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# Study of the Cost and Revenue Increase in Iran Health Insurance Organization

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**Abstract:** Health is one of the important preconditions for the welfare and social security system the lack of which can cause people to bear many financial pressures. Hence, it is not surprising that funding the public health is one of the main concerns of health policy makers. Health is a universal right that the constitution of the Islamic Republic of Iran has accepted it as one of the basic principles. New views of scientists regard human as Haman capital shows logical economic importance of health perhaps this is the main reason for the allocation of significant resources for health. Hence, the timely payment of expenses and adequate monitoring of the provided services (quantitative and qualitative) is important in improving the quality of medical services. About >90% of the Iranian people are under the coverage of at least one kind of health insurance. Investigating the sources of revenue and costs of Health Insurance Fund in 2004-2013 represent the source fluctuations and treatment uses in the community covered by the organization that make lack of timely payment of the costs of care to the medical centers having contracts with the organization and affects the service utility provided to the insured people. In this study, Sources and uses treatment of health insurance have investigated and have evaluated the relationship between the allocated resources and actual costs. The factors that are considered in this study are the bases for formulating of hypotheses are: resources (revenues), medical expenses, per capita approved and performance treatment with a breakdown of the funds.

**Key words:** Iran health insurance, cost, revenue, organization, cost

## INTRODUCTION

The importance of health insurance coverage can be considered from two viewpoints: protecting people against the costs of providing health and providing universal coverage of health services so that people have access to affordable and adequate health services. According to the principle 29 the constitution of the Islamic Republic of Iran, receiving social security and health care is a public right and its preparation from the public revenues and resources resulting from all of the citizen's participations has been undertaken by the government. Iran's way of financing health services can be categorized as mixed-financing; i.e., different types of health care financing are observed alongside each other. Before we discuss the challenges, we need to review the general financing of health care in the country. Since receiving social security and health care is a public right according to principle 29 of the constitution of the Islamic Republic of Iran and its preparation from the public revenues and resources resulting from all of the citizen's participations has been undertaken by the government it is important to study the ways to supply financial resources in this area and the ways the government acts about it is obvious that health is a basic right for all of the society; so in all the countries health is the most basic right for all of the people. Supplying an acceptable level of health in the society is the main prerequisite for the sustainable social-economic development. In addition, regardless of the political system governing any country, the most effective role of the government in providing health care expenses prevents the poverties resulting from incurring health care costs (Noreen, 1991) (Table 1).

Major types of financing health care in Iran include general revenue financing, social health care insurance and household out-of-pocket payments. There are other methods, especially private actuarial health care insurance, mainly involving secondary coverage for those already insured by social insurance. Private insurance market in Iran, though isstill small. Therefore, the most valuable way to protect people against the high cost of health services which are growing increasingly today more than ever isto create an insurance partnership between government, insurance organizations and public. The Article 91 of the fourth development program based on the necessity of the development of the public insurance the social security insurance is computed proportionally those are a few percents of the salaries,

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Table 1: Compares of health indicators and the delivery of services in selected countries

| Country | Population (Million) | Mortality rate of Children under one year (Thousand) | Life expectancy at the birth time (Years) | Urban population (%) | Health care | Health insurance |
|---|---|---|---|---|---|---|
| Indonesia | 217 | 33 | 66.6 | 42 | About 62% private services 1 center per 30,000 people | 13% of the population covered share treatment 6 percent wage for married and 3% for the singles. Payments to physicians on a per capita basis and payments to hospitals on fee basis |
| South Korea | 47 | 5 | 75.4 | 82.4 | About 85% of private beds, one-third of government costs | Health insurance is generally indirect, Franchise by 3% in outpatient services and inpatient services is 20%, method of payment is method fee |
| Germany | 82 | 4 | 78.2 | 87 | Includes public service and private sector, | Full insurance coverage and the number of funds to make the right choice |
| Japan | 127 | 3 | 81.6 | 65.3 | Patients can choose between the designated centers, pay part of the expenses | Insurance coverage is provided in different models |

Table 2: The population covered by health insurance in Iran (2013)

| Insurance fund | Number |
|---|---|
| Government employees | 6,123,636 |
| Other groups | 1,854,319 |
| Villagers | 23,173,107 |
| Iranian | 2,611,406 |
| Total | 33,762,468 |

wage is injected to the fund. The social security insurance covers about 90% of the population Aggregation of insurance in our Act (Fifth Development Program act and general policies of the health system) (Alexander and Langenbrunner, 2005).

Overview of insurance organizations performance in Iran indicates that they are faced with various problems such as increasing costs, the lack of comprehensiveness and adequacy of services, the lack of clear boundaries between basic and supplemental health insurance packages as well as, the problems in determining the scientific and fact-based tariffs. Therefore, one of the measures of organizational success and the rate of achieving organizational goals and objectives is the assessment of organizations performance indicators. Some experts believe that the analysis of performance indicators can be used in the technical development, political decisions and making policies for developing standards and improving quality of services. The results of studies conducted in Iran show that health insurance problems are one of the major challenges that exist in the health care system (Technical Report 16 and IInternatinal Social Security Association, 2008) (Table 2).

## MATERIALS AND METHODS

Given that the data used actual revenues and costs related to organization thus, the statistical population and sample of the annual balance sheet, financial statements and the actual performance of the Iranian health insurance. The study period is between 2004-2013 including resources and treatment costs of health insurance offices throughout the country based on the actual revenues and costs.

**Hypotheses:**

- There is a significant difference between government employees fund with the cost of the treatment
- There is a significant difference between villagers funds with the cost of treatment
- There is a significant difference Iranian fund (self-employed) with the cost of treatment
- There is a significant difference between the other group funds with the cost of treatment
- There is a significant difference between per approved of government employees Fund with per capita performance
- There is a significant difference between per capita approved of other groups fund with per-capita performance
- There is a significant difference between the per capita approved of villagers fund with per-capita performance
- There is a significant difference between per approved of Iranian fund with per-capita performance

**Statistical validity and reliability:** In this study, given that the information referred to documents, financial statements and balance sheet reports and control and monitoring of figures and reports are accurate thus, the validity of this study is confirmed. Statistical reliability is needed in order to ensure the validity and precision of the statistical analysis. The reliability is concerned by the fact that measurement tool the extent to identical results obtained under the same conditions, In other words, the

correlation between a set of numbers and another set of numbers in an equivalent test that can be achieved is dependent on the group of subjects.

**Data analysis:** After data collection, data were entered into the SPSS Statistical Software and outcomes were analyzed. in this study, data were analyzed using descriptive statistics and inferential statistics including parametric and nonparametric tests, For describing data used common methods included descriptive statistics (frequency tables, calculate statistics and graphs) and inferential statistics such as t-test, independent t-test, paired t and multi-way ANOVA.

## RESULTS AND DISCUSSION

**First hypothesis:** There is a significant difference between government employees fund with the cost of the treatment. The paired t-test was used to evaluate of first hypothesis. According to the results Table 3, t-value obtained from the research variables with degrees of freedom = 9 is equal 2.31 that was less than the critical value t with degree of freedom = 9 is significant at level 0.05 thus the null hypothesis is rejected and there is a According to the averages reported in Fig. 1 it can be seen that the average of cost is higher than the average of revenue and this factor makes a significant difference in the level of revenue and cost.

**The second hypothesis:** There is a significant difference between villager's revenue and cost with the cost of treatment. The paired t-test was used to evaluate of second hypothesis. Information contained in Table 4 for the second hypothesis is rejected or approved. Against the null hypothesis is as follows: According to the results Table 4, t-value obtained from the research variables with degrees of freedom = 9 is equal -1.71 that was less than the critical t-value with degree of freedom = 9 is significant at level 0.05 thus the null hypothesis is confirmed, thus there is no significant difference between revenue and cost of villagers fund. According to the averages reported in Fig. 2, it can be seen that the average of villagers cost is higher than the average of revenue and this factor makes a significant difference in the level of revenue and cost.

**The third hypothesis:** There is a significant difference Iranian fund (self-employed) with the cost of treatment. Paired t-test was used to evaluate of third hypothesis. According to the results Table 5, t-value obtained from the research variables with degrees of freedom = 9 is equal -2.37 that was less than the critical value t with degree of freedom = 9 is significant at level 0.05 thus the null hypothesis is rejected and there is a significant difference between cost and revenue of villagers fund (Fig. 3).

Table 3: The t-tests for responding to first hypothesis

| Variables | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Revenue and cost | 725415.60 | 991996.13 | 2.31 | 9 | 0.046 |

Table 4: The t-tests for responding to second hypothesis

| Variables | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Revenue and cost | -866002.70 | 1594732.23 | -1.71 | 9 | 0.12 |

Table 5: The t-tests for responding to third hypothesis

| Variables | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Revenue and cost | -1459531.90 | 194428.80 | -2.37 | 9 | 0.042 |

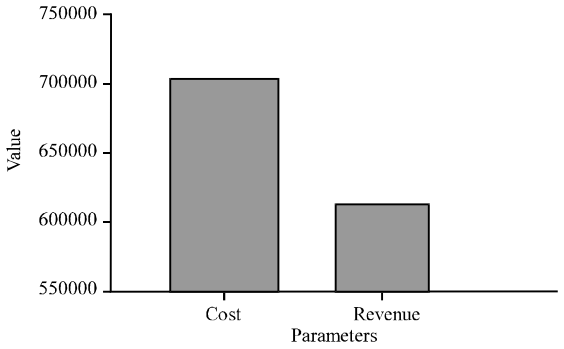


Fig. 1: The average of revenue and cost of government employee's fund

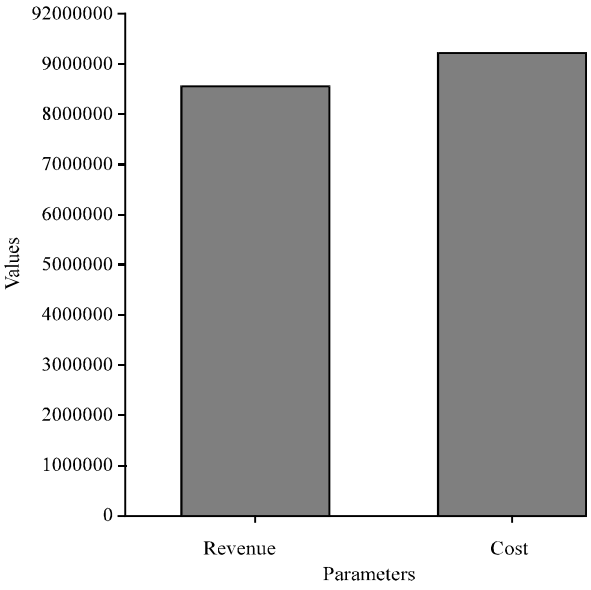


Fig. 2: The average of revenue and cost of villagers fund

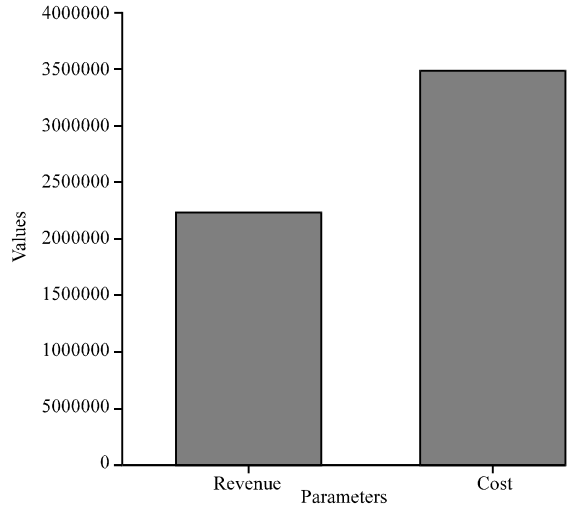


Fig. 3: Charts the average revenue and cost of Iranian fund

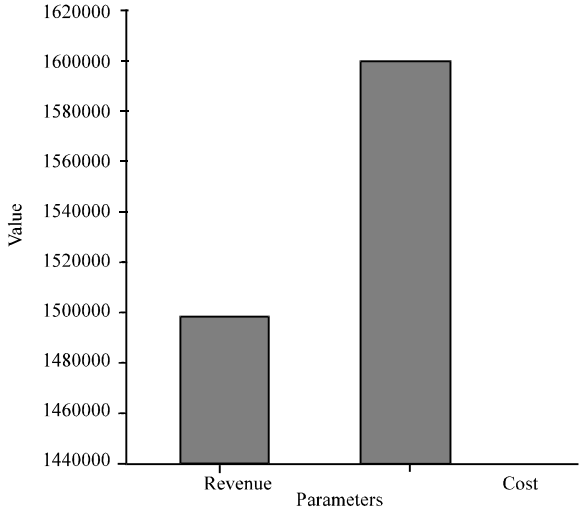


Fig. 4: Charts the average revenue and cost of other groups insurance

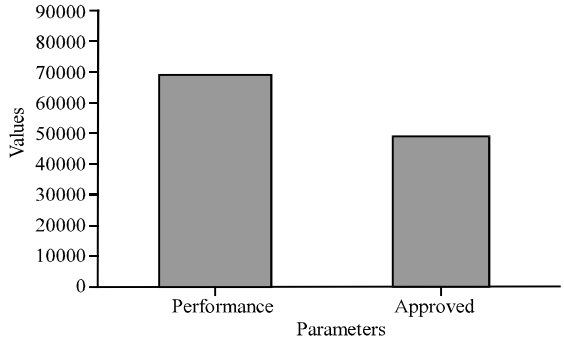


Fig. 5: The average per capita approved and Per capita Performance of government employees

Table 6: The t-tests for responding to fourth hypothesis

| Variables | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Revenue and cost | -20627.60 | 220556.45 | -0.29 | 9 | 0.77 |

Table 7: The t-tests for responding to fifth hypothesis

| Variables | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Per capita approved and performance | -24770.10 | 43392.65 | -1.8 | 9 | 0.10 |

Table 8: t-tests for responding to sixth hypothesis

| Variables | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Per capita approved and performance | 9024.76 | 72879.05 | 0.39 | 9 | 0.70 |

**The fourth hypothesis:** There is a significant difference between the other groups fund with the cost of treatment. The paired t-test was used to evaluate of fourth hypothesis: According to the results' Table 6, t-value obtained from the research variables with degrees of freedom = 9 is equal -0.29 that was less than the critical value t with degree of freedom = 9 is significant at level 0.05 thus the null hypothesis is confirmed thus, there is no significant difference between revenue and cost of other groups fund (Fig. 4).

**The fifth hypothesis:** There is a significant difference between per approved of government employees fund with per capita performance. The paired t-test was used to evaluate of fifth hypothesis: According to the results' Table 7, t-value obtained from the research variables with degrees of freedom = 9 is equal -1.80 that was less than the critical value t with degree of freedom = 9 is no significant at level 0.05 thus the null hypothesis is confirmed, thus there is no significant difference between per capita approved and per capita performance of government employees insurance (Fig. 5).

**The sixth hypothesis:** There is a significant difference between per capita approved of other groups fund with per-capita performance. The paired t-test was used to evaluate of sixth hypothesis: According to the results' Table 8, t-value obtained from the research variables with degrees of freedom = 9 is equal 0.39 that was less than the critical value t with degree of freedom = 9 is no significant at 0.05 confidence level, thus the null hypothesis is confirmed, thus there is no significant difference between per capita approved and per-capita performance (Fig. 6).

**The seventh hypothesis:** There is a significant difference between per approved of villagers fund with per capita performance. The paired t-test was used to evaluate of seventh hypothesis. According to the results' Table 9, t- value obtained from the research variables with degrees of freedom = 9 is equal 0.070 that was less than the critical

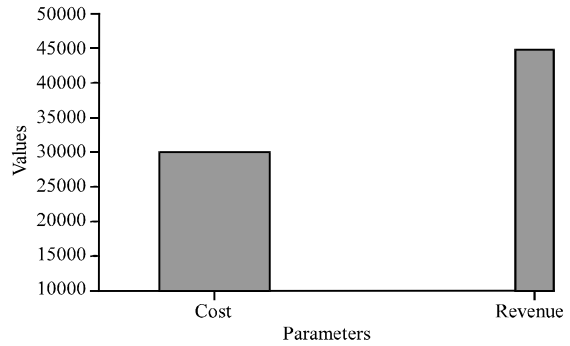


Fig. 6: The average per capita approved and Performance of other groups

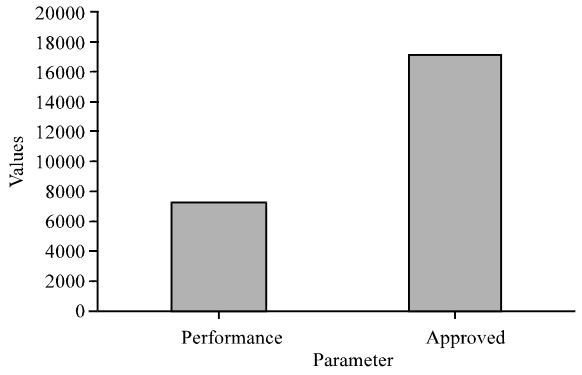


Fig. 7: The average Per capita approved and Performance of villagers

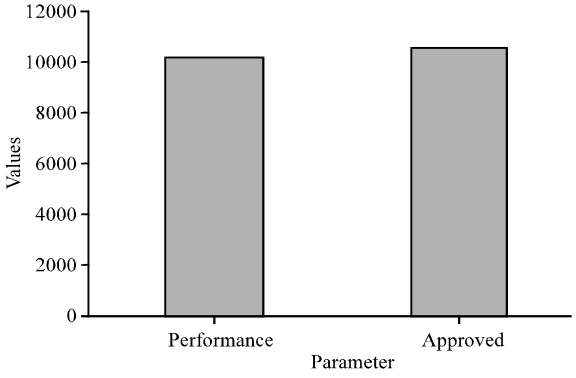


Fig. 8: The average Per capita approved and Per capita Performance of Iranian fund

value t with degree of freedom = 9 is no significant at 0.05 confidence level thus the null hypothesis is confirmed, there is no significant difference between per capita approved and per-capita performance of villagers fund (Fig. 6).

**The eighth hypothesis:** There is a significant difference between per capita approved of Iranian fund with per capita performance. The paired t-test was used to evaluate of eighth hypothesis: According to the results Table 10, t-value obtained in the research variables with degrees of freedom = 9 is equal 0.34 that was less than the critical value t with degree of freedom = 9 is no significant at 0.05 confidence level, thus the null hypothesis is confirmed, thus there is no significant difference between Per capita approved and Per capita Performance of Iranian Fund (Fig. 7). According to the information contained in Table 11 it is shown that per-capita approved and functional with degrees of freedom = 3 and F respectively, equal to (2.88, 3.54) is significant at the level 0.05 and this means that the difference between groups variance is significant. In order to compare the total of per-capita approved and the total of per capita performance was used t-test. The information contained in Table 12 to approve or reject the hypothesis: According to the results Table 12, t-value obtained from the research variables with degrees of freedom = 39 is equal -0.20 that was less than the critical value t with degree of freedom = 39 is no significant at level 0.05, thus the null hypothesis is confirmed, thus there is no significant difference between total of per capita approved with the total of per-capita performance (Fig. 8). According to the information provided from the above Table 13 can be stated that averages and standard deviations were reported and the scores can be stated that in all components except funds, in other sectors, there is a significant difference. Also on the table are the degree of freedom for groups is 9 and the total is 32. In fact, $H_4$ There is a significant difference between other groups revenue with cost. According to the information provided from the above Table 14 can be stated that averages and standard deviations were reported and the scores can be stated that in all components except Funds, in other sectors, there is a significant difference (Fig. 9-12). Also on the table are the degree of freedom for groups is 9 and the total is 32.

In fact $H_4$: There is a significant difference between approved capita with per-capita performance of self-employed. The data were analyzed by paired t-test with SPSS Software. The results of the paired t-test showed that there is a significant difference the sources with the cost of treatment at significance level 95% with

Table 9: The t-tests for responding to seventh hypothesis

| Variable | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Per capita approved and Performance | 10061.27 | 15508.88 | 2.05 | 9 | 0.070 |

Table 10: The t-tests for responding to eighth hypothesis

| Variable | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Per capita approved and Performance | 0.0030 | 0.0094 | 1.00 | 9 | 0.34 |

Table11: The multi factorial variance analysis among the research variables

| Source of Changes | Total of squares | df | Average of squares | F-statistic | Significance level | Etacoefficient |
|---|---|---|---|---|---|---|
| **Different funds** | | | | | | |
| Per capita approved | 39936593177.23 | 3 | 13312197725.74 | 2.88 | 0.04 | 0.19 |
| Per capita performance | 55816041449.02 | 3 | 18605347149.67 | 3.54 | 0.02 | 0.22 |
| **Error** | | | | | | |
| Per capita approved | 166368472295.88 | 36 | 4631346452.66 | | | |
| Per capita performance | 189170307950.93 | 36 | 5254730776.41 | | | |
| **Total** | | | | | | |
| Per capita approved | 206305065473.11 | 39 | | | | |
| Per capita performance | 244986349399.96 | 39 | | | | |

Table12: The t-test for comparison total of per capita approved with the total of per capita performance

| Variable | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| Total of per capita approvedtotal of per capita performance | -1421.01 | 43792.86 | -0.20 | 39 | 0.83 |

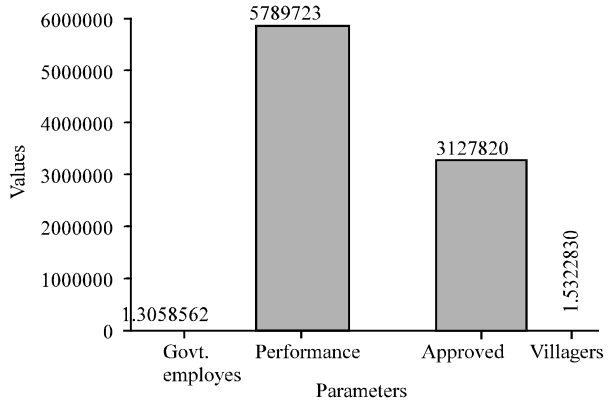


Fig. 9: Compare the average of revenue in different sectors


Fig. 10: Compare the average of treatment cost in different sectors

other groups. According to the t-negative and <-1.96 can be concluded that the cost of treatment is greater than the sources at 95%significance level. The results of t-test showed that the source (Revenue) and the costs of

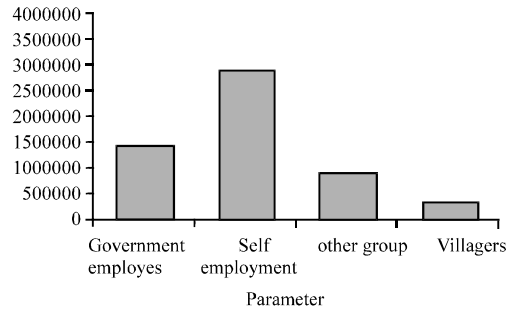


Fig. 11: Compare the average of per capita approved in different sectors

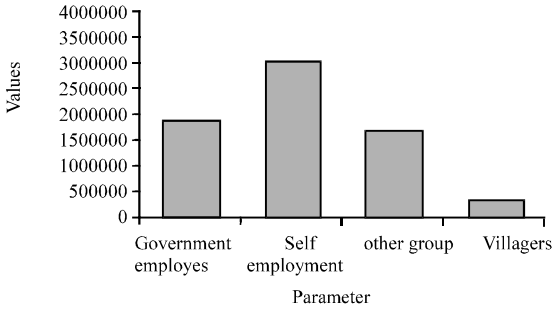


Fig. 12: Compare the average of per capita performance in different sectors

treatment for government employees and villagers, Iranians are not significantly different at significance level 95%, (>5% significance level) that hypothesis 1-3 are rejected. The results of the multilateral analysis of variance and Eta correlation coefficient indicate that the amount of resources per capita (Revenue) and the cost of treatment the funds are significantly different at the 95% confidence level. The mean value obtained the highest capita sources related to villagers sector and the least amount of sources to other groups. Finally, Total funds used the medical expenses of insured but at the end of the year are faced with a deficit in payment claims contracts institutions and any source of investment has not been put at the disposal of the organization (WHO, 2001, 2016).

Table 13: The t-test comparison between costs and funds

| Insurance | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| **Revenue** | | | | | |
| Government employees | 1.3058562 | 2289379.0 | 2.31 | 9 | 0.041 |
| Self-employed | 5789723.0 | 264060.0 | -2.37 | 9 | 0.042 |
| Other groups | 3127820.0 | 510090.0 | -0.29 | 9 | 0.770 |
| Villagers | 1.5322803 | 1021768.0 | -1.71 | 9 | 0.120 |
| Total | 8917545.83 | 4085297 | 4.12 | 32 | 0.001 |
| **Cost** | | | | | |
| Government employees | 1.3616832 | 2236682.0 | 4.32 | 9 | 0.012 |
| Self-employed | 1.0683461 | 547093.0 | 2.21 | 9 | 0.014 |
| Other groups | 3734917.0 | 471249.0 | 2.33 | 9 | 0.045 |
| Villagers | 1.7918686 | 1008367.0 | 5.7 | 9 | 0.022 |
| Total | 3734921.22 | 4263391 | 3.21 | 32 | 0.043 |

Table14: The t-test comparison between per capita approved with per capita performance

| Insurance | Average | SD | t-value | df | Significance level |
|---|---|---|---|---|---|
| **Per capita Approved** | | | | | |
| Government employees | 143000.0 | 12200.0 | 4.31 | 9 | 0.043 |
| Self-employed | 300386.0 | 92.0 | 2.33 | 9 | 0.055 |
| Other groups | 94000.0 | 12.8 | 5.21 | 9 | 0.021 |
| Villagers | 39921.0 | 41.4 | 2.00 | 9 | 0.011 |
| Total | 1154614 | 12346.20 | 5.41 | 32 | 0.001 |
| **Per capita performance** | | | | | |
| Government employees | 185304.0 | 26987.0 | 2.32 | 9 | 0.002 |
| Self-employed | 300386.0 | 92.0 | 1.43 | 9 | 0.001 |
| Other groups | 168848.0 | 75.17 | 0.71 | 9 | 0.04 |
| Villagers | 22348.0 | 75.17 | 1.36 | 9 | 0.004 |
| Total | 676886 | 27229.34 | 2.45 | 32 | 0.03 |

**Results hypotheses (5-8):** The data were analyzed by paired t-test using SPSS software. The results of the paired t-test indicated that there is a significant difference between per capita performance and per-capita approved in self-employed at 95% confidence level, According to negative t and <-1.96 can be concluded that the per-capita performance is higher than per capita approved at 95% confidence level. The results of the paired t-test showed that there are no significant differences in approved capita and performance capita in other groups 95% confidence levels. There is a significant difference in Iranian thus, hypotheses 5-7 are rejected. The results of multi-way analysis of variance and Eta correlation coefficient shows, none of the variables per capita approved with per-capita performance have not been affected by the different funds at 95% confidence level.

## CONCLUSION

The results of this study, shows disparities in direct payments to insured people in separate funds defining the same services. Lack of adequate resources is due to uses, loss or deficit of resources in different years. Overall, the maximum gap was significance in the Iranian Fund and other groups. Loss of Iranian funds was due to the not setting correctly the per capita approved annual and determined discounts by the Islamic Consultative Assembly and loss of the other groups was due to frequent changes in the group contracts and government policy in focused resources payment.

Per capita basis for differentiation and heterogeneity insurance payment, among the four funds of the Iran health insurance organization led to significant difference among the sufficient resources and uses in these funds. Government employees capita to prevent non-compliance, were reviewed annually and if any gap between resources and expenditures, organized by the parliament or the government proposed to increase premium rates (percentage). The other group fund should be carefully investigated insured population growth in some contracts, especially universities and theological schools and planning to conclude such contracts are done at the beginning of the year. The self-employed fund, according to the statistical analysis can be seen in the gap between resources and expenditures, per-capita should be presented to parliament or the cabinet and allowances approved by parliament for the welfare of the insured reported in short periods of two or three months and the government give sources to the organization. Because villagers fund entirely dependent on state resources and the insured did not participate at their own expense, >40% of the treatment costs to the fund are done; it is essential to design a model for villagers fund resources that are stable and the possibility of planning at the beginning of the year.

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