
| t-statistic | 0.328599 | 3 | 0.7641 |
| F-statistic | 0.107977 | (1, 3) | 0.7641 |
| Likelihood ratio | 0.247519 | 1 | 0.6188 |

F-test summary:

| | Sum of Sq. | df | Mean Squares |
|---|---|---|---|
| Test SSR | 130.8058 | 1 | 130.8058 |
| Restricted SSR | 3765.063 | 4 | 941.2657 |
| Unrestricted SSR | 3634.257 | 3 | 1211.419 |

LR test summary:

| | Value |
|---|---|
| Restricted LogL | -31.93920 |
| Unrestricted LogL | -31.81544 |

If the probability value of the estimated F statistic is higher than the predetermined alpha level of 0.05 (5%), it may be concluded that the regression model satisfies the assumption of linearity. Conversely, if the probability value is lower than the alpha level, the linearity assumption is not met. The computed F value is less than the significance level of 0.05, indicating that the model fails to satisfy the assumption of linearity. The concept of probability holds significant relevance in academic discourse. The F-statistic value may be observed in the row corresponding to the F-statistic and the column representing the probability. According to the research test findings, the probability value (Prob. P) of 0.7641 above the significance level of 0.05. Therefore, it can be inferred that the regression model satisfies the assumption of linearity.

### f. T Test
**Table 5.** T test

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -337.5910 | 100.2297 | -3.368173 | 0.0281 |
| marriage | 0.070066 | 0.057633 | 1.215728 | 0.2909 |
| income | 0.000148 | 5.12E-05 | 2.882457 | 0.0449 |

Based on this data, it shows that early or underage marriage has no influence on stunting in children in Tasikmalaya City. This was confirmed by research sources from the Community Health Center that children affected by stunting were not predominantly first children, but second or third children.

Interestingly, this research shows that income has a positive influence on child stunting in Tasikmalaya City, meaning that the higher the parent's income, the higher the child's stunting. This data is different from the general view in society which states that child stunting occurs in poor families. The research results which stated that income had a positive effect on child stunting, were confirmed by sources from the Community Health Center who stated that parenting style was an influencing factor in child stunting, parents who were busy working and neglected or entrusted their children to other parties were at risk of stunting. This emphasizes that it is important for parents who have high incomes to pay more attention to their children with good parenting patterns.

### g. F Test
**Table 6.** F test

| R-squared | 0.800431 | Mean dependent var | 61.00000 |
|---|---|---|---|
| Adjusted R-squared | 0.700647 | S.D. dependent var | 56.07436 |
| S.E. of regression | 30.68005 | Akaike info criterion | 9.982630 |
| Sum squared resid | 3765.063 | Schwarz criterion | 9.959448 |
| Log likelihood | -31.93920 | Hannan-Quinn criter | 9.696112 |
| F-statistic | 8.021612 | Durbin-Watson stat | 2.498294 |
| Prob(F-statistic) | 0.039828 | | |

The results of the F test show that this research model has a contribution of 70% in explaining the factors that influence stunting in children in Tasikmalaya City. There are 30% factors outside the research model that need further research. The results

of this research were confirmed by the Department of Population Control, Family Planning, Women's Empowerment and Child Protection, stating that the problem of stunting is a very complex problem, there are factors that are thought to influence stunting, such as the health of parents, especially mothers.

The issue of stunting has significant implications for future generations and their progeny, as well as limited progress in linguistic, cognitive, and motor development (Wijeakumar, et al., 2023; Abri, Zakiah, & Risal, 2023; Nasser, et al., 2022). The findings of Ulfah et al. (2021) indicate that there is no significant association between the age of marriage and stunting. However, it is important to note that this does not diminish the need of ongoing efforts to address the issue of early marriage, as it remains a significant concern in terms of both public health and human rights, particularly in poor and medium income countries.

In the realm of health, the phenomenon of stunted development during early childhood might have lasting effects, perhaps predisposing individuals to reduced growth during adolescent. According to Aryastami (2017), there is a significantly higher risk of persistent short stature before puberty for children who experience early growth retardation and remain short between the ages of 0-2 years and 4-6 years. Specifically, these children face a 27-fold increased risk of remaining short. Conversely, children who exhibit normal growth during the early years (0-2 years) but subsequently become short between the ages of 4-6 years have a 14-fold increased risk of developing short stature before puberty.

The available empirical data and cross-national research findings indicate that the occurrence of stunting has the potential to impede economic development and adversely affect the efficiency of the labour market, leading to a substantial decline in Gross Domestic Product (GDP) by about 11% and a noteworthy drop of 20% in the income of adult workers. Stunting has been identified as a contributing factor to the exacerbation of inequality, resulting in a reduction of 10% in overall lifetime income and the perpetuation of intergenerational poverty (Archda & Tumangger, 2019; Rosmalina et al., 2018). The potential reasons contributing to a lack of maturity in individuals may include the relatively limited cognitive abilities and delayed developmental progress observed in toddlers. Individuals of shorter stature exhibit reduced levels of productivity, employment opportunities, and remuneration in comparison to their taller counterparts. According to a study conducted by Wahyuni and Fitrayuna (2020), the inclusion of height as a selection factor in some occupations has resulted in taller individuals having a greater likelihood of securing employment opportunities. Consequently, this height advantage has been shown to correspond with higher earnings for these individuals.

From a health policy standpoint, the practise of early marriage poses potential risks to the health of both mothers and children. The causes encompass factors such as maternal reproductive unpreparedness, maternal educational attainment, insufficient access to knowledge, and inadequate maternal care during pregnancy. Offspring delivered to adolescent mothers exhibit decreased survival rates and an increased susceptibility to nutritional deficiencies, including symptoms such as dyspnea, wasting, and malnutrition. This phenomenon may arise due to suboptimal parenting practises exhibited by moms of children below the age of 18. The suboptimal parenting approach has the potential to exert an adverse influence on the nutritional well-being of offspring (Zulhakim et al., 2022). Additional studies have also indicated that there exists a positive correlation

between the timing of a woman's marriage and the prevalence of stunting and malnutrition among children. The reason for this phenomenon is that moms who become married before to reaching the age of 18 and have toddlers frequently exhibit inadequate parenting abilities, resulting in a detrimental effect on the nutritional well-being of their children (Dartilawati et al., 2021; Duana et al., 2022).

Indonesia exhibits the greatest prevalence of child marriages globally, occupying the 37th position among ASEAN member countries, with Cambodia being the sole exception. One of the perilous factors contributing to stunting in children is the circumstance of being born to a woman who is married and has little children, particularly those who are of a similar age as the kid in question. Based on empirical evidence, it has been observed that females who experience pregnancy throughout adolescence, namely before to reaching the age of 20, may encounter some limitations in terms of the growth and physical development of their initial offspring. Child marriage can result in early or young pregnancies for women. The age of the mother during pregnancy has an impact on the progression of the pregnancy.

According to Indrian (2023), there is an increased likelihood of encountering pregnancy complications among pregnant women who are either younger or older. The advisability of early marriage from a health standpoint is questionable due to its potential impact on the physiological preparedness of the prospective mother's reproductive system. An individual who has not attained the age of 18 years experiences underdeveloped reproductive organs, particularly the uterus, which is not yet fully matured for reproduction. Additionally, the growth of the pelvic region is suboptimal, resulting in a heightened risk during pregnancy. According to Afifah (2014), young women who enter into marriage at an early age and are still classified as minors may not possess the emotional preparedness necessary to navigate the challenges associated with pregnancy and delivery, particularly when they find themselves in disadvantaged social and economic circumstances.

This problem indicates that there is a marriage age condition which is a challenge at the national level, although in the context of Tasikmalaya City it does not have an influence on increasing the number of stunting, but it should not be a basis for not focusing on preventing early marriage, because there are other aspects, such as health and readiness. mentality in being a householder.

An alternative perspective posits that there exists a correlation between stunting in toddlers aged 25-60 months, birth weight, and per capita income. Stunting in toddlers can arise as a consequence of malnutrition, impeding their growth and development and exerting detrimental effects on subsequent phases of life. These effects encompass cognitive decline, heightened susceptibility to non-communicable ailments, diminished productivity resulting in impoverished circumstances, augmented vulnerability to infectious diseases, and an elevated incidence of low birth weight infants. The level of the text is considered to be low in terms of academic standards. Stunting can be attributed to a range of variables, encompassing economic circumstances, educational attainment, maternal knowledge, and family size. The study conducted by Zurhayati and Hidayah (2022) suggests that family income has a significant role in influencing both family and school nutrition.

Family socio-economic risk factors for stunting in children include education, employment, and family income (Nuraeni & Suharno, 2020; Utami, Setiawan, & Fitriyani, 2019; Siswati,

Hookstra, & Kusnanto, 2020). Based on empirical study, there exists a notable and affirmative correlation between the prevalence of stunting and the physical attributes of housing, such as the provision of clean water. This association serves as an indicator of favourable family socioeconomics, as well as mother nutritional knowledge and practises. The dietary circumstances of toddlers are influenced by the social milieu. Changes in the ecological environment might lead to variations in behaviour among organisms throughout their development and residency. The present scenario possesses the capacity to engender repercussions and outcomes pertaining to nutritional issues (Cahyono F., Manongga S.P., 2016).

Insufficient parental caregiving, despite high income levels, can still contribute to an elevation in stunting prevalence. This circumstance necessitates a synergistic engagement between governmental entities and corporations in order to allocate an adequate amount of time for parents to attend to their children. This observation suggests that the manner in which parents interact with their children has a significant role in mitigating the occurrence of stunting among children residing in Tasikmalaya City.

## CONCLUSION

Tasikmalaya City faces the challenge of stunting as it seeks to improve the quality of its human resources. The study findings show a positive correlation between income and stunting in Tasikmalaya City, underscoring the importance of affluent households adopting good parenting practices. In addition, the government should offer assistance in providing access to resources for working parents to improve optimal parenting practices for their children. The effect of income suggests the importance of families achieving sufficient income to meet living needs and having free time to care for their children. This can be achieved through the implementation of flexible working hours and the establishment of outreach programs targeting each sub-district, with the aim of identifying and promoting effective parenting approaches. To improve the comprehensiveness of the study on child stunting in Tasikmalaya City, it is imperative to direct future investigations to factors that have not been explored, such as the impact of parental health on child stunting.

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