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An Investigation and Comparison of Road Transportation Indicators among the Provinces of Iran

Ali Khaksari Rafsanjani[1], Amin Asadi Sisakht[2]

Abstract

One of the major obstacles in the process of national development, is the disruption in regional balance construct. As has been noted in some studies the existence of regional inequity leads to domination of some regions to surrounding regions and causing political and economic challenges in developing countries. And given that transportation is one of the components of region, undoubtedly equity in transportation infrastructure and quality services both for passenger and freight is one of the factors affecting the balance construct between regions.

Socio-economic impacts of transportation are amongst the most important issues in transportation planning and appropriate transportation planning is the key to sound regional development. One of the major planning issues is the transportation equity. Inequity of transportation, itself leads to many other inequities and it is highly essential to consider that in the plans and policies regarding transportation in the country.

The main purpose of the present paper is to investigate and make a comparison of road transportation indicators among the provinces of Iran. For this purpose, the relative level of transportation development in different provinces was determined using taxonomy method. Nine indicators provided by Road Maintenance and Transportation Organization were used to carry out analyses. The data were analyzed and described by utilizing from SPSS and GIS Soft wares.

The outcomes indicate relative favorable development status in the region consisted of Tehran, Alborz and Qom provinces and unfavorable development of transportation status, especially in the Southeast region. In fact it was revealed that vertical equity in the distribution of infrastructure and services among provinces of Iran is not considered enough. This may be the result of horizontal equity or internal and external factors affecting the performance of the provinces or both.

Keywords: Transportation, equity, inequity, vertical equity, relative level of development

1. Professor, Department of Urban and Regional Planning, Allameh Tabataba'i University (ATU), Tehran, Iran.
2. MSc Student, Department of Urban and Regional Planning, Allameh Tabataba'i University (ATU), Tehran, Iran.

1. Introduction

This fact that transportation is one of the components of region and Different components of development are affected by it, reflecting its importance in regional development. For example, about the economic component of development, transport has been considered as a primary factor of economic development. This has been particularly the case for developing countries. In this sense, the absence of a well-developed transport system acts as a serious constraint on growth [New Zealand Government, 2014]. Or in connection with its role in the social component of development Kenneth Blakmore as one of the social policy experts says that: One of the most important public issues, is improving the transportation network, because success in this area, not only reduce social exclusion and increase the social welfare of the poor groups, but also improves the quality of life of the majority [Blakmore, 2003]. In addition, it should be noted the impact of transportation on the components of environmental, legal and political developments that are the subject of some research.

On the other, the history of planning in the country shows that in the past and today in all courses, Seeks to reduce the gap between regions and avoid increasing it[Tavakoli-nia and Shali, 2012]. Although the balance between different regions, reducing inequality and poverty elimination has always stressed in national documents such as the constitution, visions, policies for land use and development plans of the country but the last half century experience in the country shown still effective measures to prevent regional gap and uneven development of the country has not been done [Zebardast and Haghrosta, 2014].Therefore, and given the importance of transportation in regional development one of the factors that could play a very important role to change this imbalance is Transportation.

Equity (also called justice and fairness) refers to the distribution of impacts (benefits and costs) [Litman, 2016]. Transportation shapes the spaces around us and creates geography of opportunity to access important destinations beyond our immediate surroundings. In modern urban settlements where important land uses and residences are dispersed in space, a lack of transportation can mean a lack of opportunities for work, school, recreation, and social interaction, profoundly impacting the prospects for communities and individuals [Martens, 2014]. Equity and transportation are linked to each other by various aspects. One of these aspects is related to the effect of transportation on poverty reduction. In the literature of this field, it has been pointed to the importance of public and cheap transportation for poor groups of society which provide them the access from suburbs to markets and job centers, because the lack of their access to markets and job centers confines them to limited occupational and economic opportunities and social services.

One of the indicators associated with the poor people is the limited access to social services and economic opportunities. People often emigrate from regions with poor social services. A study in Indonesia revealed that one percent increase in investment in infrastructure has led to three tenths of a percent (0.3%) reduction in poverty over 5 years [Nations Economic and Social Commission for Asia and The Pacific, 2004].

Development is considered as the result of equal opportunities for use of facilities in the form of having equal capacities to utilizing from opportunities, and development measurement is evaluated based on opportunities and capacities rather than results and products. However, the regional disparities are evident in almost all countries around the world, however, more evident in the developing countries like Iran.

Transportation justice requires that transportation system planning, design, and construction processes be carefully evaluated to identify the nature, extent, and incidence of probable consequences, both favorable and adverse [Oswald Beiler and Mohammed, 2016]. Justice considerations stress disadvantaged populations, with the intent to improve equality with respect to accessibility and mobility [Hananel and Berechman, 2016]. The theoretical starting point for the proposed justice approach to transport is Walzer's 'Spheres of Justice', In line with most other contemporary scholars (see Young 1990), Walzer takes a distributive approach to social

justice by asking the question how benefits and burdens are and should be distributed over members of society. However, unlike other scholars of social justice, e.g. Rawls (1971), he does not focus on the distribution of an abstract set of basic goods [Martens, 2014].

The development of transportation due to manufacturing activities and the possibility of easier movement of cargo and passenger reducing inter-regional disparities and balanced distribution of income in the country. Research carried out in this field confirms the fact that economic growth due to the development of transportation reduced households with income inequality between urban and rural areas [sharifi, 2012]. Transportation and development interact with each other. Studies also confirmed this mutual connection. It seems that the development gap between regions in the country due to the impact of development on transportation in the gaps between provinces is also reflected in the development of transportation.

Equity in transportation has been mentioned in several studies. In each of these studies the specific dimensions of equity is taken into consideration.

For example, there are some studies about the environmental dimension of equity, equity to access and distribution of benefits. This paper is intended to investigate the situation of transportation development of 31 provinces of the country based on nine indicators and then sort the provinces accordingly. The Investigation and comparison of the distribution of transportation infrastructure, facilities and services among the provinces of Iran indicates that the success level of previous planning and policy measures of transportation sector in providing equal opportunities is quite low and specifies some regions need more serious consideration in upcoming plans. In fact there are provinces in the country that are highly underdeveloped and this has been the result of poor transportation infrastructure and facilities provided for these regions.

2. Purpose and Methodology

This study has been done in order to, firstly investigate the relative level of development of road transportation in Iranian provinces based on

available transportation indicators; and secondly to evaluate the changes in the relative level of development of road transportation in Iran.

Also the research is intended to answer these questions:

- According to available indicators of country's transportation situation, to what extent Iran's provinces have equal conditions?
- And this subsequent question of what is relative level of development of road transportation in the provinces of Iran -during the years 2013 to 2015 - how much this has been changed?

Generally, there are three major categories of transportation equity.

Horizontal Equity: Horizontal equity (also called fairness and egalitarianism) concerns the distribution of impacts between individuals and groups considered equal in ability and need. According to this definition, equal individuals and groups should receive equal shares of resources, bear equal costs, and in other ways be treated the same. It means that public policies should avoid favoring one individual or group over others, and that consumers should "get what they pay for and pay for what they get" from fees and taxes unless a subsidy is specifically justified.

Vertical Equity: With Regard to Income and Social Class Vertical equity (also called social justice, environmental justice and social inclusion) is concerned with the distribution of impacts between individuals and groups that differ in abilities and needs, in this case, by income or social class. By this definition, transport policies are equitable if they favor economically and socially disadvantaged groups, therefore compensating for overall inequities. Policies favoring disadvantaged groups are called progressive, while those that excessively burden disadvantaged people are called regressive. This definition is used to support affordable modes, discounts and special services for economically and socially disadvantaged groups, and efforts to insure that disadvantaged groups do not bear excessive external costs (pollution, accident risk, financial costs, etc.),

Vertical Equity With Regard to Mobility Need and Ability: This is concerned with the distribution of impacts between individuals and

groups that differ in mobility ability and need, and therefore the degree to which the transportation system meets the needs of travelers with mobility impairments. This definition is used to support universal design (also called accessible and inclusive design), which means that transport facilities and services accommodate all users, including those with special needs [Litman, 2015].

Vertical equity requires that disadvantaged people be identified and given special consideration in planning, to insure that they are not made worse off, and that their needs are accommodated. Litman describes the following steps:

1. Identify disadvantaged groups (minority, low income, car-less, disabled, single parents),
2. Identify disadvantaged geographic areas using census data ("Environmental Justice Areas"),
3. Identify degrees of disadvantage in each geographic area, with five levels of severity.
4. Identify location of important public services and destinations (transit, highways, employment centers, hospitals, daycare centers, etc.),
5. Evaluate specific transportation plans according to how they affect accessibility between disadvantaged communities and important destinations [Litman, 2016].

This study is a descriptive–analytical study. Since the library sources and documents used in the study are considered qualitative methods and the use of statistical analyzing method is quantitative, the present study is a combinational one and by purpose is an applied (practical) research. The indicators used in this study were obtained from Statistical Yearbook of Road Maintenance and Transportation Organization of Iran and the data were analyzed and described by utilizing from SPSS and GIS Soft wares.

The numerical taxonomy method was used to conduct this study. The method was recommended in 1968 by UNESCO to assess the development level of countries [kalantari, 2014]. In this method, one point is usually selected as an ideal point and other regions are graded based on it. The steps of taxonomy are as follow:

1) **Making initial matrix**: at first, the initial matrix of data should be formed based on used indicators, in a way that the names of study points or regions placed in one column and the value of used indicators placed in the front of it.
2) Since various indicators may have different scales, therefore it is necessary **to make indicators free from scales after providing data matrix** and to make them congruence with each other. The standardization method can be used for this purpose.
3) **The calculation of the distance between sections:** After calculating the standard matrix, it is possible to calculate the difference of distance of each section to others for each of indicators.
4) **Calculating the distance of each section to others based on total indices used in the study:** for this purpose, the obtained numbers are powered to 2 and horizontally summed with each other.
5) **Identifying homogeneous sections**: the upper bound (+d) and lower bound (-d) for the shortest distance are calculated to obtain homogeneous sections.
6) **Calculating the compound distance of each section from optimal section:** The largest number in each column of the standard matrix is selected as the optimal value (if the negative indicators of development are considered, the smallest number in each column of the standard matrix is selected as the optimal value), Then the compound distance of each section from the optimal section is calculated by following equation and signed with C_{io} which in fact, shows the compound distance of section (i) from optimal area (o), The smaller the amount of C_{io} shows the development of the section.

$$C_{io} = \sqrt{\sum(Z_i - Z_o)^2}$$
(1)

C_{io} = the compound distance of each section from optimal section.
Z_i = the values of standard matrix

Zo = the optimal value in each column of standard matrix

$$DL = \frac{C_{io}}{C_o} \qquad (2)$$

In this equation:

DL= the development level of each section

C_{io} = the compound distance of each section from optimal section

Co = the mean of C_{io} plus Double SD of the same column which is obtained by following equation:

$$C_o = \overline{C_{io}} + 2S_{io} \qquad (3)$$

Where, $\bar{C}_{io}$ = the mean of column, S_{io} is the standard deviation of column C_{io} which is obtained by following equation:

$$\bar{C}_{io} = \frac{\sum C_{io}}{N} \qquad (4)$$

$$S_{io} = \sqrt{\frac{\sum (C_{io} - \overline{C_{io}})^2}{N}} \qquad (5)$$

C_{io} = the compound distance of each section from optimal section

The value of Dl is always an amount between 0 and 1. The trend of obtained DL to 0 indicates the development of the section and its trend to 1 indicates the un-development of the section.

7) **Sorting sections based on the relative level of development**: in this step, the sections can be sorted based on the development level or their distance from optimal section.

Benchmark indexes in the survey were as follows. Indicators are measurable variables selected to reflect progress toward planning objectives. To be useful and practical the selected indicators should be easy to understand and require data that is reasonably easy to obtain [Litman, 2016].

Coefficient of Variation:

The coefficient of variation was used to determine the dispersion in each index. The coefficient of variation (CV) is defined as the ratio of the standard deviation to the mean:

$$CV = \frac{\sigma}{\mu} \qquad (6)$$

In this equation μ and σ represent the population mean and standard deviation.

3. Results and Discussion

This section is organized to reveal the findings of the study. Therefore, in this section a table illustrates the relative level of development among the provinces of Iran in the years of 2013, 2014 and 2015. In table (2) the compound distance of each section from optimal section (C_{io}) and also the development level of each section (*DL*) for each province for the three year of the study period is calculated and presented and the 31 provinces were sorted from the best to the worse conditions.

Table 1. The intended indicators as a benchmark

Item	Indicators
1	The length of freeways and highways per 1000 km of suburb roads.
2	The length of lighted ways per 1000 km of suburb roads.
3	Intelligent transportation systems per 1000 km of arterial.
4	The number of active toll houses per 1000 km of suburb roads.
5	The number of machines and equipment for road maintenance per 1000 km of suburb roads.
6	The number of service - welfare centers per 1000 km of suburb roads.
7	The number of active police stations per 1000 km of suburb roads.
8	The number of emergency and rescue stations per 1000 km of suburb roads.
9	The number of died people due to the suburb roads accidents per 1000 km of suburb roads.

Table 2. The relative level of development among the provinces of Iran

Ranks	Province (2013)	C_{io} (2013)	DL (2013)	Province (2014)	C_{io} (2014)	DL (2014)	Province (2015)	C_{io} (2015)	DL (2015)
1	Tehran	6.07	.50	Tehran	3.68	.29	Tehran	6.14	.49
2	Qom	6.74	.56	Alborz	5.95	.46	Qom	7.51	.60
3	Alborz	6.89	.57	Qom	6.29	.49	Alborz	7.88	.63
4	Zanjan	7.88	.65	Qazvin	7.67	.60	Zanjan	8.42	.68
5	Qazvin	7.97	.66	Mazandaran	7.88	.62	Semnan	8.62	.69
6	Semnan	8.21	.68	Semnan	7.99	.62	Golestan	8.74	.70
7	Mazandaran	8.24	.68	Golestan	8.17	.64	North Khorasan	9.00	.70
8	Golestan	8.35	.69	Zanjan	8.42	.66	East Azarbaijan	9.16	.72
9	Lorestan	9.02	.75	Hamedan	8.570	.67	Mazandaran	9.15	.73
10	Hamedan	9.13	.76	Lorestan	8.572	.67	Qazvin	9.20	.74
11	Gilan	9.18	.76	Markazi	8.78	.69	Lorestan	9.41	.76
12	North Khorasan	9.19	.76	Gilan	8.82	.69	Chaharmahal va Bakhtiyari	9.472	.760
13	Kermanshah	9.20	.76	North Khorasan	9.00	.70	Hamedan	9.473	.760
14	Ardabil	9.29	.77	East Azarbaijan	9.16	.72	Ardabil	9.77	.76
15	East Azarbaijan	9.44	.78	Isfahan	9.65	.75	Markazi	9.60	.77
16	Markazi	9.55	.79	Ardabil	9.77	.76	Kurdistan	9.85	.77
17	Isfahan	9.80	.812	Kurdistan	9.85	.77	Gilan	9.78	.78
18	Chaharmahal va Bakhtiyari	9.80	.813	Chaharmahal va Bakhtiyari	9.88	.77	West Azarbaijan	9.94	.78
19	Kurdistan	9.92	.82	West Azarbaijan	9.94	.78	Kermanshah	9.96	.78
20	East Azarbaijan	9.93	.82	Kermanshah	9.96	.78	Bushehr	10.12	.81
21	Bushehr	9.97	.83	Bushehr	10.20	.80	Isfahan	10.17	.82
22	Khorasan Razavi	10.23	.85	Khorasan Razavi	10.39	.81	Ilam	10.45	.82
23	Ilam	10.24	.85	Ilam	10.45	.82	Kohgiluyeh va Boyer Ahmad	10.72	.84
24	Fars	10.51	.87	Hormozgan	10.58	.83	Fars	10.73	.84
25	Kerman	10.67	.88	Yazd	10.59	.83	Khorasan Razavi	10.66	.86
26	Hormozgan	10.76	.89	Kerman	10.66	.83	Yazd	10.71	.86
27	South Khorasan	10.77	.89	Kohgiluyeh va Boyer Ahmad	10.72	.84	Hormozgan	11.23	.90
28	Yazd	10.94	.91	Fars	10.73	.84	Kerman	11.25	.90
29	Khuzestan	10.95	.91	Khuzestan	10.98	.86	Khuzestan	11.46	.92
30	Kohgiluyeh va Boyer Ahmad	11.16	.93	Sistan va Baluchestan	12.01	.94	Sistan va Baluchestan	12.01	.94
31	Sistan va Baluchestan	11.20	.93	South Khorasan	12.07	.94	South Khorasan	12.07	.94

The values of DL for Tehran as the capital of Iran indicates the superiority of it to other provinces during 2013-2015, in a way that its DL value is always lower than 0.5. The Alborz and Qom provinces are in next place. These two provinces have always maintained second and third places during study period. The matter indicates the absolute excellence of these three provinces. It is not surprising that these two provinces always ranked in second, because first of all both used to be part of the Tehran province and they were separated and became independent provinces so they were in fact receiving a good share of budget and consideration in planning system. The other reason is that they are small provinces adjacent to Tehran province and therefore are using many capacities.

In the other side, the Sistan va Baluchestan province has always allocated the undesirable place among 31 provinces of Iran during study period and its DL value is always 0.93 or higher. As it was mentioned before, the value of DL is always an amount between 0 and 1 and the trend of obtained DL to 0 indicates the development of the section and its trend to 1 indicates the un-development of the section. The matter indicates the unsuitable conditions in Sistan va Baluchestan province. The fact is that this province is geographically located at the very south East end of the country on the border with Pakistan and Afghanistan, therefore it can be highlighted that this is not only a remote area but surrounded with underdeveloped regions of the neighboring country. So it is not surprising this province faces worse condition in achieving transportation infrastructure and services. However, this province should be considered for consideration of transportation infrastructure and services in order to help the region to develop and be secure.

Results indicate that the Southern Khorasan province has had a descending trend compared with other provinces, in a way that, the province has allocated the worth place during two last years of study period. In contrast, the trend in Kohgiloyeh va Boyerahmad province indicates the relative improvement of this province during study period .

Following table (2) map 1 illustrates the situation of road transportation indicators among Iranians provinces in year 2015.

According to the findings and as it can be seen in the maps, there is a regional inequality for study indicators among the provinces of Iran. The South region (consists of the southeast and southwest) and typically the southeast region includes Sistan va Baluchestan, Kerman and Hormozgan provinces don't have desirable condition compared to the other provinces. Meanwhile, the region consists of three provinces of Tehran, Alborz and Qom which is adjacent to each other is ranked first during the study years. It worth mentioning that in 2010, a part of Tehran province was separated from the province and officially became a new province called Alborz. Therefore these two provinces which were in the favorable places during study period have been under a single management until 2010. It should be noted that taxonomy computing by eliminating indicators 6 and 9 in order to focus more on the position of infrastructure indicators also was conducted and the result is shown in map 2.

The findings showed that even without considering indicators 6 and 9, three provinces of Tehran, Alborz and Qom are also located in the top three provinces and three provinces of Khuzestan, Sistan va Baluchestan and South Khorasan are located in the level of under developed provinces. About other provinces slight variance with previous findings were observed. The following map describes the results of the taxonomy calculation by eliminating of indicators 6 and 9. The highest coefficient of variation was observed in the index of length of lighted ways per 1000 km of suburb roads. This means that inequality among provinces in this index is higher than other indicators. Also, seventh index has a lower coefficient of variation, which means that the provinces are less unequal on this indicator
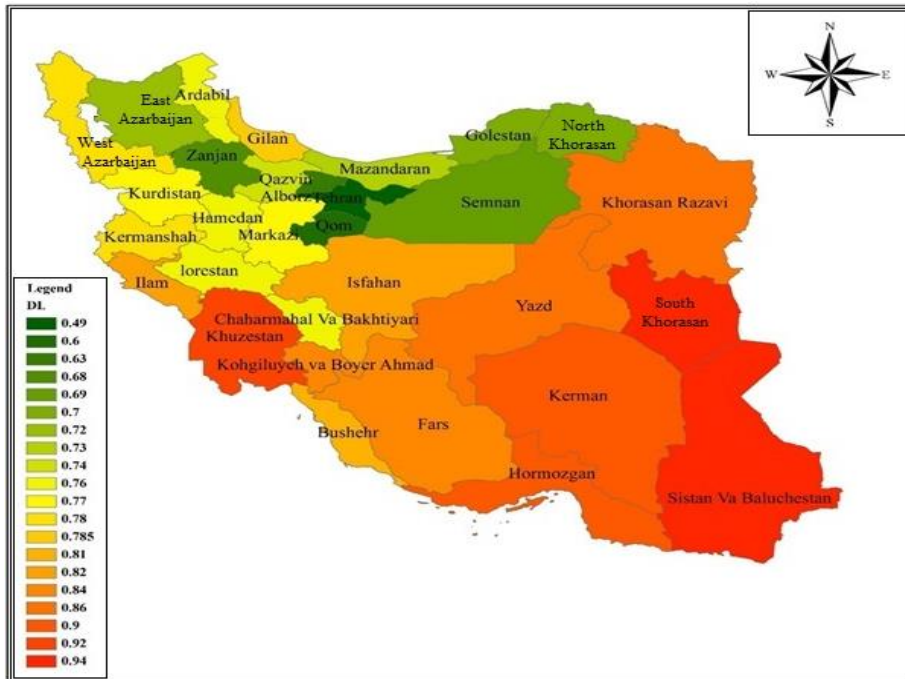
Map 1. The Situation of Road Transportation indicators among Iranians Provinces-2015
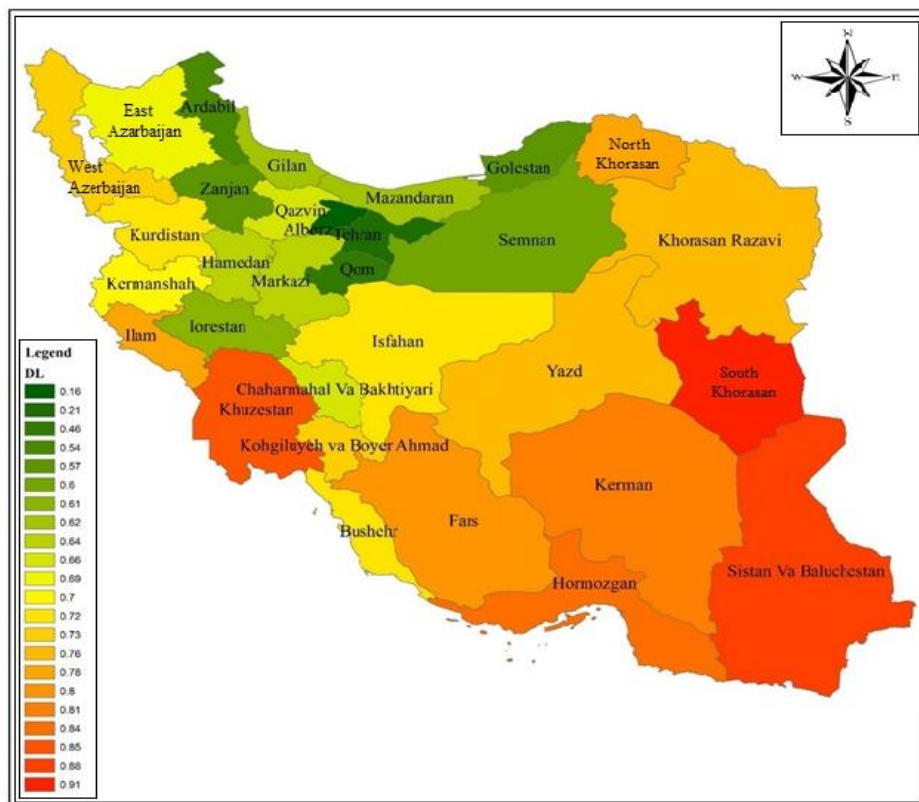
Map 2. The Situation of Road Transportation indicators - Regardless indicators 6 and 9

Table 3. The Coefficient of Variation during 2013-2015.

Item	Indicators	CV (2013)	CV (2014)	CV (2015)
1	The length of freeways and highways per 1000 km of suburb roads.	0.689	0.640	0.642
2	The length of lighted ways per 1000 km of suburb roads.	0.974	0.958	0.996
3	Intelligent transportation systems per 1000 km of arterial.	0.790	0.698	0.556
4	The number of active toll houses per 1000 km of suburb roads.	0.565	0.586	0.631
5	The number of machines and equipment for road maintenance per 1000 km of suburb roads.	0.347	0.325	0.401
6	The number of service - welfare centers per 1000 km of suburb roads.	0.836	0.803	0.800
7	The number of active police stations per 1000 km of suburb roads.	0.556	0.562	0.597
8	The number of emergency and rescue stations per 1000 km of suburb roads.	0.508	0.527	0.578
9	The number of died people due to the suburb roads accidents per 1000 km of suburb roads.	0.245	0.237	0.206

Table 4. The situation of the most disadvantaged provinces in indicators.

Province & situation	South Khorasan			Sistan va Baluchestan			Khuzestan		
Indicators (Items)	current situation	Distance to index average	Distance to index maximum	current situation	Distance to index average	Distance to index maximum	current situation	Distance to index average	Distance to index maximum
1	7	15.4	58	3	19.4	62	19	3.4	46
2	1	6	29	1	6	29	4	3	26
3	0.9	4.6	12.2	1.9	3.6	11.2	2.8	2.7	10.3
4	2.9	8.4	31.8	4.8	6.5	29.9	1.4	9.9	33.3
5	8	12.1	32	8	12.1	32	8	12.1	32
6	3.8	4.7	29.1	2.7	5.8	30.2	4.9	3.6	28
7	0.9	2.7	9.8	1.8	1.8	8.9	1.6	2	9.1
8	11	12.6	64	16	7.6	59	14	9.6	61
9	3	12.8	48	10	5.8	41	9	6.8	42

If the average of each index be considered as a measure of vertical equity, based on the above table we can see how much improvement in poor provinces would improve the situation of poor provinces.

4. Conclusions

At a superficial glance it might seem that we are facing with an inequality in road transportation indicators and the adverse effects of this unequal status is limited to the topic of social justice or equity. But the fact is that, the adverse consequences of this inequality have wider dimensions. The transportation can effect on poverty reduction, because it can provide access of the poor groups to social and economic opportunities. Therefore, inequality in infrastructure and road transportation indicators among provinces also means the existence of an inequality in their power to reduce poverty. As it was mentioned, a study in Indonesia revealed that one percent increase in investment in infrastructure has led to three tenths of a percent (0.3%) reduction in poverty over 5 years. People often emigrate from regions with poor social services and economically, the dividing between rural and urban sectors continues. Targeted interventions of the government can principally reduce such kind of problems. International organizations like ESCAP, ADB and the World Bank have recognized the relationship between transportation and poverty reduction [Nations Economic and Social Commission for Asia and The Pacific, 2004], the dimensions range of this inequality can also develop to people welfare, because transportation provides access of the poor groups to social and economic opportunities. Therefore, inequality in transportations leads to economic inequality and inequality of access and regional disparities. About 6 percent of the country's working population and 7.86% of total production in Iran is in the transportation sector [Mahmoudi, et al, 2006], the first problem in access appears when efficient transportation infrastructure does not exist. If the roads are not travelable in an area, the vital goods and services cannot reach to that area and also the products of that area cannot get to the market. This reality reduces interactions between people and prevents region from attracting new technologies and ideas. Economically, inadequate transportation infrastructure increases the costs of production and transportation. In addition to the mentioned dimensions, the dimensions of this inequality should be expanded to the lost human capitals. Some parts of this lost human capital are associated with the study indicators of this research. For example the toll death from traffic accidents, inadequate quality of infrastructures (like the length of lighted roads), shortage of rescue stations and shortage in the number of police stations which leads to reduction of monitoring drivers behavior.

It seems equity on transportation requires attention to both horizontal and vertical equity. This means that, as mentioned in horizontal equity the equal province should receive an equal share of resources and, bear equal costs. On the other, as mentioned in vertical equity the unequal province should receive an unequal share of resources and, bear unequal costs. In other words, the provinces that have a lower level in terms of development of transportation, receive a greater share of resources to achieve vertical equity. According to the findings of this research due to extreme inequality among provinces of Iran, while respecting the horizontal equity, vertical equity should be considered excessive. As Litman noted that in the case of vertical equity, deprived regions should be identified and measured the intensity of their deprivation, to ensure that their situation will not be worse in the future. This study was carried out in line with some Litman stages of vertical equity which mentioned in the context of vertical equity.

It seems cannot be sure that the current disparities among provinces of Iran is due to the lack of horizontal equity. Because, it is possible resources are distributed equally, however, factors such as the weakness in management structure, natural hazards and topology, being overly broad and other factors prevented from reaching some provinces to the high level of development. As mentioned development means the process of capacity building in order to create equal opportunities. Thus creating equal opportunity for Iran's provinces, may require unequal distribution of resources. What can be said is that a severe inequality, due to lack of attention to a number of provinces - in particular in the southeast- is among Iran's provinces. Horizontal and in particular vertical equity strategies can be effective to mitigate the intensity of this inequality. Recognizing the existed status is the first and the most important step in the planning process. The present study tried to provide a recognition for

decision makers to set the transportation plans which are based on equity and social Justice.

5. Recommendations

1) According to the various dimensions mentioned in the conclusion, the southern region and in particular southeastern region of Iran needs special attention. Since, the southeast region and some parts of northwest are faced with security problems, and don't have desirable status based on this research findings, paying attention to security dimension of transportation is very important in these regions, in addition to the other dimensions were mentioned in present study.

2) There is a positive relationship between the economic development of a region and its quality and quantity of transportation infrastructure and services. Therefore in order to improve the economic situation of the regions with inadequate transportation infrastructure, the central government, the Ministry of Roads and Urbanization in particular, should seriously consider expansion of these infrastructures. This will result in improving the living condition of the people living in these provinces which in turn results in higher added-value from them and higher GDP of the country. It is worth mentioning that there are undergoing projects such as Chabahar-Mashad railway which will cause both improving the economic situation and the security matters of the region.

3) The study showed that there are valuable transportation infrastructures even in the less affluent provinces, therefore, it is highly suggested that an appropriate use and maintenance of these infrastructure be planned. In this regard sufficient budget needed to be invested for the maintenance and monitoring of the roads and other transportation infrastructure.

4) Litman (2016) raises the issue of geography of opportunity and Martens (2014) states that "a lack of transportation can mean a lack of opportunities for work, school, recreation, and social interaction," therefore, in order to create further opportunities for residents of less affluent provinces, transportation infrastructure expansion and improvement, is the key. The results of this study can help policy makers and planner to prioritize those provinces which ranked low in table 2 and give them the opportunity to boost.

5) From 2013 to 2015, the coefficient of variation and inequity has been rising in some indicators. These indicators are the number of active toll houses per 1000 km of suburb roads, the number of active police stations per 1000 km of suburb road and the number of emergency and rescue stations per 1000 km of suburb roads. It is suggested to pay more attention to these indicators and indices with high Coefficient of Variation.

6. References

-Blakmore, K. (2003) "Social policy: an introduction", England: University of Buckingham.

-Golub, A. and Martens, K. (2014) "Using principles of justice to assess the modal equity of regional", Journal of Transport Geography, Volume 41, December 2014, pp. 10–20.

-Hananel, R., Berechman, J. (2016) "Justice and transportation decision-making: The capabilities approach", Transport Policy 49, pp.78–85.

-Kalantari, K. (2014) "Quantitative models in planning" Tehran: Farhange Saba.

-Litman, T. (2015) "Evaluating Transportation Equity: Guidance For Incorporating Distributional Impacts in Transportation Planning", Victoria Transport Policy Institute, www.vtpi.org.

-Litman, T. (2016) "Evaluating Transportation Equity: Guidance For Incorporating Distributional Impacts in Transportation Planning", Victoria Transport Policy Institute, www.vtpi.org.

-Litman, T., Brenman, M. (2012) "A New Social Equity Agenda For Sustainable Transportation"**,** Victoria Transport Policy Institute. Presented at the 2012 Transportation Research Board Annual Meeting Paper 12-3916.

-Mahmoudi, A., keshavarz Hadad, GH And Jouybari Majid, F. (2006) "Analysis of the transport industry in Iran's economy by using Input - Output"**,** Journal of Commerce, Volume 9, Issue 34, pp. 87-116.

-Martens, K. (2014) " Justice in transport as justice in accessibility: applying Walzer's 'Spheres of Justice' to the transport sector"**,** Transportation, Volume 39, Issue 6, pp. 1035–1053

-Nations Economic and Social Commission for Asia and the Pacific. (2004) "Review of developments in transport in the ESCAP Region, 2003"**,** Tehran: Department of Education, Research and Technology Transportation Research Institute, First Edition.

-New Zealand Government (2014) "Contribution of transport to economic development: International literature review with New Zealand perspectives"**,** Transport Ministry of New Zealand.

-Oswald Beiler, M., Mohammed, M. (2016) "Exploring transportation equity: Development and application of a transportation justice framework"**,** Transportation Research Part D 47 , pp.285–298.

-Road Maintenance & Transportation Organization. (2014) "Statistical Yearbook of Road Maintenance and Transportation Organization OF Iran 2013"**,** Tehran :Deputy Planning Office of the Information and Communication Technology.

-Road Maintenance & Transportation Organization. (2015) "Statistical Yearbook of Road Maintenance and Transportation Organization OF Iran 2014"**,** Tehran :Deputy Planning Office of the Information and Communication Technology.

-Road Maintenance & Transportation Organization. (2016) "Statistical Yearbook of Road Maintenance and Transportation Organization OF Iran 2015"**,** Tehran :Deputy Planning Office of the Information and Communication Technology.

-Sharifi, N. (2012) "The transport and its impact on other sectors of the economy: An input-output analysis"**,** Journal of Economic Growth and Development Researches, Volume 2, Issue 5, pp. 207 -237.

-Tavakoli nia, J., shali, M. (2012) "Regional disparities in Iran"**,** Journal of Environmental Logistics, Issue 18, Pp. 1-15.

-Zebardast, A., Hagh-rosta, S. (2014) "Comparative analysis of regional disparities between neighboring provinces: A case study in Hamedan and Markazi"**,** Journal of Art University Issue 15, pp. 113-137.