

## Regional differences of the impact of urbanization on tourism industry in Guangdong province

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**Abstract:** Taking Guangdong Province as an example, the paper verifies the Granger causal relation between the urbanization process and the development of tourism industry, and analyses the regional difference of the urbanization influence on the tourism industry development and the reasons of such regional difference. The major conclusions are as follows: (1)Urbanization plays a long and stable role in promoting the development of tourism. When the significant level is 5%, the urbanization is the one-way Granger cause for the development of tourism industry. (2)The influence of urbanization on the tourism industry has a large regional difference. The promotion of the Pearl River Delta urbanization to the tourism industry is most efficient, followed by the eastern Guangdong, the western Guangdong, and the northern Guangdong is the worst. (3)The differences of every urbanization dimension's development level in different regions and the different impacts of urbanization's different dimensions on tourism development are the main reasons for the existence of regional differences in tourism development.

**Keywords:** urbanization; the tourism industry; regional difference; granger causality test; panel regression; gray correlation model

### INTRODUCTION

By the end of 2015, tourism's comprehensive contribution to GDP reached to 10.1%<sup>1</sup>. The tourism industry has been incorporated in national "the 13th Five-Year" professional plan in 2016. Tourism is a significant component of the Chinese economy. Urbanization process brings sound infrastructure and public service facilities, tourists, etc. for the development of the tourism industry. Under the background of new-type urbanization, a correct understanding of the urbanization's influence on the Tourism development and a rational tourism strategy according to local conditions is increasingly important. Guangdong is the vanguard of China's reform and opening up and its urbanization has two obvious traits: firstly, the urbanization development process rapidly; secondly, the development gap between different regions is significant which the general characteristics of Chinese urbanization process are. Meanwhile, Guangdong province's tourism industry is one of the most developed ones in China, the research of the relationship between urbanization and tourism industry can provide references for the development of tourism in other regions of China.

Thus, basing on the analysis of Guangdong urbanization and tourism development level, the paper investigates the promotion capability of urbanization in

Guangdong Province on the development of tourism industry and discuss the regional differences of the promotional capability and the reason of the differences, in order to grasp the functionary mechanism of urbanization on Tourism and provide evidence for formulating the regional development policy and promoting the harmonious development of urbanization and Tourism.

In 1867, A. Searda's *Basic principles of Urbanization* began the study of Urbanization research. Since then, scholars studied the urbanization process from demography [1], economic[2], sociological [3] and other perspectives and reaches a consensus: Urbanization is a compound concept blended of various aspects. Urbanization not only means the increase of "quantity" brought by the population increasement, also means the improvement of "quality" caused by economic, social and spatial changes.

According to the different research objectives, they use the single indicator method or the composite indicator method to measure urbanization. Composite indicator method reflects the level of regional urbanization with many indicators through the establishment of indicator system. Most domestic scholars agree with the division of urbanization into four dimension, including population urbanization, economic urbanization, social urbanization and spacial urbanization[4]. This article will also examine the

<sup>1</sup> Data resource: The official website of the National Tourism Administration

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urbanization development level of Guangdong Province from these four dimensions.

Foreign scholars focus on the study of tourism competitiveness. They think the level of regional tourism development depends on the level of tourism competitiveness and sustainability will improve the competitiveness of the tourism industry [5]. In China, Most scholars conduct application-oriented research, including the measurement of the regional inbound tourism flow influencing factors, the construction of tourism competitiveness evolution's evaluation system [6] and so on.

Tourism is comprehensive and complex; tourism evaluation indicators should also have a high degree of complexity and diversity. Due to the limitation of consecutive relevant statistical data, most of the scholars select the number of tourists, tourism revenue, and the number of tourism-related businesses and employment in tourism as measure indicators according to the principles of representation, system and availability.

The study of the relationship between urbanization and tourism originates from the attention on "tourism urbanization" phenomenon. Domestic studies on the impact of urbanization on tourism are mostly empirical studies, and different conclusions have been drawn.

Conclusion 1: Urbanization promotes the development of tourism. Yang Yali found that the domestic tourism shows the phased growth with the improvement of urbanization [7]. Sun Gennian's research shows that with the urbanization and economy developed rapidly, the inbound tourism, domestic tourism and local tourism have got faster development respectively [8].

Conclusion 2: The relationship between urbanization and tourism development is different. Zhao Lei found that there are significant differences in the promotion effect of urbanization on tourism under different regional conditions [9]. The study of Shu Xiaolin and others has shown that urbanization's different levels' promotion ability to the tourism development is also different [10].

Conclusion 3: The relationship between urbanization and tourism development is not significant. Xu Jie [11] analysed the data of urbanization and international tourism revenue since 30 years of China's reform and opening up. Yang Changpeng [12] carried out a research on Zunyi, Anshun and other places. They all concluded that there is no significant causal relationship between the urbanization and the tourism development.

Previous studies, however, have not been able to establish a strong relationship between urbanization and tourism development. The reasons are as follows: Firstly, the selection of indicators is not comprehensive and inconsistent; Secondly, Chinese regional development level disparity is great, and different researches selected different cases.

In order to establish a strong relationship between urbanization and tourism development, this paper's innovations mainly focus on the following three aspects:

Firstly, it builds comprehensive urbanization and tourism evaluation index system, measuring the development level of regional urbanization and tourism comprehensively; secondly, it analyzes the influence of different urbanization level on tourism development; finally, it studies the impact of urbanization's different dimensions on tourism.

## **DATA SOURCE AND MODEL INTRODUCTION**

According to the principle of scientificity, representativeness and availability and combining with the theoretical analysis of the second chapter and seven experts' opinions, this paper establishes the evaluation index system to measure the development level of Urbanization and tourism development.

### **The evaluation index system of urbanization**

Based on the development requirements of "new type of urbanization", this paper adopts generalized urbanization, which thinks urbanization includes population urbanization, society urbanization, economic urbanization and space urbanization.

Population urbanization is mainly characterized by the increase of urban population and the change of employment structure. Social urbanization aims to make more people enjoy the convenience brought by modern life, measured from the three dimensions of health, education and lifestyle. According to Petty - Clark Law and Kuznets theorem, urbanization drive upgrades of industrial structure, thus be measured by the total amount of economic development and industrial structure. Special Urbanization means the nature of land transfer from agricultural to urban, so this article measures it with urban infrastructures and ecological environment.

### **The evaluation index system of tourism development level**

Tourism is an comprehensive industry which relies on tourism resources and bases on tourism facilities to provides tourism products and services to meet consumer demand [13]. Combining with the research findings of Gao Nan [14], Shu Xiaolin [10] and so on,

this paper establishes the four dimensions index system which contains tourism income, tourism scale, tourism employment and tourism elements. Table 1 summarizes the urbanization and tourism development Index System.

### Data

The relevant data of urbanization are from Guangdong Statistical Yearbook and China Urban Statistical Yearbook. The relevant data of tourism has been published by Guangdong Provincial Tourism Statistical Yearbook and the database. The missing values are completed by exponent-smoothing method.

## TESTS AND RESULTS

### The level of urbanization and tourism development in Guangdong province

Table 4-1 shows the weight of assess index system which is obtained by the entropy method. According to the index system, the paper calculates the level of tourism development (LTD) and urbanization (LUD) in Guangdong Province, as is shown in Figure 1. The development of urbanization and tourism in Guangdong Province is synchronized on time and has the same development law, so the paper put forward the preliminary assumption: those two parts interact with each other which is the basis for the further analysis.

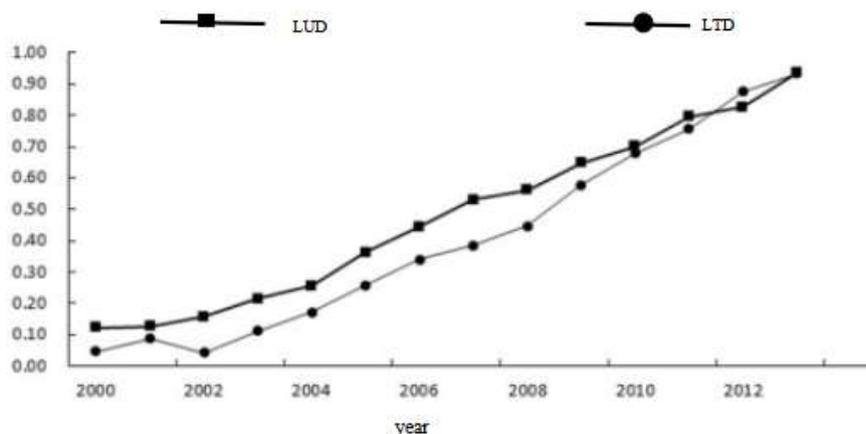


Fig-1: The level of urbanization and tourism development in Guangdong province over the years

Table-1: The Evaluation Index System Urbanization and Tourism<sup>2</sup>

project	Primary indicator	Weight	Second-class indicators	Weight
Tourism industry index system	Tourism income	0.26	Inbound tourism income	0.13
			Domestic tourism income	0.13
	Tourist traffic	0.27	Number of Inbound Tourists	0.14
			Number of Domestic Tourists	0.13
	Tourism employment	0.33	Travel agency practitioners	0.09
			Tourism hotel employees	0.07
			Tourist attractions practitioners	0.08
	Tourism industry	0.23	Number of Travel Agencies	0.08
			Number of tourist hotels	0.05
			Number of tourist attractions	0.10
Urbanization index system	Population Urbanization	0.25	The proportion of urban residents	0.09
			The proportion of urban employed persons	0.08
			The proportion of the employed population in the second and third industries	0.08
	Economic urbanization	0.22	Per capita GDP	0.10
			The proportion of secondary industry in GDP	0.05
			The proportion of the tertiary industry in GDP	0.07
	Social urbanization	0.25	The number of doctors per 10,000 people	0.03
			The number of beds per 10,000 people	0.03
			Expenditure on Education per 10,000 People	0.05

<sup>2</sup>The data used in table 4-1 is the overall relative data of Guangdong's tourism and urbanization from 2000 to 2013. Meanwhile, in the data process procedure, the paper convert the initial weight according to the number of indicators and then get the weight as is shown in the table 4-1 in order to avoid the effect of the difference of the indicators' number on the weight of the first class index.

			The number of college students per 10,000 people	0.03
			Per capita electricity consumption of urban residents	0.04
			Number of public transport in operation by the end of the year (units)	0.03
			Number of Internet Broadband Access Subscribers	0.04
	Spatial Urbanization	0.28	Urban per capita road area	0.07
			Percentage of built - up areas	0.08
			The green coverage of built - up areas	0.08
			Harmless disposal rate of domestic garbage	0.05

Note: "+" means positive indicator; "-" means negative indicator

### The impact of the urbanization comprehensive level on the tourism development in Guangdong province

In order to understand the relationship between urbanization and the tourism industry in Guangdong Province as a whole and lay the foundation for further analysis, the paper uses the Granger causality test to investigate the causal relationship between the

comprehensive level of urbanization and tourism development firstly.

### Stationary test

To avoid spurious regression, this paper first test the stability of each variable, LUD and LTD is stable after first order difference. As is shown in Table 2, the two variables are all pass the stationarity test.

**Table-2 : The results of the time series stationary test**

variable	Inspection form (C, T, K)	ADF test value	Threshold (1%)	Threshold (5%)	Threshold (10%)	conclusion
LUD	(0, 0, 0)	-5.288272	-2.771926	-1.974028	-1.602922	stationary
LTD	(0, 0, 1)	-2.475092	-2.792154	-1.977738	-1.602074	stationary

NOTE: In the Inspection forms, C, T and K represent the constant term, the time trend item and lagged rank respectively; The lag order is determined by the principle of AIC and the minimum SC.

### Granger causality test

According to AIC criterion, the lag order is 2. And the results of the Granger causality test are shown in Table 3. In the 5% confidence interval, the P-values of the development of the tourism industry is not the cause of urbanization is 0.6241, thus the null hypothesis is accepted; In the 5% confidence interval, the P-values of urbanization is not the cause of tourism development

is 0.0105, and thus the null hypothesis is rejected. Therefore, the tourism industry's promotion to urbanization is limited, but urbanization can promote the development of tourism. Specifically, the level of urbanization in the very year and next year has a significant role in promoting tourism growth, while the tourism's promotion to the urbanization is limited.

**Table-3: The results of the Granger causality test**

Number of lag periods	The null hypothesis	Number of samples	F-statistic	P-values	Confidence interval	conclusion
2	Tourism is not the Granger cause of urbanization	11	0.51042	0.6241	5%	accept
2	Urbanization is not the Granger cause of tourism	11	10.7094	0.0105	5%	Refuse

### The regional differences of the urbanization's comprehensive level's impact on tourism.

The theoretical analysis of the second chapter shows that the different comprehensive levels of urbanization have significantly different impact on the

tourism industry. The panel analysis can further explore the reasons of the regional differences.

**The unit root test and cointegration test of the panel data**

The paper adopts LLC, IPS, ADF and PP test, when the test results are inconsistent, we will follow the PP and LLC test. According to the table 7, LUD and LTD series are integrated of order one I

(1). Due to the space limitations, Table 4 only shows the unit root test results of northern Guangdong. Test results of eastern, western Guangdong and the Pearl River delta region also indicate that LUD and LTD are integrated of order one I (1).

**Table 4: The unit root test results of the northern Guangdong model**

Variable	Test Method				
	LLC	IPS	ADF	PP	Unit Root
LUD	-0.10180(0.4595)	-0.21508(0.4149)	3.87774(0.4228)	10.6933(0.0302)	Yes
Δ LUD	-6.02760 (0.0000)	-2.64749 (0.0041)	15.6384 (0.0035)	26.3446 (0.0000)	No
LTD	-0.73194 (0.2321)	0.43127; (0.6669)	1.93836 (0.7471)	1.68947 (0.7926)	Yes
Δ LTD	-3.39155 (0.0003)	-1.52441 (0.0637)	9.90970 (0.0420)	10.0400 (0.0398)	No

Due to all variables are subject to t integrated of order one process, there may be cointegration relationships among the variables and the cointegration test results are shown in Table 5. Most results of the test methods reject the null hypothesis at the significance

level of 10%, which indicates that there exists a panel cointegration relationship among those variables. In other words, there is a long-term and stable equilibrium relationship between those variables.

**Table 5: The results of the Panel Cointegration test**

Testing method		North Guangdong	East Guangdong	Western Guangdong	Pearl River Delta
Pedroni (E - Gbased)	Panel v-Statistic	0.084867 (0.4662)	-0.429862 (0.6664)	2.984251 (0.0014)	0.051432 (0.4795)
	Panel rho-Statistic	-2.057449 (0.0198)	-2.914371 (0.0018)	-0.884445 (0.1882)	-3.535665 (0.0002)
	Panel PP-Statistic	-2.314628 (0.0103)	-3.582730 (0.0002)	-6.110806 (0.0000)	-4.233297 (0.0000)
	Panel ADF-Statistic	-1.812826 (0.0349)	-2.024510 (0.0215)	-2.638793 (0.0042)	-2.594797 (0.0047)
	Group rho-Statistic	-0.891490 (0.1863)	-0.866395 (0.1931)	0.549290 (0.7086)	-0.105574 (0.4580)
	Group PP-Statistic	-2.556931 (0.0053)	-5.447157 (0.0000)	-4.483977 (0.0000)	-3.637085 (0.0001)
	Group ADF-Statistic	-1.183029 (0.1184)	-2.058731 (0.0198)	-4.436205 (0.0000)	-2.478003 (0.0066)
Kao test	ADF	2.544999 (0.0143)	3.547926 (0.0002)	3.129506 (0.0030)	3.366270(0.0015)

Panel data usually have three forms, namely mixed estimation model, fixed effect model and random effects model. F test and Hausman test results are

shown in Table 6, northern Guangdong, western Guangdong, eastern Guangdong and the Pearl River Delta models are all set to a fixed effects model.

**Table 6: The specification test of individual sectional panel model**

model	test result	Statistic name	Statistic value	P-values	conclusion
North Guangdong	Radom Effects Test	Period random Chi - square	0.032818	0.8562	accept
	Fixed Effects Test	Period F	14.359531	0.0005	refuse
		Period Chi - square	56.845178	0.0000	refuse
Western Guangdong	Radom Effects Test	Period random Chi - square	0.000000	1.0000	accept
	Fixed Effects Test	Period F	2.517728	0.0260	refuse
		Period Chi - square	22.484342	0.0041	refuse
East Guangdong	Radom Effects Test	Period random Chi - square	0.000000	1.0000	accept
	Fixed Effects Test	Period F	6.229171	0.0005	Refuse
		Period Chi - square	48.466418	0.0000	Refuse
Pearl River Delta	Radom Effects Test	Period random Chi - square	0.090005	0.7642	accept
	Fixed Effects Test	Period F	66.830316	0.0000	Refuse
		Period Chi - square	277.488740	0.0000	Refuse

**Regression analysis**

Table 7 shows the results of the regression model. In northern, eastern, western Guangdong and the Pearl River Delta region, the elasticity of urbanization level for development of tourism are 0.1344, 0.1985, 0.1679 and 0.7996 respectively. In other words, when the level of urbanization increase by 1%, the level of tourism development in the four regions will increase by 0.1344%, 0.1985%, 0.1679% and 0.7996% respectively.

So the urbanization of the Pearl River Delta is more effective in promoting tourism development, followed by eastern Guangdong, western Guangdong and northern Guangdong. There are obvious development gaps among different regions in Guangdong province. Therefore, the level of urbanization is positively related to the tourism development and the driving effect of urbanization on the growth of tourism is different.

**Table 7: The regression Model of different areas' urbanization's effect on tourism**

variable	North Guangdong	East Guangdong	Western Guangdong	Pearl River Delta
Constant term	0.590685 *** (23.51022)	0.422841 *** (23.36345)	0.162199 * (0.486274)	0.597376 *** (4.066236)
Level of urbanization	0.134429 *** (3.009145)	0.198538 *** (6.431011)	0.167901 ** (0.903999)	0.799562 *** (0.333398)
R <sup>2</sup>	0.929252	0.940857	0.926142	0.986737
P-values	0.000000	0.000000	0.000000	0.000000

**The factors affecting the differentiated role of urbanization on the tourism development**

Tourism and urbanization come together to constitute a complex gray system, which can be analyzed by the gray correlation model. The former analysis points out that urbanization can influence the tourism economic growth through population, economy, space and society. Therefore, the paper uses the GTMS3.0 software, selects  $\Theta = 0.5$  and therefore the calculation formula of the comprehensive gray relative analysis is:

$$\rho_{oi} = \theta \epsilon_{oi} + (1-\theta)\gamma_{oi}, \theta \in [0,1]$$

$\epsilon_{oi}$  represents the gray absolute correlation;  $\gamma_{oi}$  means represents the gray relative degree; The value range of I is 1-7.

According to the panel data of various cities in Guangdong Province from 2004 to 2013, the paper estimates that gray correlation degree of urbanization and tourism. The paper sorts out the differential effects of every dimension in different regions on tourism and the results are displayed in Table 8. In the model of northern Guangdong, spatial urbanization has the greatest impact on tourism. Under the relative lagging economy, spatial urbanization which improves the transportation infrastructure and public environment can promote the development of tourism. The resources and urbanization in eastern Guangdong and western

Guangdong are all not prominent; the driving function of social urbanization is the strongest. According to the law of tourism travel rate, a certain area of tourism development depends mainly on the local residents of tourism consumption. With the promotion of the social security system and the changes of people's life style created by the social urbanization, tourism industry experiences a rapid development. In Pearl River Delta region, economic urbanization is the most important factor in the development of tourism, the capital

investment brought about by the rapid economic development promotes the development of tourism.

In the four regions, spatial urbanization occupies an important position without expect, indicating that spatial urbanization and tourism development are closely related. Most scholars have confirmed that good infrastructure, especially traffic conditions, is essential for the development of tourism, which is consistent with the conclusion of this paper.

**Table 8: The different influences of every urbanizational dimensions in different region on tourism**

area	The sequence of every dimension according to it's importance
North Guangdong	Spatial Urbanization> Social Urbanization> Population Urbanization> Economic urbanization
East Guangdong	Social urbanization> spatial urbanization> population urbanization> economic urbanization
Western Guangdong	Social urbanization> spatial urbanization> economic urbanization> population urbanization
Pearl River Delta	Economic urbanization> spatial urbanization> population urbanization> social urbanization

## RESULTS AND DISCUSSION

This paper studies the impact of urbanization on tourism from the perspective of overall and regional differences by using time series data and panel data. The main conclusions are as follows:

(1) There is an one-way causal relationship between urbanization and tourism development in Guangdong Province. At the significant level of 5%, urbanization is a one - way Granger cause of tourism development.

(2) There are large regional differences in the impact of urbanization on tourism. The fixed effect regression model found that the elastic coefficients of the urbanization level to tourism development in the northern, eastern, western part of Guangdong and Pearl River Delta regions are 0.1344,0.1985,0.1679 and 0.7996. It can be considered that the promotion of the Pearl River Delta urbanization to the tourism industry is most efficient, followed by the eastern Guangdong, the western Guangdong, and the northern Guangdong is the worst.

(3) The differences of every urbanization dimension's development level in different regions and the different impacts of urbanization's different dimensions on tourism development are the main reasons for the existence of regional differences in tourism development. Grey Relational Model Showing: Social Urbanization significantly affect the tourism development in Less Developed Areas. In the eastern, western, northern regions, the Correlation between social urbanization and tourism Grey is significant, and the coefficients are 0.7, 0.87, 0.83 respectively; Economical urbanization has an remarkable impact on

tourism development in developed areas. In the Pearl River Delta region, the gray economy urbanization associated with tourism significantly and the coefficient is 0.83.

Through the establishment of urbanization, tourism development evaluation index system ,the paper discusses the relationship between the development of urbanization and tourism from a multi-dimensional comprehensive perspective. At the same time, it studying the promoting effect of urbanization on Tourism longitudinally and transversely. The study recommends that future studies can conduct similar analyses using data of a long time, from other provinces or regions to offer more comparative examinations.

## CONCLUSION

Taking Guangdong Province as an example, the paper verifies the Grainger causal relation between the urbanization process and the development of tourism industry, and analyses the regional difference of the urbanization influence on the tourism industry development and the reasons of such regional difference. The major conclusions are as follows: (1) Urbanization plays a long and stable role in promoting the development of tourism. (2)The influence of urbanization on the tourism industry has a large regional difference. (3)The differences of every urbanization dimension's development level in different regions and the different impacts of urbanization's different dimensions on tourism development are the main reasons for the existence of regional differences in tourism development.

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So it is reasonable to develop tourism needs according to its urbanization background. Tourism development in different regions should pay attention to the choices between "the quality" and "the quantity" for different choices; Selecting the appropriate integration of urbanization and tourism; Taking the initiative measures to break the barriers of difference.

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