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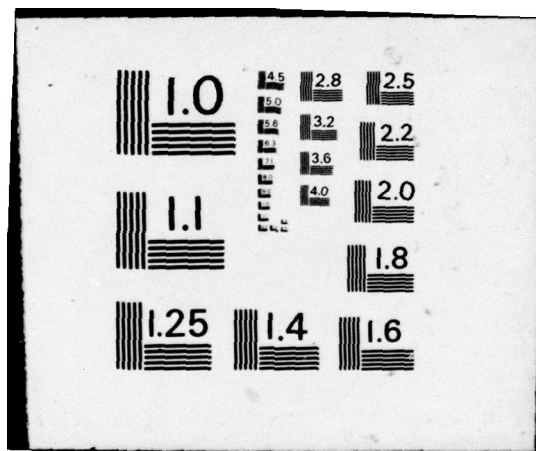
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Graduate School of Arts and Sciences



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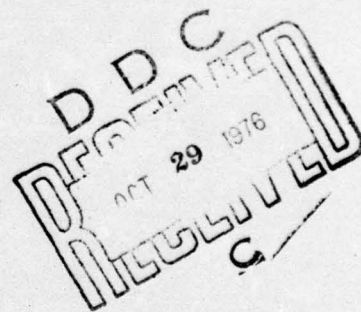
by

Charles T. Stewart, Jr.

**Serial TR-1281
June 1976**

**The George Washington University
Graduate School of Arts and Sciences
Econometric Research on Navy Manpower Problems**

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Econometric Research on Navy Manpower Problems

Abstract
of
Serial TR-1281
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JOBS, OCCUPATIONS, CAREERS

by

Charles T. Stewart, Jr.

Enlistees who are job-seekers are primarily attracted by pay and are unlikely to reenlist. The occupation-oriented are attracted by training opportunities, are less influenced by pay or deterred by long enlistments. The career-minded are concerned with training, but also with promotion. The reward-structure of the Navy should recognize differences in motivation and therefore in the effectiveness of alternative incentives.

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THE GEORGE WASHINGTON UNIVERSITY
Graduate School of Arts and Sciences
Econometric Research on Navy Manpower Problems

JOBS, OCCUPATIONS, CAREERS^{*}

by

Charles T. Stewart, Jr.

0. Introduction

This report examines the civilian labor market behavior of young males in the same age-group as first-term enlistees. The objective is a better understanding of the low reenlistment rate in the Navy, in order to indicate what kinds of policies may prove effective in raising enlistment and reenlistment rates. As a result of studying the literature and data on labor market behavior of young males, a classification of enlistees into job-takers, occupation-seekers, and career-choosers is presented. These different motives differentiate enlistees in terms of effective enlistment and reenlistment incentives. Employment in the Navy is constrained by a four-year enlistment period, whereas jobs in the civilian economy are not. As a result, labor mobility behavior in the Navy and among the same age-group in the civilian labor market is very different. This difference may be the major deterrent to enlistment and an important explanation of low reenlistment rates.

A Navy job is chosen at age 18-20, is typically a 4-year commitment; failure to stay the term is presumably not a matter of choice, but

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is, in fact, failure. On the contrary, civilian job change is predominantly voluntary, at times of the employee's own choosing.

Since individuals of the same age as enlistees typically have some job turnover, change in occupation, withdrawal from the labor force, and unemployment during the 3-4 years corresponding to the first enlistment, it is reasonable to expect that enlistees have similar propensities for learning, experimentation, turnover. However, their opportunities for turnover before expiration of their enlistment term are much more limited than in the civilian labor market. It is conceivable that the low rate of reenlistment represents the cumulative frustrated turnover over a 3-4 year period. If this hypothesis is even approximately correct, then it is not reasonable to expect any large rise in reenlistment rates as a result of modest manipulation of Navy policy variables.

1. Civilian Labor Market Behavior of Young Males

The reason to study the labor market behavior of young males is that they have a much wider range of choices in the civilian labor market than they would have after committing themselves to a four-year enlistment in the Navy. The basic assumption is that young males who volunteer in the Navy are pretty much like those who do not so far as labor market behavior propensity is concerned. The further assumption, that civilian labor market behavior of young males is an unconstrained expression of their preferences, must be qualified. Some unemployment is involuntary; some nonparticipation in the labor force is disguised unemployment; so is some part-time employment.

Although recent data are usually preferable to earlier data, such is not the case when recent experience is characterized by abnormally high unemployment, and when the behavior of young males therefore is more constrained, less an expression of their preferences unqualified by circumstances, than it would be in the early 1970's when more normal economic conditions prevailed.

The civilian labor market behavior of young males not enrolled in school is quite different from that of older adults. Since this difference

is in large part voluntary, it sheds light on the preferences of the age-group including nearly all first term enlistees, which should be considered in devising enlistment and reenlistment policies for the Navy.

A significant proportion of young males not in school are also not in the labor force: 13 percent of the 18-19 year olds in 1970¹ (and a larger, although unknown percentage, in the course of the year). Those in the labor force experience a very high unemployment rate: 28 percent of 18 and 19 year olds experienced some unemployment in 1970. Of those who were employed, one-third were working only part time.

For information on job tenure and its correlates, it is necessary to refer to Career Thresholds, a survey of some 16,000 males age 14-24 first conducted in late 1966 and repeated twice at one-year intervals, in 1967 and 1968.² Most of those employed in late 1966 who were not enrolled in school had held their jobs less than one year, as indicated below:³

| <u>Whites</u> <u>Age 18-19</u> | <u>Non-Whites</u> <u>Age 18-19</u> | <u>Whites</u> <u>Age 20-21</u> | <u>Non-Whites</u> <u>Age 20-21</u> |
|-----------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|
| 63% | 62% | 49% | 60% |

Many of them had not been in the labor market for long, and this may have been their first job while not enrolled in school. Nevertheless, job changes were frequent. Fifty-three percent of workers under 21, and thirty-two percent of workers age 21-25, changed jobs between the 1966 and 1967 surveys. (These figures are for whites; for blacks they are 66 and 38 percent, respectively.) Fifty-seven percent of the job changers under 21, and 44 percent of changers 21-25, had held their previous job less than one year. (The corresponding figures for blacks were 66 and 38 percent.)⁴

The key finding is that most of these job changes are voluntary. Most job changers are voluntary job leavers, as tabulated below for the first job after leaving school.⁵

| <u>White Collar Whites</u> | <u>Blue Collar Whites</u> | <u>White Collar Blacks</u> | <u>Blue Collar Blacks</u> |
|--------------------------------|-------------------------------|--------------------------------|-------------------------------|
| 87% | 73% | 72% | 71% |

Although there are differences in proportion of voluntary job-leavers by race, by educational attainment, and between white and blue collar workers, they are neither large nor systematic. Nonparticipation in the labor force between the 1966 and 1967 surveys for 21-25 year olds not enrolled in school also proved largely voluntary. The main reason given by whites was vacation. For blacks, however, the main reason was illness or disability.⁶

Occupational mobility among young workers is also very high. Eighty-one percent of employed 20-24 year olds not enrolled in school surveyed in late 1966 were working in an occupation different from that they held a year earlier. (For blacks, it was eighty-seven percent.) Sixty-one percent of the whites and sixty-eight percent of the blacks were working in a different one-digit occupational code job.⁷

This labor market experience of young males not in school is characterized then by an uncertain attachment to the labor force, ignorance of own preferences, prospects, and labor market opportunities, and a process of job and occupational experimentation, trial and error, learning. These characteristics of instability and high turnover apply irrespective of race, occupation, or educational attainment. Differences by these criteria exist, but are insignificant. With age, all these characteristics diminish.

Except for age, just one characteristic appears important in explaining the labor force behavior of young males: presence or absence of dependents. Standardizing for age and education, there is a sharp difference between married and single out of school males in labor force participation, unemployment, part-time employment (see Table 1) and particularly in turnover. The married white male holds his first job after leaving full-time schooling (for more than 16 months), 30 months longer than his single counterpart. The married non-white male holds his first job a full three years longer than his single counterpart.⁸ Whether

TABLE 1

Labor Market Behavior by Marital Status and Age

| Age | Labor Force Participation | | Unemployment Rate | | Full Time Worker | | Median Hours Worked Per Week | |
|-----|---------------------------|--------|----------------------|-------|------------------|----------------------|------------------------------|----------------------|
| | Total | Single | Married ¹ | Total | Single | Married ¹ | Single | Married ¹ |
| 16 | 29.7 | | | 13.9 | | | | |
| 17 | 43.2 | | | 11.4 | | | 20.6 | 40.4 |
| 18 | 56.4 | 46.0 | 86.4 | 10.2 | 11.3 | 6.7 | | |
| 19 | 64.4 | | | 9.7 | | | 34.0 | 40.7 |
| 20 | 71.4 | | | 8.7 | | | | |
| 21 | 75.8 | 66.9 | 92.5 | 8.1 | 9.8 | 5.1 | 40.1 | 40.7 |
| 22 | 82.6 | | | 6.9 | | | | |
| 23 | 87.2 | 77.0 | 94.4 | 5.7 | 8.6 | 3.6 | 40.4 | 40.7 |
| 24 | 89.0 | | | 4.8 | | | | |

Sources of the Data

- i) Labor force participation rate: 1970 Census of Population Subject Reports, Vol. 6A "Employment Status and Work Experience", Bureau of Census in April, 1973, Tables 2 and 3.
- ii) Unemployment Rates: *Ibid.*, Tables 1 and 3.
- iii) Proportion of Full-Time worker: *Ibid.*, Table 17.
- iv) Median Hours Worked Per Week: *Ibid.*, Table 17.

¹ All the figures for the 'married' were calculated from the 'married, spouse present' sample, which was 94.9 percent of all presently married and 87.4 percent of all who had once been or were married in 1970.

marriage is the cause, creating a need for income, or whether those willing to marry at this age are different in propensity to work and retain a job longer than those who remain single, the data cannot tell us.

2. Naval vs. Civilian Employment

The following attributes of military employment differentiate it from civilian employment:

1. Contractual commitment is typically for 4 years vs. 30 days' notice in most civilian employment for the age-group enlisting or making the first reenlistment decision.

2. Geographical mobility is not entirely, if at all, at the discretion of the enlistees; in civilian life, location of employment is typically given, almost never subject to compulsory change, since employees can quit, and turnover is costly to the employer.

3. Job mobility is not entirely, if at all, at the discretion of the enlistee; in civilian life, job change is optional since continued employment is optional, and since turnover is costly to the employer.

4. Occupational change, like job change, is not mainly at the discretion of the enlistee.

Possibly the differences listed under Nos. 2-4 can be comprehended implicitly under No. 1, for if the enlistee could leave at a time of his choosing, there would be little involuntary change in location, job, or occupation. The core difference is a loss of free choice. This is one of the dimensions of occupational status stressed by Temme⁹ in a somewhat different context. Temme speaks of work self-determination or autonomy, whereas the military enlistee is to be distinguished from his civilian counterpart in terms of lack of job and occupational self-determination, rather than work self-determination.

5. The enlistee is on call 24 hours a day, 7 days a week. This is true of some civilian occupations: health and protective services, but certainly not typical. This loss of freedom is in large part

potential, not actual, since few enlistees are called frequently in off-duty hours and days. It may be regarded as a lack of autonomy or self-determination in leisure, rather than in work.

These drawbacks of military employment are countered in part by some advantages:

6. Military compensation includes insurance against involuntary unemployment, and against medical expenses, rarely met in civilian life. There is a gain in security to compensate for a loss in autonomy. However, the age-group of first-term enlistees does not rank security high among its values.

7. There are deferred compensations and rights, especially retirement pay and post-service education and training benefits, instantly vested, vastly superior to their civilian counterparts. Whereas retirement pay requires a minimum of 20 years of service, educational and training benefits are maximally available with a single term of enlistment. These deferred benefits are also a contribution to security.

3. Jobs, Occupations, Careers

The difficulty of designing an enlistment decision model derives from the fact that enlistees differ in their objectives, some searching for a career in the service, others taking a job, yet others making a training decision which is related to occupational choice, but not necessarily to a service career.

A job is a task-set, in a given occupation, for a given employer.

An occupation is a job-set, which may or may not incorporate a vertical hierarchy. It is possible, indeed usual, to change jobs and employers without changing occupation.

A career is a less clear-cut concept. Alternative definitions include:

1. A lifetime work history, which consists of a series of jobs, without regard to occupational situs or employer.

2. A set of related, substitutable occupations, typically with some hierarchical relation. Implicit in this definition is correlation between individual work histories and career occupation-set for individuals entering one of the related careers early in their working lives.

3. The lengthy work history of an individual for a single employer, irrespective of the jobs and occupations he may have held. This is a less common definition, which however is most appropriate for military service.

Civilian careers (No. 1) involve limited change of occupations after age of 25 or so, but continued change of jobs and employers, although at a declining rate. Thus career and occupation tend to converge for most workers.

Naval careers (No. 3), by contrast, involve no change of employer, but frequent change of jobs, some change of occupations. The typical long-term enlistee will have undergone more than one type of training, worked at more than one not closely related occupation. Some of the skills acquired therefore are specific to the employer (the Navy) rather than to the job or occupation the individual may be engaged in at a particular time.

A Navy career is analogous to a long stay with a single employer, since it may entail job reassignment, and occupational changes. Career may be characterized either in terms of investment or in terms of lack of skill substitutability: a civilian career is compatible with numerous changes of employer, but with only limited occupational change. The reverse is true of a Navy career. No investment is required for a career in the Navy, but possibly a large one in civilian life. A Navy career (multiple enlistments) may be characterized by lack of skill substitutability; this is rare: there are civilian equivalents; also there are occupational changes in an individual's Navy life. Another definition is simply in terms of opportunity costs: larger rewards in the Navy than in civilian life for doing the same sort of thing. Further related considerations distinguishing the Navy from civilian careers are its shorter duration -- typically 20 years -- and the terminal value

of a Navy career: retirement pay, post-service benefits of various kinds.

For many enlistees the decision to enlist is none of these -- not a career choice certainly, not an occupational decision, not even a job choice. It is simply a decision to invest in training, for which the trainee pays neither in tuition nor in foregone income while he trains. He pays in kind: a four-year enlistment term, most of which will be spent on activities other than the training for which he enlists; some time will be spent, however, in training-related jobs. The cost to the enlistee is that of other options foregone during the enlistment term (a highly subjective expectation), and the discipline of military life, again something not readily quantifiable. The civilian alternative is not the occupation in which the enlistee becomes engaged in the Navy, but a combination of civilian training costs and prospects for ensuing employment income. For enlistees with less than a high school education, access to training in civilian life may not be assured by any means. Therefore part of the value of enlistment is the training option itself. (Or conversely, the opportunity cost of civilian alternatives must be deflated by the probability of access to them.)

On the other hand, the enlistment decision may be an occupational as well as a job choice. For those whose necessary if not sufficient reason for enlisting is training in skills with some civilian counterpart, it is an occupational choice, with career paths (whether in the military or in civilian life) either open, or already constrained to the civilian alternatives.

If enlistment is a career or occupational choice, initial pay is of limited importance. If it is a job choice, initial pay is quite important (except during periods of high unemployment in the relevant age group). If it is a career or occupational choice, it is opportunities for advancement in pay and skill and work content that matter. It follows that it may take more pay to attract those who are job-oriented, and there is less prospect of their reenlisting. On the other hand, pay increases and promotion are important for reenlistment of those who are occupation and career-oriented. The hypothesis is that reenlistment rates either

are not sensitive to starting pay, or are inversely related, inasmuch as higher starting pay attracts a higher proportion of those who are job rather than occupation or career-oriented.

4. Enlistee Motivation and Incentives for Enlistment and Reenlistment

It is not possible to distinguish on a mass basis between the career-oriented, the occupation seekers, and the job choosers. Nor is it necessary. It is enough to know that there are major differences in motivation among enlistees in order to realize that particular policies have quite different effects. Therefore any one policy inadvertently selects in, and selects out, a certain type of enlistee. A policy mix may be designed to be particularly attractive to a specific group of enlistees, defined in terms of the incentives and disincentives to which they are responsive.

It is likely that most first-term enlistees are initially job-takers. This is true of most males in their age group. It is also true that most of these job-takers will undergo in the following four years a gradual process of occupational if not career choice. Possibly by the end of the first term, not many will be purely job seekers. Policies designed to increase the number of reenlistments will have to give much more weight to the concerns of occupation seekers and career-choosers than policies aimed at first enlistments only.

For enlistees whose main motivation in enlisting is a job, pay is the main incentive. The length of the first enlistment is the main disincentive. By definition, training for a skilled occupation is not a major motivation. A cost-effective policy to maximize the number of such enlistees would offer high pay, short enlistment periods, and limited training at best. It would offer no post-service benefits. The probability that a job-oriented enlistee, if he remains job-oriented, will reenlist is very low. Therefore job mobility, in a short enlistment period, may not prove cost-effective, even though it would raise reenlistment rates. On the other hand, since many such enlistees will become concerned with occupational skills and a career during their

first enlistment term, they should have the option to transfer to another "track," if qualified; to obtain skill training in return for a longer enlistment period.

For enlistees whose main interest is in acquiring a valuable skill, by contrast with the job-takers, the main incentive is assured access to skill training and experience. High starting pay is not important, and a long enlistment period (four years) is not as serious a deterrent as it is for the job-taker. In fact a good part of this period will be spent in acquiring skills and in obtaining some experience in the skills for which the enlistee was trained. Some such enlistees know exactly what they want, and their enlistment decision is contingent on assurance that they will obtain the skill training they desire. Others are engaged in the process of occupational choice. For them, mobility within the Navy, affording them the opportunity to learn by experience about different kinds of occupations and jobs, will increase their propensity to enlist, and to reenlist. But they will prefer training and occupational experience with close civilian counterparts. Since acquisition of occupational skills and experience will increase their job options and earning power in the civilian economy, their earnings prospects during a second term will be a major consideration. Post-service educational training benefits earned during their first term will be a strong inducement not to reenlist.

It is expected that job and occupational mobility within the first term of enlistment will increase reenlistment. The reasoning is twofold: first, simulation of preferred behavior as evidenced by civilian labor market behavior of the same age-group will reduce dissatisfaction with a lengthy term of enlistment; second, with regard to occupational changes in particular, it is expected that the enlistee will be more content with the second occupation than with the first. This expectation in turn may be based on two assumptions: that the enlistee has some say in the decision to change occupations, and that decision-makers take into account the enlistee's talents and interests in making occupational changes.

It was possible to test this hypothesis with regard to occupational change within the first term, for four-year enlistees entering

the Navy in 1968. Information was available on the number of NECs for each enlistee. Enlistees with two or more NECs had a reenlistment probability of 0.31, whereas, those with one or less had a reenlistment probability of 0.21. By this crude measure of occupational mobility in the Navy, those who change occupations have a 50 percent greater probability of reenlistment than those who do not.

The career-oriented are those who have already settled on an occupation, or who are not concerned about it. They take a long view, being concerned with the longer-term prospects in the Navy and vis-a-vis civilian life. For career-choosers, rank and promotion opportunities are the major consideration. Initial pay is of secondary importance, and long enlistment terms are not a serious deterrent. Post-service benefits available immediately after the first term are not a strong attraction. Training opportunities are relevant in terms of promotion and a career rather than as steps toward occupational choice, and skills with close civilian alternatives are of less importance than for the occupation-seeker. Whereas the first enlistment is commonly a job choice, reenlistment is typically a career choice. This follows from the fact that typically it implies a minimum of eight years service in the Navy, and from the fact that a very high proportion of second-term enlistees reenlist for additional terms.

It was also possible to test the hypothesis that rank is important apart from pay as a factor in reenlistment decisions. Although limitations preclude arriving at a numerical value, it is clear that attainment of rank E-5 is an important factor in reenlistment after allowing for pay. Attainment of rank E-4, on the other hand, appears to have little or no effect on reenlistment rates.¹⁰ E-4 is the typical rank for enlistees completing their first term, whereas E-5 represents an above-average attainment.

The importance of occupational, and possibly career, choice in reenlistment is reflected not just in rank attainment, but in occupational skills acquired. After allowing for the ratio of civilian to Navy pay by occupation, it was found that cost of training in the Navy (closely correlated with length of training) was the one highly

significant variable in explaining reenlistment rates across thirty selected occupations.¹¹ It is assumed that those who have undergone costly training are much more likely to have settled on an occupation than those whose training was brief and cheap. In this particular report, the ratio of civilian to Navy occupational compensation did not prove to be a significant variable in explaining reenlistment rates. A further test, using the presence or absence of VRB, was attempted. The reasoning was that VRB represents an expectation of a sizeable increase in pay during the second term, and a reduction in pay during a third term. The job-oriented enlistee would therefore reenlist for a second term, but would be less likely than non-VRB enlistees to reenlist for a third term. (Whereas cost of training indicates occupational characteristics, response to VRB indicates enlistee motivation.) Thus one would expect a positive relation between VRB and first reenlistment, but a negative relation between VRB and career reenlistment. This proved to be the case, although the first relation was not statistically significant, whereas the second was very significant.¹²

Finally, the review of findings of labor market behavior of young males sheds light on the high reenlistment rate of enlistees with dependents. The assumption that the dependent-related benefits are the main factor implies a concern primarily with the ratio of civilian to Navy pay, and this would be less favorable for those receiving dependent-related benefits in the Navy than for those not receiving such benefits. But the dominant role of relative pay in turn assumes that enlistees with dependents are primarily job-seekers in making a reenlistment decision. Although no study has distinguished between single and married young males out of school in terms of their occupational and career commitments, it is plausible to expect that married young males (enlistees among them) are more likely to have made an occupational if not a career choice than the single young males (including enlistees). A recent report concludes that dependent-related benefits are not a major factor in explaining the higher reenlistment rates among enlistees who have additional dependents.¹³ Like their civilian counterparts, enlistees with dependents are more security conscious, more work oriented, more willing to make long term commitments, less prone to quit, to take risks, and by

implication to leave the Navy, than single enlistees, quite apart from differential pay and benefits.

A final indirect test of the enlistee decision model is possible by examining the number of enlistments and of reenlistments over recent years. The main change in enlistment inducements has been large increases in Navy pay, in particular the increase of November 1971. Since training options attractive to occupation choosers have remained essentially unchanged, presumably the additional enlistees attracted by pay increases were primarily job-oriented, and therefore would be less likely to reenlist than other enlistees. Unfortunately for purposes of testing this hypothesis, there have been other important changes affecting reenlistment probabilities: the end of the draft, and the reduction in the probability of going to Viet Nam. Job-seekers might also be represented disproportionately among those enlisting in periods of high unemployment. In sum, fluctuations in number of enlistees are accounted for disproportionately by job-seekers who are much less likely to reenlist than enlistees choosing an occupation or deciding on a career. One would expect therefore that the number of reenlistments would vary less than the number of first enlistments four years earlier. Table 2 indicates that this expectation is borne out. The acid test however, will have to wait for data on reenlistments in 1975 and 1976, which will reflect the decisions of those who were induced to enlist by the large pay increase effective in November 1971, when neither Viet Nam nor draft pressure were any longer major factors in enlistment decisions. The only possible significant disturbing influence would be the high unemployment rates in 1975 and in 1976, which would encourage reenlistment.

TABLE 2

Navy Enlistments and First Reenlistments
FY 1960-1974

| | | <u>First-Term Reenlistments</u> |
|------|-----|---------------------------------|
| 1960 | 91 | |
| 1961 | 94 | |
| 1962 | 107 | |
| 1963 | 85 | |
| 1964 | 95 | 15.8 |
| 1965 | 94 | 15.9 |
| 1966 | 143 | 15.5 |
| 1967 | 101 | 15.1 |
| 1968 | 123 | 12.7 |
| 1969 | 147 | 12.5 |
| 1970 | 100 | 12.8 |
| 1971 | 79 | 13.3 |
| 1972 | 89 | 17.1 |
| 1973 | 126 | 17.9 |
| 1974 | 102 | 18.2 |

Source: Selected Manpower Statistics, Department of Defense for first enlistments; Navy, Bureau of Naval Personnel, for reenlistments.

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