

**Conclusion:**

This study explored the spatial distribution patterns of Saudi students studying in US language institutes and universities. Based on SACM data, there is an accumulation of students in some states, so this study attempted to analyze the issue through a questionnaire sent to all students studying in the top five states for gatherings of Saudi students in the US. The study found that 46.81% of the students had previously moved to other states and this move created many problems for them. In addition, 51.23% of students had faced the accumulation problem during their studies at language institutes or universities, and this also caused them problems, such as difficulty in learning the English language and therefore difficulty in obtaining university admission. This fact necessitates further action by SACM to distribute students to language institutes and universities where there is no accumulation problem. It is thus necessary to build channels of communication between students and SACM to evaluate and explain the problems that students may face. With these numbers of students (70,000), it is necessary to build an accurate database that is updated continuously. In this case, GISs can contribute to student information management by building a geographic database and analysis of the spatial distribution via digital maps.

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**References**

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Table 14 shows students' situation if they have moved to another state or are planning to move. As shown, students were not satisfied with their first choice of states in about 46.81% of the sample. The three main reasons for students to change state or plan to move to another states were academic acceptance (33.93%), provide a

field of their study (16.73%), and cost of living (12.43%). These reasons combined will create many problems for students, such as instability, nonattendance at class, and more time and money spent to find another state.

**Table(14). Reasons that made students move to another state or change their current state.**

Did you move to another state before or are you planning to change your current state?		
Option	Number of Responses	Percentage of Responses
YES	646	46.81%
NO	734	53.19
Skipped this question(32)	Total responses (1380)	97.73%
Why ?		
Reasons	Number of Responses	Percentage of Responses
Provide a field of my study	140	16.73%
Academic acceptance	284	33.93%
Cost of living	104	12.43%
Weather	78	9.32
Suitable for families	13	1.55%
With Friends	12	1.43%
Concentration problem	60	7.17%
Other	90	10.75
Skipped this question(577)	Total responses (835)	59.14%

**Accumulation problem:**

The main objective of this paper is to discuss the accumulation problem of Saudi students in the universities and language institutes in the US. According to Saudi culture, Saudis tend to gather so this will cause introversion, isolation, non-learning of the other culture, and no participation in volunteering or other activities. Table 15 shows that 51.23% of the sample of participants has faced the problem of accumulation during their studies at universities or language institutes. This high percentage will result in

educational problems such as difficulty learning English or other skills and thus the inability to obtain academic acceptance. On the other hand, some students have not faced problems with accumulation because most Saudi students are only clustered in three first-class of institutes and most overcrowded universities have been blocked by SACM. Also, some students thought that studying inside those universities was good for cooperation and helping others.

**Table(15). Effect of accumulation problem.**

Did you face any accumulation problem with Saudi students during your study at university or language institute?		
Option	Numbers of Response	Percentage of Responses
YES	708	51.23%
NO	674	48.77%
Skipped this question (32)	Total Response (1380)	97.73%
Why Yes ?		Why No ?
It is hard to learn English quickly.		As a Saudi woman, we are not used to interacting with Saudi men.
It doesn't help to practice the English language.		Because all Saudi students' classes are in the first three levels.
We are speaking Arabic all the time.		I do not become involved in their activities.
Practicing English is quite difficult		They are good and help each other.
A lot of Saudis are in the English classes.		Because there are only three Saudis in my university.
Sometimes I feel afraid and ashamed to speak in front of my Saudi friends in class.		Many English institutions are blocked by SACM.
Some places don't have rules to control Arabic speakers in class.		In university, it is very helpful because we can explain to each other.
Due to overcrowding, I did not find acceptance from the university.		Maybe it will benefit us because teachers will focus on Saudi students and know what they need to do to improve their English language.
Lack of exposure to the new culture.		I don't care about others if I am working great.

**Table (10). Total responses by reason for choosing state.**

Reasons for choosing your state	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Total
1-Provide a field of my study	413 (31.15%)	488 (36.80%)	244 (18.40%)	112 (8.45%)	69 (5.20%)	1326
2-Academic acceptance	495 (36.83%)	490 (36.46%)	211 (15.70%)	94 (6.99%)	54 (4.02%)	1344
3-Cost of living	160 (12.20%)	289 (22.04%)	301 (22.96%)	237 (18.08%)	324 (24.71%)	1311
4-Weather	343 (25.87%)	392 (29.56%)	293 (22.10%)	177 (13.35%)	121 (9.13%)	1326
5-Suitable for families	190 (14.50%)	334 (25.50%)	491 (37.48%)	162 (12.37%)	133 (10.15%)	1310
6-With Friends	96 (7.39%)	245 (18.86%)	362 (27.87%)	306 (23.56%)	290 (22.32%)	1299
7-No accumulation problem	96 (7.40%)	155 (11.94%)	396 (30.51%)	309 (23.81%)	342 (26.35%)	1298
8- Other	133 (25.98%)	51 (9.96%)	212 (41.41%)	36 (7.03%)	80 (15.63%)	512
Skipped this question (26)	Total responses (1386)					98.16%

**Table(11). Three main reasons for students to choose their state for study and living.**

What are the three main reasons that made you choose this state for study and living?										
	Provide academic field	Academic acceptance	Cost of living	Weather	Suitable for families	With Friends	No concentration problem	Other	total	
1	392 (28.61%)	<b>502 36.64%</b>	93 6.79%	184 13.43%	44 3.21%	58 4.23%	24 (1.75%)	73 5.33%	1370	
2	256 (19.31%)	<b>364 27.45%</b>	161 12.14%	259 19.53%	110 8.30%	77 5.81%	59 (4.45%)	40 3.02%	1326	
3	142 (11.43%)	138 11.11%	186 14.98%	<b>245 19.73%</b>	174 14.01%	138 11.11%	92 (7.41%)	127 10.23%	1242	
	Skipped this question (26)								Total responses (1370)	97.03%

**Table 12: The number of students who had moved to another state.**

Did you move to another state before or are you planning to change your current state?		
Option	Numbers of Responses	Percentage of Responses
YES	646	46.81%
NO	734	53.19%
Skipped this question(32)	Total responses (1380)	
		97.73%

After identifying the reasons that led students to choose their state, it is left to determine the factors that may influence these students' choice of state or choice to move to another state in the future. Table 13

shows that academic field and academic acceptance are the most common reasons to move to another state in the future, followed in order by cost of living, weather, suitability for families, and with friends.

**Table13: Factors that determine students' choice of state or choice to move to another state in the future.**

Please arrange the factors that determine your choice of state or your choice to move to another state in the future?									
	Provide academic field	Academic acceptance	Cost of living	Weather	Suitable for families	With friends	No concentration problem	Other	
1	<b>603 (44.97%)</b>	407 (30.35%)	130 (9.69%)	99 (7.38%)	34 (2.54%)	11 (0.82%)	33 (2.46%)	24 (1.79%)	
2	315 (23.74%)	<b>564 (42.50%)</b>	180 (13.56%)	133 (10.02%)	66 (4.97%)	22 (1.66%)	41 (3.09%)	6 (0.45%)	
3	130 (9.98%)	143 (10.98%)	<b>347 (26.65%)</b>	343 (26.34%)	155 (11.90%)	62 (4.76%)	105 (8.06%)	17 (1.31%)	
4	79 (6.44%)	85 (6.93%)	251 (20.47%)	<b>309 (25.20%)</b>	233 (19.00%)	96 (7.83%)	158 (12.89%)	15 (1.22%)	
5	44 (3.90%)	51 (4.52%)	163 (14.45%)	210 (18.62%)	<b>236 (20.92%)</b>	195 (17.29%)	209 (18.53%)	20 (1.77%)	
6	46 (4.45%)	26 (2.51%)	88 (8.51%)	87 (8.41%)	190 (18.38%)	<b>276 (26.69%)</b>	275 (26.60%)	46 (4.45%)	
7	14 (1.52%)	21 (2.28%)	49 (5.33%)	28 (3.04%)	127 (13.80%)	<b>284 (30.87%)</b>	242 (26.30%)	155 (16.85%)	
	Skipped this question (70)							Total responses (1342)	95.04%

Follow Table (8).

Administrative Region of Residence in Saudi Arabia	Number of Responses	Percentage of Responses
5- Aseer	35	2.50 %
6- Qaṣīm	55	3.92 %
7- Tabuk	14	1.00 %
8- Najran	33	2.35 %
9- Jazan	16	1.14 %
10- Jawf	10	0.71 %
11- Northern Borders	7	0.50 %
12 -Bāhah	8	0.57 %
13- Hā'il	10	0.71 %
Skipped this question (11)	Total responses (1401)	99.22 %

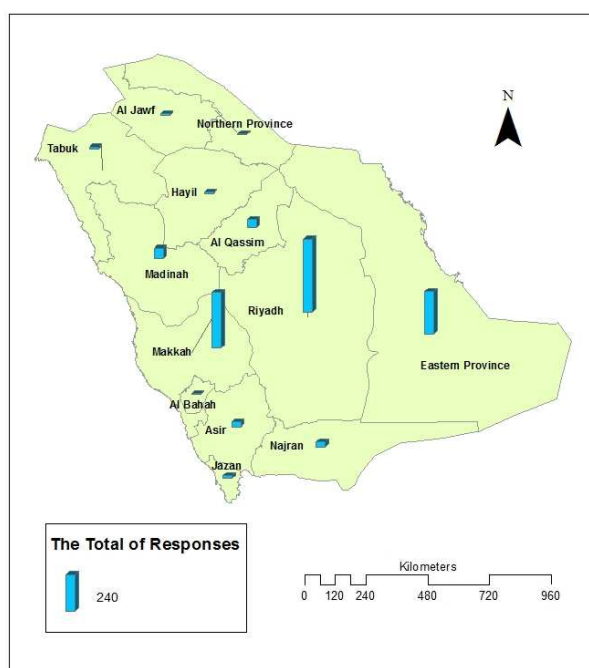


Figure 10: Spatial distribution of participants by administrative region of residence in Saudi Arabia.

Table (9). Total responses by academic degree.

Academic Degree	Number of Responses	Percentage of Responses
Bachelor's	609	43.81 %
Master's	634	45.61 %
Doctoral	112	8.06 %
Medical Fellowship	30	2.16 %
Other	5	0.36 %
Skipped this question (22)	Total responses (1399)	98.44 %

To analyze the reasons that made students choose their state, Table 10 shows the reasons divided into five scale measures. Students mostly cited provide a field of study, academic acceptance, and weather as their reasons; in contrast, cost factors and the overcrowding problem were not primary reasons for students choosing their state. Table 11 indicates the three main reasons that compelled students to choose

their state for study and living. The first and second reasons are academic acceptance from the university and the third reason is the weather. Of the participants, 46.81% had changed their state (Table 12).

Table 6 shows the number of family members living with the student. Most of the students are living as a single or alone, about 51.47 %. In this case, it is easy for students to move or change their state; it is more difficult for students to move if they are living with their families because moving to a new city or state requires

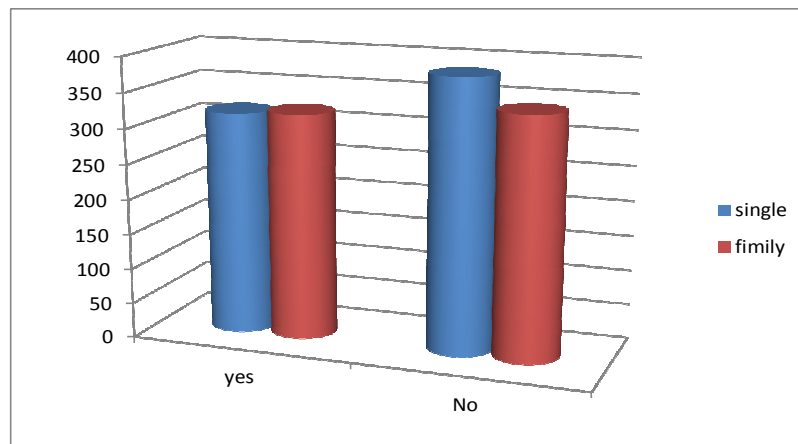
finding a suitable house, new school for children, and the expenditure of more money. However, statistically, Table 7 indicates through percentages that there is no relationship between student family members and moving.

**Table (6). Total responses by number of family members.**

Number of family members	Number of Responses	Percentage of Responses
1 (single or alone )	716	51.47 %
2	337	24.23 %
3	186	13.37 %
4	116	8.34 %
5	30	2.16 %
< 5	6	0.43 %
Skipped this question (21)	Total responses (1391)	98.51 %

**Table(7). Relationships between number of students' family members and transition for students.**

Student Situation	Moving Situation (Yes)	Moving Situation (No)
Single or Alone	317 (45.16%)	385 (54.84%)
With Family	321 (48.49%)	341 (51.51%)



**Figure (9). The relationship between marital status and the status of the transition for students.**

Table 8 shows the number of students by administrative region of residence in Saudi Arabia. This result depends on the population in these areas. For example, the number of Saudi people in the Riyadh region was around 4,296,745 (Central Department of Statistics & Information, Saudi Arabia

2010), so the Riyadh region had 34.88% of students in this sample. The most frequent responses regarding academic degree were bachelor's and master's at about 89.42% (Table 9).

**Table (8). Total responses by administrative region of residence in Saudi Arabia.**

Administrative Region of Residence in Saudi Arabia	Number of Responses	Percentage of Responses
1- Riyadh	489	34.88 %
2- Eastern Province	282	20.11 %
3- Makkah	372	26.53 %
4- Medina	71	5.06 %

**Explore and analyze the questionnaire survey data.**

The objectives of this questionnaire were to obtain answers for two questions: What are the reasons for the accumulation of Saudi students in some states? What is the impact of this accumulation? Due to the large number of Saudi students in US universities, study participants came from the top five states for Saudi students, where they number about 26,353 students: California (9,067 students), Texas (5,077 students), Ohio (4,696 students), Florida (4,396

students), and Colorado (3,117 students) (SACM, 2012). Table 3 shows the top student numbers by university and major in these states (SACM, 2012). The questionnaire was submitted to all Saudi students in these five states from February 1 to February 28, 2013. The number of responses depended on the type of question, but approached 1,400 students. Tables 4 and 5 show the ages, genders, and number of participants.

**Table (3). Number of students by top state, university, and major in the US (SACM, 2012).**

STATE_NAME	Top-UNIV	Number of student	Top Major	N of Student by Major
Ohio	WRIGHT STATE UNIVERSITY-MAIN CAMPUS	467	Accounting	326
Ohio	KENT STATE UNIVERSITY-MAIN CAMPUS	460	BUSINESS ADMINISTRATION	281
Ohio	CLEVELAND STATE UNIVERSITY	458	Mechanical Engineering	258
Ohio	UNIVERSITY OF TOLEDO	429	Electrical Engineering	256
Ohio	UNIVERSITY OF AKRON	385	Computer Science	166
Colorado	UNIVERSITY OF COLORADO DENVER	596	BUSINESS ADMINISTRATION	345
Colorado	COLORADO STATE UNIVERSITY	596	Engineering	300
Colorado	UNIVERSITY OF COLORADO AT BOULDER	245	Computer Science	207
Colorado	UNIVERSITY OF DENVER	232	MARKETING	169
Colorado	SPRING INT LANG CENT-AURARIA	199	Accounting	117
FLORIDA	FLORIDA INSTITUTE OF TECHNOLOGY-MELBOURN	432	BUSINESS ADMINISTRATION	398
FLORIDA	UNIVERSITY OF CENTRAL FLORIDA	400	Computer Science	260
FLORIDA	UNIVERSITY OF SOUTH FLORIDA	367	MARKETING	187
FLORIDA	FLORIDA STATE UNIVERSITY	241	Accounting	145
FLORIDA	UNIVERSITY OF MIAMI	240	Electrical Engineering	134
Texas	THE UNIVERSITY OF TEXAS AT SAN ANTONIO	794	BUSINESS ADMINISTRATION	330
Texas	UNIVERSITY OF NORTH TEXAS	455	Computer Science	170
Texas	UNIVERSITY OF HOUSTON-UNIVERSITY PARK	327	Accounting	150
Texas	TEXAS A & M UNIVERSITY-COMMERCE	299	Engineering	124
Texas	TEXAS SOUTHERN UNIVERSITY	241	Mechanical Engineering	108
California	CALIFORNIA STATE UNIVERSITY-NORTHRIDGE	597	BUSINESS ADMINISTRATION	824
California	SAN DIEGO STATE UNIVERSITY	475	Computer Science	440
California	CALIFORNIA LUTHERAN UNIVERSITY	474	MARKETING	304
California	CALIFORNIA STATE UNIVERSITY-LONG BEACH	405	Mechanical Engineering	285
California	UNIVERSITY OF CALIFORNIA-SAN DIEGO	351	Electrical Engineering	275

**Table (4). Total responses by age.**

Age	Number of Responses	Percentage of Responses
18 – 24	502	35.88 %
25 – 28	528	37.74 %
28 – 40	365	26.09 %
< 40	4	0.29 %
Skipped this question (14)	Total Responses (1398)	99.01 %

**Table (5). Total responses by gender.**

Gender	Number of Responses	Percentage of Responses
Males	1046	77.71 %
Females	300	22.29 %
Skipped this question (66)	Total Responses (1346)	95.33 %

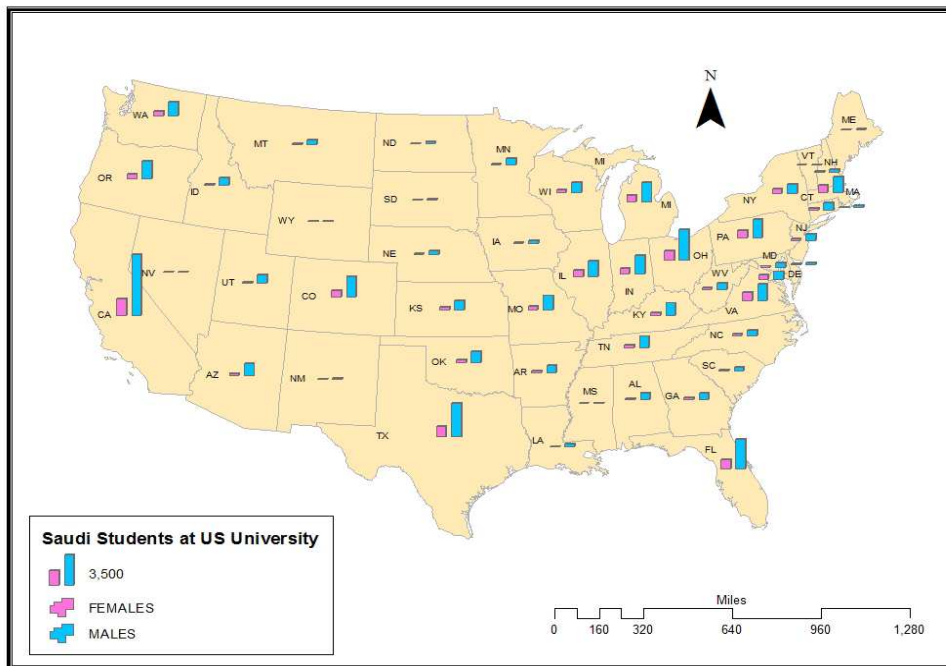


Figure (7). Spatial Distribution of Saudi students at U.S. universities by gender. SACM2012.

To understand the spatial distribution of Saudi students in the United States clearly, the study represented the data as three-dimensional Geovisualization (figure 8). 3D geovisualization is a quite generic term that is used for a range of 3D

visualizations representing the real world, parts of the real world or other data with a spatial reference (Bleisch,2012).

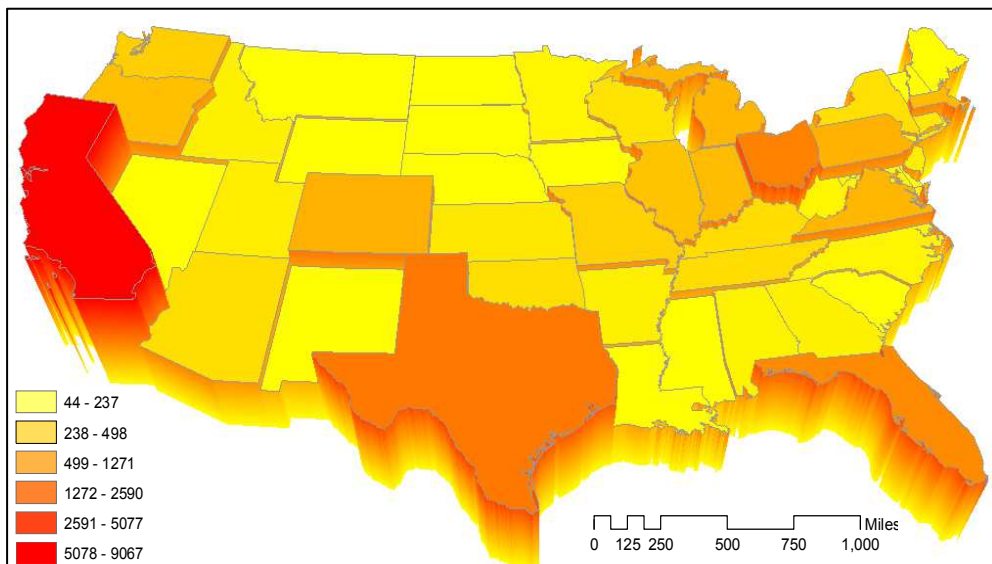


Figure (8). 3D geovisualization of suadi students in the US, 2012 .

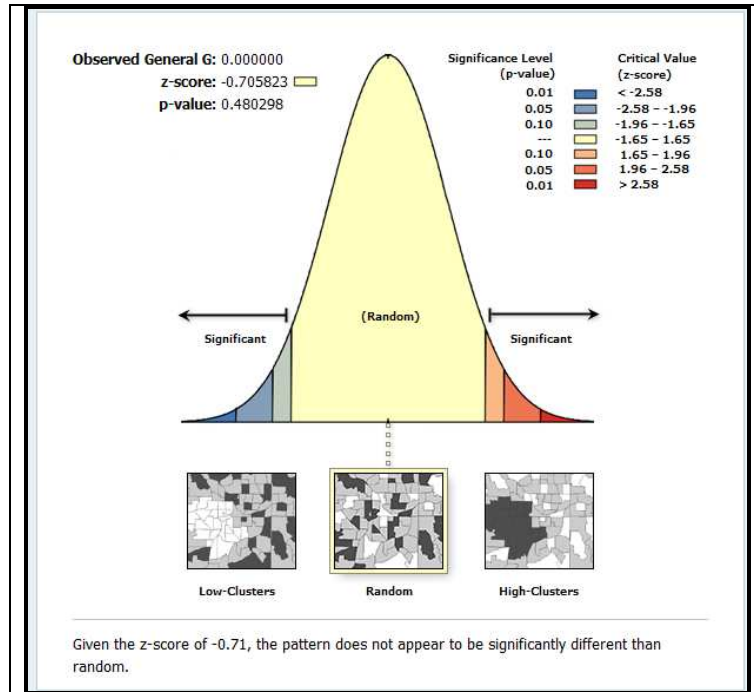


Figure 5: The distribution pattern of Saudi students in the US by High/Low Clustering (Getis-Ord General G) method.

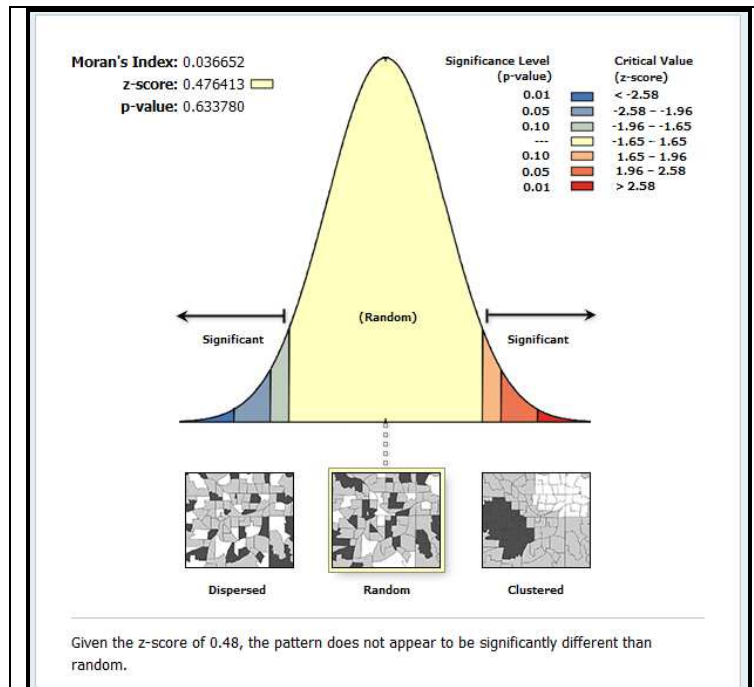


Figure 6: The distribution pattern of Saudi students in the US spatial autocorrelation method.

Follow Table (2) .

	STATE_NAME	Numbers of students		STATE_NAME	Numbers of students
11	Oregon	2590	36	Louisiana	451
12	Illinois	2485	37	South Carolina	406
13	Washington	2083	38	New Hampshire	399
14	Missouri	2002	39	Delaware	382
15	Kentucky	1614	40	Iowa	353
16	Tennessee	1608	41	Rhode Island	302
17	Arizona	1554	42	North Dakota	237
18	Oklahoma	1554	43	New Mexico	188
19	New York	1515	44	Wyoming	129
20	District of Columbia	1490	45	South Dakota	120
21	Wisconsin	1390	46	Mississippi	119
22	Kansas	1271	47	Maine	89
23	Connecticut	1168	48	Hawaii	79
24	Utah	1081	49	Nevada	69
25	New Jersey	1048	50	Alaska	67
			51	Vermont	44

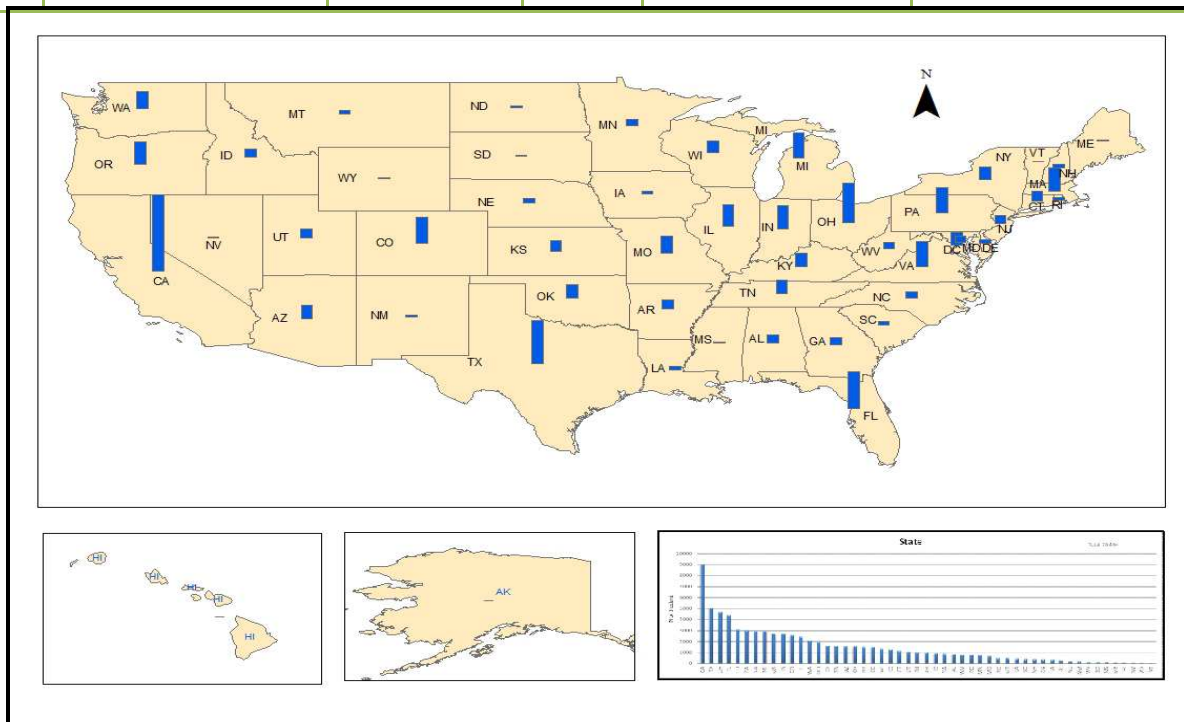


Figure (4). The Saudi Students distribution in the US (SACM, 2012).

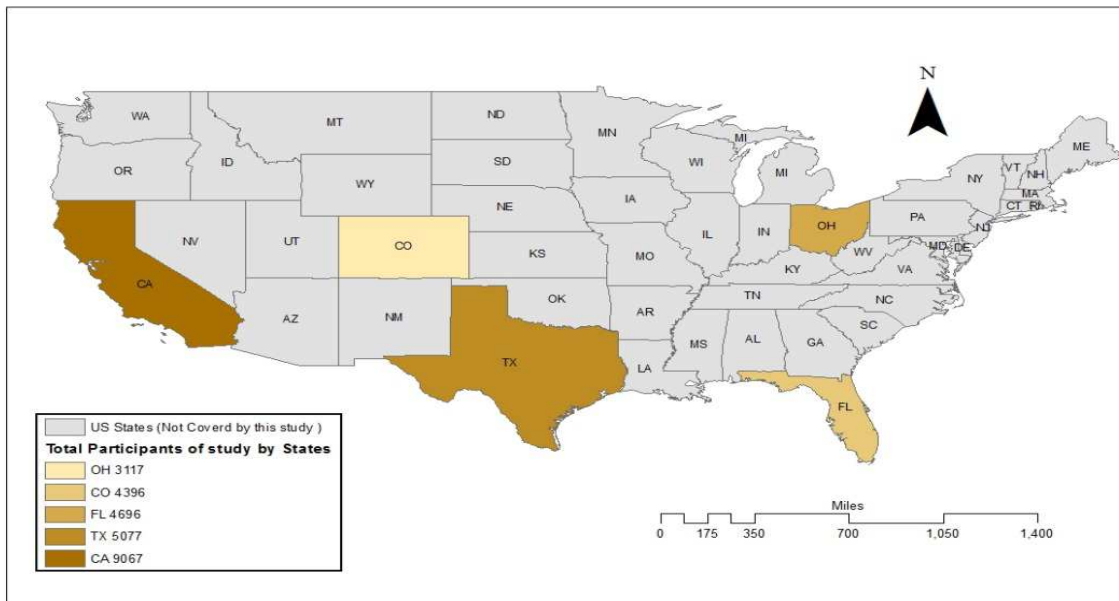


Figure 3: Total of participants from five states, SCAM, 2012

**Results and discussion:**

**1- Explore and analyze the SACM data.**

According to SACM (2012), the largest state for Saudi students is California, with about 9,067 students, and the smallest is Vermont, with 44 students (Table 2). To understand this distribution more clearly, a map is used to represent this data spatially (Figure 4). Figure 5 shows the result of the Getis-Ord General G method in the spatial statistics tool in GIS. The distribution pattern of Saudi students

in the US does not appear to be significantly different from random. In other words, there is no clustering in the distribution of Saudi students in the US. The spatial autocorrelation method also shows that the distribution of Saudi students in the US is random (Figure 6). As seen in Figure 7, male Saudi students more than females and California, Texas, Ohio, Florida, and Colorado experience the most overcrowding of Saudi students.

Table (2) . The Saudi Students distribution in the US (SACM, 2012).

	STATE_NAME	Numbers of students		STATE_NAME	Numbers of students
1	California	9067	26	Arkansas	1017
2	Texas	5077	27	Idaho	931
3	Ohio	4696	28	Georgia	909
4	Florida	4396	29	Alabama	872
5	Colorado	3117	30	West Virginia	820
6	Pennsylvania	3021	31	North Carolina	815
7	Virginia	2952	32	Minnesota	801
8	Michigan	2943	33	Maryland	703
9	Massachusetts	2734	34	Nebraska	498
10	Indiana	2719	35	Montana	489

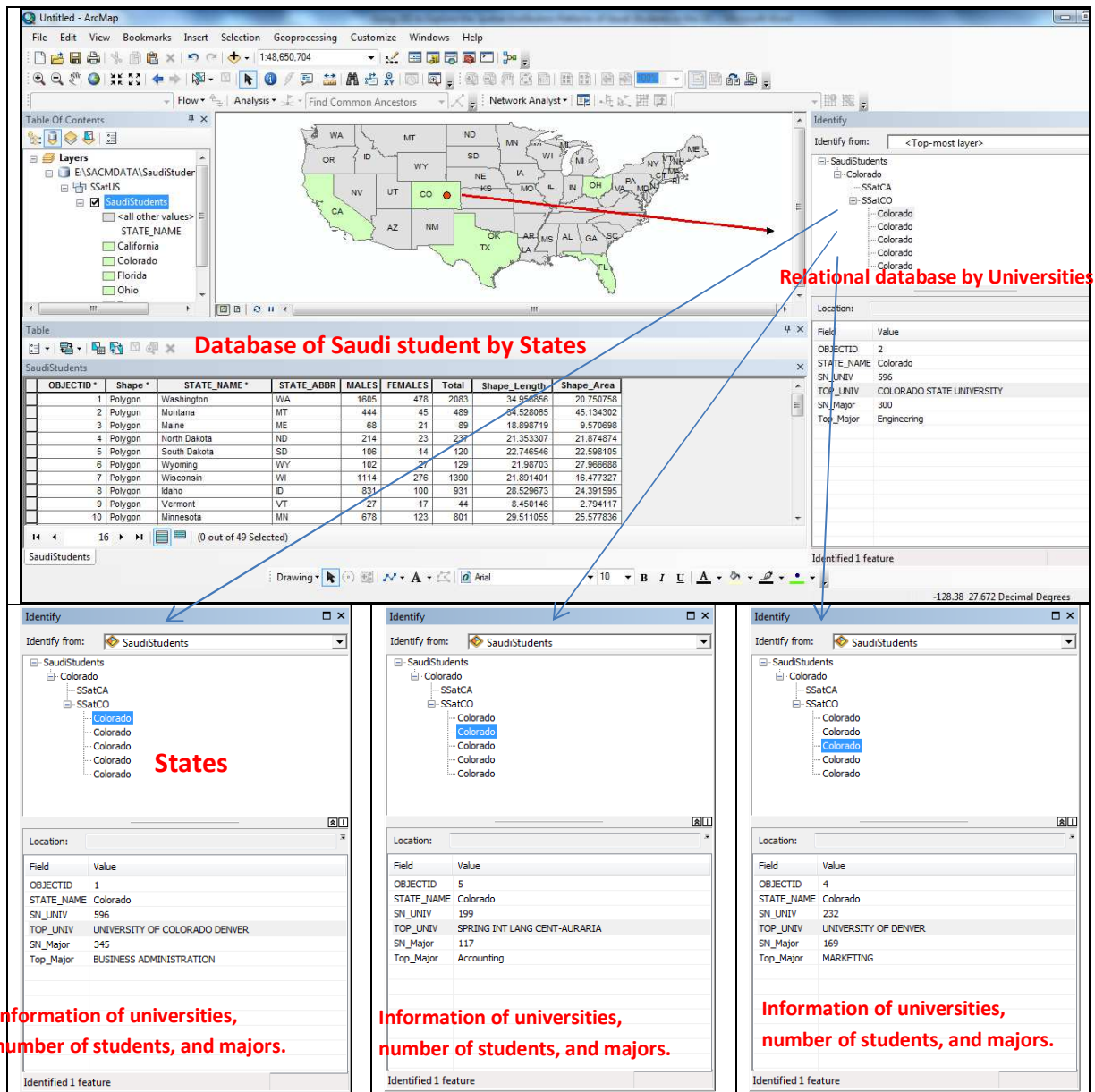


Figure 2: GIS relational database of Saudi students in the US.

### **King Abdullah Scholarship Program (KASP)**

The KASP allows Saudi students to go to the best universities in the world to pursue bachelor's, master's, and doctoral degrees. In 2005, the program began by sending a group of male and female students to study in the US. Its scope was then broadened to include a number of advanced countries in diverse fields of specialization. Academic disciplines and scholarships are selected based on the needs of government ministries, national corporations, and the private sector. The SACM offers generous support for scholarship recipients - a monthly stipend, educational tuition and fees, study-related travel expenses, airline tickets, and a cash allowance for books and clothing. Bonuses are given for outstanding academic performance. According to the Ministry of Higher Education (2011), the goals of this program are as follows:

1. Sponsor qualified Saudis for study in the best universities around the world.
2. Work to bring about a high level of academic and professional standards through the foreign scholarship program.
3. Exchange scientific, educational, and cultural experiences with countries worldwide.
4. Build up qualified and professional Saudi staff in the work environment.
5. Raise and develop the level of professionalism among Saudis.

### **Methodology:**

This study employed the quantitative approach to determine the spatial distribution pattern of Saudi students in the US by using the spatial statistics tool in GIS. The spatial statistics tool contains tools for analyzing spatial distributions, patterns, processes, and relationships. The practical part of the research has been based on questionnaires sent to the target group (the top five states for Saudi students in the US). Questionnaire-based research was chosen because it is a relatively fast and low-cost method when a large number of respondents is targeted. It is therefore very time-efficient for respondents themselves and easy to analyze for researchers. The

questionnaire was published on the Internet and covered three areas: personal information, educational information, and spatial information. The questionnaire was expected to take approximately six minutes to complete. The first part focused on personal information of the students, such as age, gender, number of family members living with the student, and province of residence in Saudi Arabia. The second part focused on educational information, such as study major and university location. The last part addressed spatial information such as reasons for choosing the university and the impact of the overcrowding problem. The data analysis for the first part used the spatial statistics tool in GIS to process the acquired information. This tool relied on direction trend (standard deviational ellipse), spatial autocorrelation methods, and the global Moran method to identify patterns and relationships in the Saudi student data. Data analysis for the second part used statistical computer programs such as Excel for frequencies of tables and descriptive statistics.

### **Data Collection:**

The main instruments used for this study were Excel (SACM, 2012) and a questionnaire. Data for the study were collected from SACM and an online questionnaire survey. The SACM data were non-spatial data where they were numbers in Excel format only. These data covered the number of Saudi students by state, university, and academic major. GIS analysis works on spatial data, so these data were needed to build a database of Saudi students in the US (Figure 2). On the other hand, the online questionnaire was designed by generating a list of items that solicited students' responses on personal Information, educational Information, and spatial Information to explore the spatial patterns of Saudi students in the US. The participants of this study were all Saudi students enrolled at universities from the five top US states for Saudi students on February 1, 2013. More than 29,374 Saudi students were studying at US universities in California, Texas, Ohio, Florida, and Colorado (Figure 3).

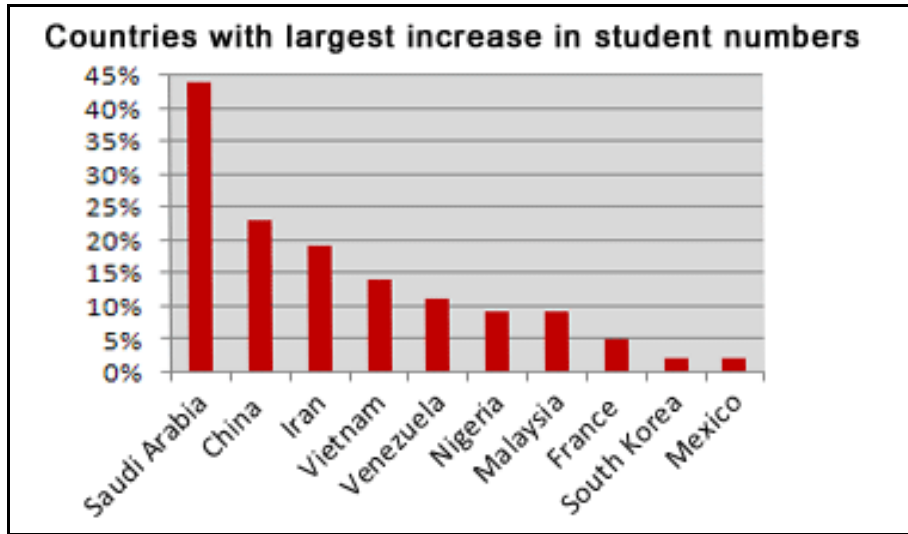


Figure (1). Percentage of international students in the US by sending country; Open Doors Report published by the Institute of International Education (IIE), December 2011.

Table (1). Top 10 sending countries of origin and percentage of total international student enrollment in 2011; Open Doors Report published by the Institute of International Education (IIE), December 2012.

Places of Origin	Top 10 Places of Origin	Total Number of International Students	Undergraduate International Students	Graduate International Students	Non-degree-seeking International Students	Optional Practical Training
#1	China	194,029	74,516	88,429	12,690	18,394
#2	India	100,270	13,059	59,014	1,455	26,742
#3	South Korea	72,295	38,232	21,260	6,996	5,807
#4	Saudi Arabia	34,139	14,344	6,133	13,214	448
#5	Canada	26,821	12,866	11,190	625	2,140
#6	Taiwan	23,250	6,000	12,007	1,866	3,377
#7	Japan	19,966	9,359	4,403	4,611	1,593
#8	Vietnam	15,572	11,244	2,649	864	815
#9	Mexico	13,893	7,564	4,188	1,096	1,045
#10	Turkey	11,973	3,495	6,198	989	1,291
Total of All Places of Origin		<b>764,495</b>	<b>309,342</b>	<b>300,430</b>	<b>69,566</b>	<b>85,157</b>

دراستهم . وأخيرًا اقترحت هذه الدراسة توظيف تقنيات نظم المعلومات الجغرافية لبناء قاعدة بيانات جغرافية علائقية تسهم في إدارة وتحليل نمط التوزيع المكاني للطلاب والإسهام في التقليل من تكديس الطلاب في بعض المعاهد والجامعات الأمريكية، مما سوف تسهم في مساعدة متخذي القرار على وضع الإستراتيجيات التعليمية لضمان الجودة والتميز الدراسي للطلبة.

## **Introduction**

In its 2013 budget, the Saudi government allocated SR 204 billion to the education sector; this reflects the government's determination to develop that sector. In addition, the Saudi government is encouraging its nationals to pursue studies abroad by providing scholarships. One of the most important programs in this effort is the King Abdullah Scholarship Program (KASP). The government has allocated more than SR 7 billion to support applicants to prestigious universities in many countries of the world; furthermore, a recent survey showed that 75% of scholarship candidates expressed a desire to study in the United States (US), followed by Canada (12%), Europe (11%), and Asia (2%) (Arab News, 2013). This research will focus on Saudi students in the US and explore the spatial pattern of those students.

Since 2005, the KASP has sponsored approximately 70,000 Saudi students seeking bachelor's, master's, and doctoral degrees in American universities and 150,000 in universities worldwide (Saudi Arabian Cultural Mission, 2012). The scholarship program covers the cost of tuition, housing, and health benefits for students and family members, plus round-trip tickets home once a year. Under the scholarship, students have up to 18 months to study intensive English abroad to bring their language level up to university standards before being admitted to a university. The goals of the program are to improve students' job prospects and prepare Saudi nationals to replace expatriate workers in better-paid technical jobs in the kingdom, thereby reducing unemployment and opening the conservative kingdom to the outside world.

The large number of Saudi students in the United States has created overcrowding for those students in US universities. This problem might damage the quality of education for Saudi students. Indeed, recently, the Ministry of Higher Education moved to limit the number of students accepted at certain universities and colleges so as to encourage their mixing with host nationals to improve their English and performance in general studies. This paper explores the spatial patterns and analyzes the overcrowding problem of Saudi students in the US

through a spatial analysis using geographic information systems (GISs).

## **Research Purpose:**

The purpose of this paper is to investigate the issue of Saudi students concentrating at select US universities. The first goal is to explore the spatial distribution pattern of Saudi students in the US. By analyzing the spatial distribution, we can determine which states and universities are overcrowded with Saudi students. The second objective is to determine the factors and reasons that led to the overcrowding problem and its impact on Saudi students in the US. This endeavor will help in determining whether Saudi students are spending more time with other Saudis than they are with either American students or foreign students from other countries as a result of culture. To understand the importance and effects of the overcrowding problem on Saudi students in the US, questionnaire-based research was chosen because it is a fast method when a large number of respondents is targeted.

## **Background:**

The number of international student enrollments at universities in the US is about 764,495. The largest increases are coming from Saudi Arabia (44%), China (23%), and Iran (19%) (Institute of International Education, Open Doors Report, December 2011) (Figure 1). According to the annual Open Doors Report (December 2011), the number of Saudi student enrollments at universities in the US is about 34,139 (Table 1). In August 2012, the number of Saudi students studying in the US reached nearly 70,000, a 105% rise from 2011, due primarily to the large Saudi government scholarship program (King Abdullah Scholarship Program), according to the Saudi Arabian Cultural Mission to the United States (SACM). This significant increase in the number of students may contribute to problems such as overcrowding, educational quality, and services provided by SACM. This paper limits its discussion to the overcrowding of Saudi students in the US.

## التوزيع المكاني للطلاب السعوديين في الولايات المتحدة الأمريكية والعوامل المحددة لتركيزهم في سنة ٢٠١٢م

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الكلمات المفتاحية: الطلبة السعوديون في أمريكا، نمط التوزيع المكاني، تكديس الطلبة، نظم المعلومات الجغرافية. ملخص البحث: تناول هذه الورقة التوزيع المكاني للطلاب السعوديين في الولايات المتحدة الأمريكية بحسب الجامعات والتخصص. بناء على بيانات الملحقية الثقافية السعودية (٢٠١٢م)، فقد بلغ عدد الطلاب المبتعثين إلى الولايات المتحدة الأمريكية فقط حوالي ٧٠ ألف طالب وطالبة و ١٥٠ ألف طالب في كل دول العالم. هؤلاء المبتعثون يسعون للحصول على الدرجات الأكاديمية المختلفة كالبيكالوريوس والماجستير والدكتوراه، وفي العديد من التخصصات مثل: الطبية والهندسية والإدارية التي يتطلبها سوق العمل السعودي. هذه الأعداد الكبيرة قد تسبب بعض التكديس في معاهد اللغة أو في بعض البرامج الأكاديمية في الجامعات الأمريكية، مما قد يؤثر بشكل مباشر على التحصيل اللغوي والأكاديمي للطلبة، ومن ثم جودة التعلم. وقد سعت هذه الورقة لتحديد النمط المكاني لتكديس الطلاب في المعاهد والجامعات الأمريكية من خلال تقنيات نظم المعلومات الجغرافية وتحديد العوامل والأسباب التي أدت إلى هذا التكديس بعمل استبانة لمجموعة من المبتعثين. حيث أظهرت نتائج الدراسة استحواذ ولايات كاليفورنيا (٩,٠٦٧ طالباً)، تكساس (٥,٠٧٧ طالباً)، وأهايو (٤,٦٩٦ طالباً)، فلوريدا (٤,٣٩٦ طالباً) وكولورادو (٣,١١٧ طالباً) على التوالي بنسبة ٣٨٪ تقريباً من أعداد الطلاب السعوديين في الولايات المتحدة الأمريكية، وكان لعامل توفر القبول الأكاديمي دوراً فاعلاً في تكديس الطلاب في بعض الجامعات بنسبة ٣٦٪ تقريباً من العينة. وقد سببت مشكلة التكديس في المعاهد أو الجامعات تأثيراً على التحصيل العلمي للطلاب، حيث أجاب ٥١٪ من العينة بنعم عند سؤالهم هل عن تأثير مشكلة التكديس عليهم أثناء

## **Saudi students' distribution in the US and the determining their concentrations**

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**Keywords:** Saudi students in US , spatial patterns , accumulation , GIS

**Abstract:** This paper explores the spatial patterns and analyzes the overcrowding problem of Saudi students in the US through a spatial analysis using geographic information systems (GISs). Since 2005, the King Abdullah Scholarship Program (KASP) has sponsored approximately 70,000 Saudi students seeking bachelor's, master's, and doctoral degrees in American universities and 150,000 in universities worldwide (Saudi Arabian Cultural Mission, 2012). One objectives of this paper is seeks to determine the factors and reasons that led to the overcrowding problem and its impact on Saudi students in the US by questionnaire method. Based on the results, the five largest states accumulation of Saudi students were California (9,067 students), Texas (5,077 students), Ohio (4,696 students), Florida (4,396 students), and Colorado (3,117 students). In addition, the study found that 51.23% of students had faced the accumulation problem during their studies at language institutes or universities, and this also caused them problems, such as difficulty in learning the English language and therefore difficulty in obtaining university admission. Finally, the study proposed that GIS can contribute to student information management by building a geographic database and analysis of the spatial distribution via digital maps.