

# Explaining the Wage Gap Between Contingent and Noncontingent Workers

Nicole Skalski

## I. Introduction

The number of contingent workers in the labor market is increasing. In fact Callaghan and Hartmann (1991) find that the contingent workforce is growing more rapidly than employment overall. Now, more companies are considering employing contingent workers because they are temporary and cost less than noncontingent workers. Companies can take advantage of these workers by providing them with lower pay and fewer benefits. A common definition for a contingent worker is an individual who does not perceive himself or herself as having an explicit or implicit contract for continuing employment (Barker, 1998). Under this definition, it is estimated that 6 million workers are classified as contingent. Included in contingent work are part-time, temporary, and contract employment. Contingent jobs often have a lack of non-wage benefits, such as insurance and retirement plans.

The contingent workforce is difficult to analyze because its rise is a recent trend. Also, companies are unable to provide information about how many contingent workers they employ, how many hours these individuals work, the time they have worked, and their performance. However, companies do collect data or keep records about the workers they employ that are temporary, part-time, or contract.

The purpose of my research is to determine if a wage differential exists between contingent and noncontingent workers after controlling for a number of determinants of earnings. Since the contingent workers now make up so much of the workforce, it is important to determine how they are rewarded in the workplace compared to noncontingent workers.

Researchers find that a pay gap exists between contingent and noncontingent workers. For example, Hipple (1998) finds that median earnings for contingent workers in 1997 were \$266 per week while noncontingent workers earned \$444 per week. Although there is a gap between contingent and noncontingent wages, part of the gap could be the result of differences in demographics (e.g. gender, age), human capital (e.g. education and training), and occupational choice.

A characteristic of the emerging literature on contingent workers is the focus on only one or two subsets of the entire contingent workforce, such as temporary workers or part-time workers. Focusing

only on these two groups allows for simple descriptive comparisons. For example, Callaghan and Hartman (1991) use simple descriptive statistics to find that temporaries earn less than regular workers. My study attempts to use a broader definition of the con-

tigent workforce and to use multivariate analysis rather than descriptive comparisons.

Segal and Sullivan (1998), using multivariate techniques, find that a 10 percent wage gap exists for temporary workers after controlling for certain variables. However, a major shortcoming of his study is the failure to control for the amount of training. A focus of the present study is to determine the extent that contingent workers receive less on-the-job training than noncontingent workers. The paper will also attempt to determine if training differences explain earnings differences between the two groups.

In Section II, the theory and literature is presented. Section III introduces the data and descriptive statistics. Section IV develops the empirical

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model while section V presents the results. Section VI concludes the paper, recommending policy implications and areas for further research.

## II. Theory and Literature Review

This section identifies a number of important determinants of earnings. These variables are hypothesized to explain part of the earnings gap between contingents and noncontingent workers. They can be divided among demographic variables, human capital variables, and occupational choices.

### A. Demographic and Control Variables

When explaining differences in income, there are generally concerns about discrimination. An important characteristic about contingent workers is that they are more likely to be women (Polivka, 1996). Considerable research has been completed on the earnings differentials between men and women. Past research shows that even after accounting for human capital differences, a large portion of the gender pay gap remains unexplained (Haager, 2000). Therefore when determining the gap between contingent and noncontingent workers, it is necessary to account for the gap in earnings caused by gender differences.

Another interesting difference between contingent and noncontingent workers is their age distribution. Polivka (1996) finds large differences in age between contingent and noncontingents. Contingent workers are more than twice as likely as noncontingent workers to be between the ages of 16 and 24. For younger workers, it may be beneficial to obtain contingent jobs because they can experience a broad base of employment opportunities. It is possible for a worker who is a temp or a consultant to gain experience at numerous companies.

Hipple (1998) finds that nearly half of the contingent workers give personal reasons for accepting their contingent jobs, such as flexibility or family obligations. One measure of family obligation would be marital status. Marriage could have a different effect on income for men than for women. Many females who are married and have childcare responsibilities may prefer contingent arrangements and receive lower wages. Women who are not married would more than likely take noncontingent work arrangements and have higher wages. If there are traditional divisions of labor within the family, men who are married would seek job arrangements that had more permanency, instead of a contingent arrangement and thus receive

higher wages.

The hours an individual works in a year can greatly affect his or her income, therefore hours worked needs to be included as a control variable. When the number of hours worked increases, a person will be compensated with higher earnings. Research has shown that contingents work fewer hours than noncontingents. Many people in the contingent workforce may choose these arrangements because they tend to be more flexible and require less work time.

Furthermore, Descriptive analyses of contingents conclude that they receive less education (Hipple, 1998). Polivka (1996) also finds data to indicate that contingent workers are three to four times more likely to be enrolled in school than noncontingents. A student lacks the long-term commitment necessary for many full-time employment opportunities and a student is limited by his or her class schedule. Therefore, a student is more compatible with a temporary work arrangement. If contingent workers are students they may also specifically choose these jobs because they are tailored to the school year and/or are more flexible. Enrollment status should be controlled for when accounting for the pay gap.

### B. Occupational

The occupational choices of contingents can greatly affect the wages they receive. Contingents may be concentrated in occupations that have lower wages. Callaghan and Hartmann (1991) find that part-time and temporary workers are concentrated in particular occupations. In particular they discovered a higher concentration of part-time workers in service, sales, administrative support, and unskilled occupations. They are typically less likely to be managers or professionals. Temporary workers are most commonly found in clerical and unskilled laborer, and operative occupations. In other words, contingents are in occupations that are comparatively low paying. The firms employing workers in occupations that use temporary workers, or contingents, may not want to spend time and money training these workers. This effect could have a dynamic impact on earnings. Interestingly, Hipple (1998) finds that contingent jobs are in occupations with varying skill levels. Therefore, the impact of these occupational variables may not be as strong as expected on the incomes of contingents.

### **C. Human Capital**

There are many sources of human capital such as investments in schooling, on-the-job training, and hours worked. According to Gary Becker's human capital theory, investments in human capital will have a positive effect on income (Becker, 1993). An individual will be compensated in the form of higher earnings for investments in human capital. In the case of the contingent workers, there are reasons to believe that they have less human capital. These workers tend to have less job tenure and their employers are less willing to invest in human capital through spending for on-the-job training. Thus, contingent workers may have lower salaries than non-contingent workers because they are given less training and education.

On-the-job training is an important human capital investment. If an individual receives training on the job, it is expected that she is gaining more human capital by keeping her skills current. Becker makes an important distinction between two types of on-the-job training, general and specific. General training is training that can be used in many firms besides the ones providing it. It will increase the future marginal productivity of the workers in many firms. A rational firm in a competitive market will provide general training as long as they do not have to pay the costs. The people receiving general training are willing to pay these costs with decreased wages since it increases their future wages. Specific training increases workers' productivity in the firm providing the training. The wage that an employee could get elsewhere is independent of the specific training that he or she receives. Employees receiving specific training are unwilling to pay for this, and employers do not want to lose the employees to whom they have given specific training. If a worker has received specific training, then the firm would be likely to pay a higher wage in order to keep the employee at their firm. Should the employee leave right after the training period, an employer would incur a loss for the amount spent on training. Therefore, employees that receive specific training have higher wages in order to induce them to stay long enough for the employer to recoup training costs.

The effect of this variable on the contingent workforce is difficult to interpret. It may be the case that the worker is temporary and only received general training, not specific training. This means that contingent workers will not be fully compensated for

the increases in training that they receive. Firms also may be less willing to provide specific training for contingents because they may not be employed long enough for firms to recover their training investment. This could be the case for the entire contingent workforce since they do not have implicit or explicit contracts for continuing employment. It may also be the case that a contingent worker such as a consultant is hired because of his/her previous knowledge. In this situation contingents are not receiving training from their current employers. On-the-job training can have different effects depending on the type received. But in general, I expect contingent workers to receive less training than noncontingent workers.

It is also interesting to consider that contingents acquire useful information about how well they are suited to an occupational field (Segal and Sullivan, 1998). Contingents may gain knowledge about their own preferences, which is of value to the individual but may be of less value to the firm. The impact this has on income will be difficult to predict depending on what type of training is obtained.

An interesting study that has been completed on contingent wage differentials is "Wage Differentials for Temporary Services Work: Evidence from Administrative Data" (Segal and Sullivan, 1998). This study examines the temporary workforce, which is only a portion of the contingent workforce. The data that it analyzes predicts that temporary wage rates are 15% to 20% lower than a wage that may be standard. The empirical model in this study controls for many effects and after their analysis a 10% wage penalty remains. As a result of the study, it was "found that there is a definite wage differential associated with temp work. This is true even after we control for worker-specific fixed effects and time trends" (Segal and Sullivan, 1998).

I can improve on this study by capturing a larger portion of the contingent workforce using data from the National Longitudinal Survey of Youth. Also, these data seem to capture certain effects better than the administrative data that was used. The administrative data includes large sample sizes and long and complete records of the workers; however it does not contain demographic, occupational, or training information. Including this information could be essential in explaining a larger portion of the gap. Also, temporary service work, which is the focus of the study by Segal and Sullivan, only accounts for one portion of the contingent workforce.

I hypothesize that the wage differential between contingent and noncontingent workers will be explained when the variables described above are taken into account. The estimates presented later in the paper will show that the effect of on-the-job training explains much of the earnings gap between contingent and noncontingent workers.

### III. Data and Descriptive Statistics

The purpose of this paper is to explain the wage gap between contingent and noncontingent workers. The models look at demographic, control, human capital, and occupation variables to account for the wage gap. I use 1998 Data from the National Longitudinal Survey of Youth (NLSY). The sample consists of 7,051 individuals between the ages of 33 and 41.

Refer to Table 1 for a summary of variable definitions and expected signs of the coefficients. These variables are described in greater detail in the rest of this section.

The EARN variable is the total monetary compensation (including salary, wages, and tips) that the respondent earns annually. EARN will be the dependent variable in the analysis in section IV. It would be interesting to have other things included such as benefits that might differ between contingent and noncontingent. However, this variable is appropriate because it measures all the monetary compensation that an individual receives and this study is only concerned with the earnings differential.

In the NLSY there are proxy variables that measure contingency. The variable used in this study asks the respondent if he or she is a regular employee, a temp worker sent by a temporary agency, a temp worker hired directly by the company, a consultant, a contractor, an employee of a contractor or other. To create the dummy variable, CON, regular employee was used to represent noncontingent workers and all of the remaining categories were grouped together to represent contingent workers. This best represents the contingent and noncontingent workforce. A relatively small shortcoming is that a small number in the contingent pool do not fit into the earlier definition, which required that contingents do not have an explicit or implicit contract for continuing employment. For example, consultants may have a long-term relationship with their parent companies. CON attempts to measure the differences between contingent and noncontingent workers, as well as possible discrimi-

nation effects. A value of zero is assigned to noncontingents and a value of one is assigned to contingents. It is predicted that being contingent will have a negative effect on earnings, because contingents receive lower wages than noncontingents. I hypothesize that this gap will be large before the other variables are added.

#### A. Demographic and Control Variables in the NLSY

In this category the HRSWRKD, AGE, ENROLL, FEM, and MARRIED are included. The HRSWRKD variable is predicted to be positive. If an employee works more hours, he or she has the potential for more compensation. The AGE variable accounts for the age of the respondent. This data is limited because the NLSY 1998 survey only accounts for individuals between the ages of 33 to 41; age is still expected to have a positive effect on earnings since older individuals usually have more work experience than younger individuals.

To account for school enrollment (ENROLL), gender (FEM), and marriage (MARRIED) dummy variables were created. Refer to Table 1 for more information about how these variables were assigned. Being female or being enrolled in school is expected to have negative effects on earnings. The effect of MARRIED on earnings is ambiguous as discussed in section II.

#### B. Occupational Variables in the NLSY

The purpose of including the four dummy variables describing an individual's occupation is to control for any differences in earnings between them. These occupations were chosen because previous literature indicates that they may be overrepresented in labor and craft occupations and underrepresented in occupations such as managerial and professional. This means that the omitted variable includes all other occupations (armed forces, farmers, service, clerical, operatives, and sales). Included is a dummy to indicate if the respondent is in a non-farm labor occupation, LABORERS. CRAFT includes employees in precision production, craft or repair jobs; PROFESS includes employees in professional, technical, or kindred occupations; and MAN includes employees in managerial, official, or proprietor occupations. It is expected that CRAFT, PROFESS, and MAN will all have a positive effect on earnings because they are high skilled occupations. LABORERS will have a

**TABLE 1**  
Definitions of Variables

Variable	Definition	Expected Sign
EARN	Total income from wages, salary, commissions, or tips in past calendar year (1997), dependent variable	N/A
CON	Dummy Variable to indicate the contingency of the respondent; 0=noncontingent (regular employee), 1=contingent (temporary, consulting, contracting, other)	-
HRSWRKD	Number of hours worked	+
AGE	Age of respondent at interview date (1998)	+
EDUCATION	Highest grade completed by the respondent as of May 1 of survey year (1998)	+
ENROLL	Dummy Variable to indicate if respondent is enrolled in school; 0=not enrolled, 1=enrolled	-
FEM	Dummy Variable to indicate gender of respondent; 0=male, 1=female	-
MARRIED	Dummy Variable to indicate marital status of respondent; 0=not married, 1=married	?
LABORERS	Dummy Variable to indicate if respondent's job is a labor occupation; 0=other occupation, 1=labor occupation	-
CRAFT	Dummy Variable to indicate if respondent's job is in precision production, craft or repair; 0=other occupation, 1=craft occupation	+
PROFESS	Dummy Variable to indicate if respondent's job is professional, technical, or kindred; 0=other occupation, 1=professional occupation	+
MAN	Dummy Variable to indicate if respondent's job is a manager, official, or proprietor; 0=other occupation, 1=managerial occupation	+
TRAIN	Dummy Variable to indicate if employer made training or educational opportunities available; 0=no, 1=yes	+

negative effect on earnings because it includes less skilled work.

**C. Human Capital Variables in the NLSY**

The final categories of variables are those that represent investments in human capital. EDUCATION measures the respondent's years of education. It is hypothesized to be positively related to earnings.

TRAIN represents if the respondent's employer made training or educational opportunities available. It would be beneficial to have a training variable that could identify general versus specific training. Within the NLSY, some questions were asked about informal training; however the results of these variables proved insignificant. TRAIN is the best available variable to measure training. According to

human capital theory, TRAIN should be positively related to earnings.

Next, the data are analyzed by using descriptive statistics to determine if the results are similar to those found by previous researchers. The results of the descriptive statistics are presented in Table 2, which includes the variables discussed above, and it compares mean values for each variable by contingent and noncontingent workers.

The first and most important result is the difference between earnings (EARN) for contingent and noncontingent workers, which is comparable to past research. Contingents earn \$6,421.90 less than noncontingents in a year. Earnings will be the dependent variable in the multiple regression analysis that follows. As expected contingents work fewer hours,

have less education, and are less likely to be married. However these differences are not large. There are minor differences within occupations. The results in Table 2 indicate that 16.8% of contingents are in professional occupations compared to 20.2% of noncontingents. There is also a higher percentage of contingents in labor occupations. The most striking difference shown in Table 2 is that contingents are much less likely to receive training than noncontingents. This variable may explain why the wage gap is so large and will become an important part of the explanation of the contingent/noncontingent wage gap in the multiple regression analysis.

**IV. Empirical Model**

In this section I analyze the data using ordinary least squares (OLS) multiple regression with annual income from wages and salaries as the dependent variable. The focus of the analysis will be on the contingent/noncontingent wage gap as measured by  $\beta_1$ , which is the coefficient of the dummy variable indicating contingency (CON). It is expected that as more independent variables are added to the model, the magnitude of the coefficient for CON will decrease.

Using regression analysis it is possible to determine if contingent workers receive lower pay after controlling for worker specific variables. The first model is simple in order to determine the magnitude of the contingent/noncontingent wage gap before controlling for the other independent variables:

$$(1) \text{ EARN} = \beta + \beta_1 \text{CON}$$

Next, Model 2 adds a number of worker specific variables except for the occupation variables and TRAIN. Model 2 is formulated as:

$$(2) \text{ EARN} = \beta + \beta_1 \text{CON} + \beta_2 \text{HRSWRKD} + \beta_3 \text{AGE} + \beta_4 \text{EDUCATION} + \beta_5 \text{ENROLL} + \beta_6 \text{FEM} + \beta_7 \text{MARRIED}$$

As discussed in the previous section occupational choices affect income. Model 3 adds occupation variables (LABORERS, CRAFT, PROFESS, MAN) to the previous model:

$$(3) \text{ EARN} = \beta + \beta_1 \text{CON} + \beta_2 \text{HRSWRKD} + \beta_3 \text{AGE} + \beta_4 \text{EDUCATION} + \beta_5 \text{ENROLL} + \beta_6 \text{FEM} + \beta_7 \text{MARRIED} + \beta_8 \text{LABORERS} + \beta_9 \text{CRAFT} + \beta_{10} \text{PROFESS} + \beta_{11} \text{MAN}$$

Finally Model 4 adds a dummy variable for training opportunities to Model 3. This variable has been largely ignored in previous research even though contingent workers receive less of it, as shown by the descriptive statistics in Section III. It is expected that including TRAIN will decrease the magnitude of the coefficient of the contingency variable  $\beta_1$ . The final model is:

**TABLE 2**

Variable Means for Contingent and Noncontingent Workers		
Variable	Contingent	Noncontingent
EARN (dependent variable)	\$22,704.63	\$29,126.53
HRSWRKD	1,673.68	1,993.27
AGE	36.95	36.81
EDUCATION	12.96	13.22
ENROLL	5%	4.05%
FEM	43.17%	49.67%
MARRIED	49%	57.27%
LABORERS	11.33%	5.07%
CRAFT	11.83%	10.71%
MAN	15.50%	14.17%
PROFESS	16.83%	20.21%
TRAIN (on the job training)	25.41%	53.46%

Source: National Longitudinal Survey of Youth, 1998.

$$(4) \quad EARN = \beta + \beta_1 CON + \beta_2 HRSWRKD + \beta_3 AGE + \beta_4 EDUCATION + \beta_5 ENROLL + \beta_6 FEM + \beta_7 MARRIED + \beta_8 LABORERS + \beta_9 CRAFT + \beta_{10} PROFESS + \beta_{11} MAN + \beta_{12} TRAIN$$

As each set of variables is added, the effect on the coefficient of CON is expected to decrease.

## V. Results

The first regression includes only CON in order to determine if a wage gap exists between contingent and noncontingent workers. The contingent variable is highly significant. I hypothesized that this variable would have a negative effect on income and the results show that it does. A contingent worker will receive about \$6,422 less income than a noncontingent worker, but this gap does not take into account differences in individual characteristics between contingent and noncontingent workers. Regressions #2 through #4 attempt to address this by adding additional independent variables to regression #1.

In Regression #2 six variables are added to the first equation (see Table 3). When these variables are added, the coefficient to CON decreases in magnitude by more than 50% (\$6,421.90 to 3,022.79). Although contingency still has an effect on earnings, it is not nearly as large after controlling for HRSWRKD, AGE, EDUCATION, ENROLL, FEM, AND MARRIED. It appears that controlling for these differences in individual characteristics reduces the magnitude of the estimated gap between contingent and noncontingent workers.

As predicted, if an individual works more hours, is older, or has completed more schooling, this individual will receive higher earnings. All of these variables (HRSWRKD, AGE, and EDUCATION) are significant to the .001 level. As predicted, being enrolled in school significantly reduces earnings. The results indicate that an individual that is enrolled receives \$6,724.80 less than someone who is not. There is also a significant negative effect on earnings of being female of \$11,054.59. This was expected considering past research. Married people earn \$5,274.59 more than unmarried people. If traditional family expectations are true, then this result is understandable. Married individuals are more likely to have permanent jobs that receive good pay in order to support their families. All of these variables have very

significant effects on earnings and together they decrease the magnitude of contingency by over \$3,000.

Regression #3 includes the same variables as in Regression #2, as well as variables to control for occupation. Surprisingly, it is found that occupation does not have an effect on the earnings of contingent workers. As shown in the descriptive statistics, the percentage of contingents in the stated occupations was very similar to the percentage of noncontingents. Occupation is very significant when explaining earnings. However the inclusion of the four occupation dummy variables do not have much of an impact on the contingent/noncontingent wage gap as reflected by the coefficient to CON.

Finally, Regression #4 includes TRAIN to control for the effect of training on the magnitude of the coefficient of CON. When this variable is added the sample size decreases from 7045 to 6254 because a number of respondents did not reply to this question. Training is significant and has a positive effect on earnings as predicted in the previous sections. Interestingly, CON now has a negative coefficient of \$373.75 and is insignificant. This suggests that an important reason that contingents earn less is because they have less training.

## VI. Conclusion and Implications

In this research, I find that the contingent/noncontingent wage gap is due to differences in human capital and demographic variables, and training. The most important finding is that contingents receive much less training than noncontingents, as shown from the descriptive statistics. The regression analysis suggests that training differences explain about half of the earnings gap. Past research did not consider the effect of training on this gap. The other half of the gap is explained from other human capital and demographic variables.

It is interesting to reflect on the possible implications that the contingent/noncontingent training differential might have on the future efficiency of the workforce. Estimates indicate that the contingent workforce is rapidly increasing. As a result, employers are less likely to invest in these workers. It could be a major concern that the workforce as a whole is going to receive less training. If training raises the skill level of the workforce and improves productivity among the workforce, the productivity of the workforce will decrease overall with the rise of the contingent workforce.

**TABLE 3**  
Regression Results (Dependent Variable = EARN)

Variable	Regression #1	Regression #2	Regression #3	Regression #4
CON	-6,421.902*** (-5.475)	-3,022.794** (-3.063)	-3,239.081*** (-3.338)	-373.752 (-.285)
HRSWRKD		8.427*** (28.992)	7.713*** (26.751)	7.196*** (22.552)
AGE		394.743*** (3.369)	363.919** (3.167)	454.622*** (3.809)
EDUCATION		3,488.710*** (31.482)	2,907.167*** (23.429)	2,903.145*** (21.988)
ENROLL		-6,724.804*** (-5.098)	-6,767.042*** (-5.230)	-6,534.731*** (-4.822)
FEM		-11,054.809*** (-20.237)	-11,112.765*** (-19.570)	-10,786.415*** (-18.417)
MARRIED		5,274.590*** (9.812)	4,529.477*** (8.554)	4,628.642*** (8.397)
LABORERS			-5,049.531*** (-4.172)	-4,008.688** (-3.067)
CRAFT			3,096.970*** (3.394)	3,757.606*** (3.985)
MAN			12,515.781*** (15.552)	12,810.241*** (15.388)
PROFESS			5,430.459*** (7.105)	4817.329*** (6.053)
TRAIN				5,582.922*** (9.751)
Adjusted R <sup>2</sup>	.004	.306	.333	.349
Sample Size	7051	7050	7045	6254

NOTES: *t*-statistics in parentheses. \*\* significant at the .01 level. \*\*\* significant at the .001 level.

Now with the information from this research, it seems that more effective policies could begin to decrease the contingent/noncontingent wage gap. The demographic differences that account for a portion of the gap cannot be changed. However, if these differences are caused by gender discrimination, actions to reduce that discrimination will help. Sheri Caudron (1997) suggests some policies to help contingents, such as ending pay discrimination based on work arrangement, part-time, full-time status, or job title; and indexing the minimum wage so that it rises automatically with inflation or average wage growth. These suggestions could help with any pay gap caused by discrimination. However, the half of the wage gap that is caused by training differences is not addressed

by these policies.

The results suggest that employers are not willing to pay for the training costs of very many contingents. To make the contingents more productive it is going to be necessary for the employer to pay for the costs of training or for the worker to pay for them. If policy makers determine that it is desirable to have a more productive workforce, it may be necessary for the government to subsidize the training of contingent workers either by providing part of the training or by giving subsidies to employers to provide it.

Future research should determine why people are choosing contingent jobs. Are contingent jobs created to cut costs or provide flexibility? Workers may be choosing contingent work arrangements to

increase their work flexibility; however workers must understand that there is an opportunity cost for being contingent. This paper has shown that the opportunity cost of being contingent is a decrease in training.

Other research shows that besides earnings, benefits that contingent workers receive are less than for noncontingents. Some recent statistics show that only one-third of contingent workers are eligible for employer-provided health care, while three-fourths of noncontingent workers are eligible for employer provided health care (Hipple, 1996). It seems that a substantial inequity in benefits between contingent and noncontingent workers exists. These differences in benefits should be further researched in the future.

The impact that the growing number of contingent workers could have on the entire workforce is major. To effectively integrate these workers into the workforce, policymakers need to consider ways of increasing the amount of training that they receive. More focus should be placed on the impact of training on the earnings of contingents.

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