

# Interregional Migration and Graduate Earning in Malaysia

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**Abstract:** *This paper investigated the interregional migration patterns and the effects of spatial mobility on the earnings of new graduates from Malaysian universities, utilising the 2013 Tracer Study data obtained from the Ministry of Higher Education. Several local studies using the same data source mainly dealt with issues of employability, but none have studied the effects of migration on their earnings. Some graduates pursued tertiary education away from their state of birth and settled to work in the state where they studied or relocated to work in another state. This study examined graduate migration between Klang Valley (KV) and the rest of Malaysia, which differs very much in terms of economic activities and development. The estimations of the wage equation using ordinal logit models show that migration from all other states towards Klang Valley was associated with higher starting salaries for the graduates.*

**Keywords:** Returns to education; interregional migration; intergenerational mobility

**JEL Classification:** I26; J24; J31; J61

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## 1. Introduction

An important aspect of graduate employment is their spatial mobility in pursuing higher education and finding a job. This paper examined graduates' interregional movement, and the effects of migration on their earning, utilising a nation-wide data set on graduates' employment and salaries collected and administered by the Ministry of Higher Education Malaysia. The results show that migration has a significant impact on the employment outcomes of new graduates, and this is consistent with past findings (Iammarino and Marinelli, 2007; Nakosteen and Zimmer, 1980; Venhorst and Corvers, 2015).

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According to Hicks (1963), people migrate to increase their earnings. Sjaastad (1970) viewed migration as a process of human capital development in that an individual makes a rational decision to maximise the present value of their net gain by moving to another location. An individual will choose to migrate if the gain in making a move is more than the total one-time costs involved in their migration (Nakosteen and Zimmer, 1980). This voluntary act of deciding to move to another location by comparing the costs and benefits of migration induces the self-selection process, where highly skilled individuals are more likely to migrate to enhance their human capital. Hence, the propensity to migrate increases with educational level and potential productivity (Molho, 1987). Quinn and Rubb (2005) found that better-trained individuals are more likely to migrate in order to apply the skills they possess.

The general theme of research of Malaysia's graduate unemployment problem focuses on graduates' lack of necessary skills for employment. Ismail, Yussof & Sieng (2011) reported that some graduates possessed "unsuitable skill and qualification... no good working performance". From the employers' perspective of local graduates, Hanapi & Nordin (2014) suggested that "lecturers are lack of skill and higher education could not produce graduates with skills required in the labour market". A report from the Central Bank in 2002 stated that Malaysian graduates are "less skilled as compared to the international graduates". The skills mentioned include technical skills, problem-solving skills and communication skills, especially in the English language. Hanapi & Nordin (2014) found that the ten primary weaknesses of Malaysian graduates pertain to management, problem-solving, communication, leadership, creativity, critical thinking, proactive, self-confidence and interaction skills. Nasrudin (2004) stated the 11 factors that lead to the unemployment problem among the graduates are the relationship between capital intensive economy, a rapid increase of the number of graduates, lack of the linkage between educational institutions and the industry, lack of training for work preparation, rapid increase of the population and decrease in the mortality rate, educational development, economic recession, quality of education, capability of graduates, and the graduates' skills and personalities.

### ***1.1 The Dualistic Economy in Malaysia***

Malaysia comprises two main parts - the Malay Peninsular and East Malaysia comprising Sabah and Sarawak on the Borneo Island, which are separated by the South China Sea. Malaysia is a newly industrialised market economy, with its main economic activities transforming from a predominantly agriculture towards an industrialised and dynamic society. However, economic development has not been uniform, resulting in wide disparity

across regions. The dualistic economic structure in the country causes significant differences in skill demands. The most developed regions in the Klang Valley attract high-skilled workers to work in the secondary and tertiary sectors, while the less developed regions are characterised by primary sector in agriculture, self-employment, traditional, and low-technology industries which offer low skilled jobs.

The Klang Valley (KV) comprises Kuala Lumpur and the four adjacent district in neighbouring Selangor. This is the most vibrant region in the country, with dynamic scientific and technological infrastructure. The KV is the hub for administration, commerce, industry, and education. Hence, it comes as no surprise that the KV has attracted migrants from all parts of the country. The migration survey data shows that Selangor is the leading migrant destination in the country, followed by Pulau Pinang (Dept. of Statistics, 2011). On the other hand, the Eastern states (Kelantan, Terengganu, and Pahang, as well as the Northern states, i.e. Kedah and Perlis) have been experiencing migration deficit, which diminishes the human resources for development, resulting in regional disparity.

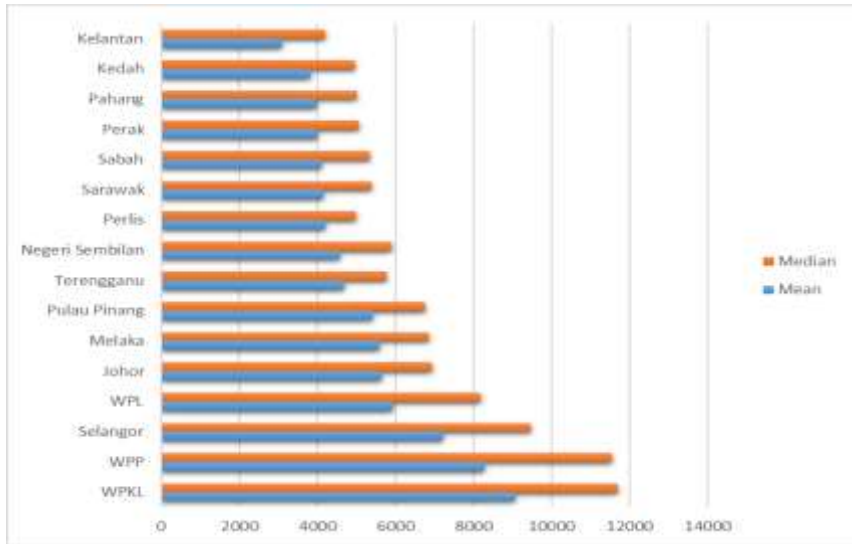
In 2015-2016, urban-urban migration accounted for some three-quarters of internal migration in Malaysia, up from 58.5% in 2011. Urban-to rural migration made up 15.2% of all internal migration, while rural-rural and rural-urban migration accounted for 7.0% and 4.2% respectively (Department of Statistics 2017). These numbers are the culmination of a trend of increasing urban-to-urban migration and decreasing rural-rural and rural-urban migration. Migrants tended to be better-educated than their non-migrant counterparts. The surveys show that 36.9% of internal migrants have tertiary education, compared to only 27.3% of non-migrants (Department of Statistics 2011, 2017). Analyses using census and survey data show that migrants to the Klang Valley were selective of the better-educated (Tey, 2014; Department of Statistics, 2017).

There are substantial differences in employment opportunities in different parts of the country. The regional environment (i.e., economic, technology, socio-demographic characteristics) gave rise to a different pace of economic growth. The more developed regions have been attracting skilled workers from the less developed regions. The more vibrant states offer better economic opportunities and are in a better position to integrate various skills in the labour market. This phenomenon leads to a self-reinforcing mechanism of skills creation and retaining skills for work, which leads to further development in the more developed states and a widening of disparity between the more developed and the less developed regions.

The regional disparity in development is reflected by income level (see Figure 1). KV has the highest household salary in the country. The mean monthly household salary of Kuala Lumpur (W.P.Kuala Lumpur) and Putrajaya (W.P.Putrajaya), at around RM11,692 in 2016 was almost three

times that of Kelantan, the lowest of all states, at RM4,214. The salary level of Selangor is not far below of Kuala Lumpur. The mean monthly household salary of all the non-KV state ranged from around RM5,000 - 5,400 in Kedah, Perlis, Perak, Pahang, Sabah and Sarawak to around RM6,800 – 6,900 in Johore, Pulau Pinang, and Melaka.

**Figure 1:** Monthly household gross salary by state, 2016



The regional economic disparity can also be assessed from the Salaries and Wages Surveys. In 2017, the mean salary of workers ranged from RM2,193 in Kedah to RM4,220 in Putrajaya. Part of the earning disparities may be due to state differentials in educational level. The proportion of workers with tertiary education ranged from about 12-13% in Perak, Sabah, Sarawak, and Kedah to about 25% in the Klang Valley. The returns to education can be seen from the earning differentials, ranging from RM1,410 with no formal education to RM4,798 among those with tertiary education (DOSM, 2018). Do regional economic disparities result in migration towards the Klang Valley and earning differentials among new graduates?

Another compelling case of Malaysia is the inter-linkage between location and ethnic groups. The Bumiputera, which comprises the Malays and indigenous tribes in Sabah and Sarawak, forms the largest group in the country, followed by Chinese and Indian. There is a pronounced regional ethnic distribution where the non-Bumiputera are mostly in the more developed states, and the Bumiputeras are more spread out in both the developed and the less developed states.

The upward mobility of some graduates was constrained by the place of origin and where they studied. There are barriers for new graduates to move to a new locality, such as the high cost of migration and problems of adjustment. Because public and private institutions of higher learning are concentrated in the Klang Valley, those who studied in this region were likely to stay back as they would have fewer problems of adjustment. Did the graduates stay behind to work in the state where they studied?

Migration plays a crucial role in the redistribution of human resources for national development. The Department of Statistics routinely conducted migration surveys, and data on internal migration were also available in the decennial population censuses. Nevertheless, a review of the literature reveals that research on internal migration and its impact is still very lacking in Malaysia (Rashid et al. 2014; Tey, 2014). There is a need for a study on population mobility and its effects on socio-economic development and individual wellbeing.

This paper aimed to examine the migration patterns of new graduates and how migration had affected their earnings. Specifically, the paper aimed to ascertain the earning differentials between fresh graduates who took up jobs in the KV state to those in the non-KV state, taking into account other socio-economic variables, including the courses taken and their job characteristics. However, for some graduates, their first job might be transitory as they accepted a job that required a lower qualification in order to gain experience before taking up a more suitable job (Rosen, 1972). Dekker, De Grip, & Heijke (2002) called this the waiting room effect - where graduates found themselves experiencing education-job mismatch (i.e., lower-earning) at the beginning of their career by taking up part-time or temporary jobs.

## **2. Literature Review**

The job search theory in the field of regional economy states that graduates make rational choices in their migration decision that includes movement towards the developed regions by comparing the expected earnings in the place of migration to the expected earnings in the place of origin. Migration might improve the chances of finding a job with a good match in terms of expected earning and also utilisation of skills. Molho (1986) categorised migration into speculative migration (when migration takes place with the hope to find suitable opportunity); and contracted migration (when migration occurs after securing such opportunity).

The push and pull factors cause people to migrate. People move out of less developed localities where there is a lack of economic opportunities to places with ample opportunities, such as in the KV. Other factors, such as family, social networks, and quality of life were also found to affect the

graduate's migration decision (Crescenzi & Holman, 2017). In this study, we ignored the family commitments and dual-body movements, as our sample consists of young graduates starting their career.

Using data from National Science Foundation (USA), Kazakis & Faggian (2017) studied the sequential interstate movements from the place of origin to university, then from university to the place of work among US college graduates. Controlling for selectivity bias, the results of their study found a significant impact of migration on the graduates' earning.

Many studies have found that the fields of study have a significant effect on graduate's employability and earnings (see Chevalier, 2011). Winters (2017) indicated that migration also depends on the earning of major-specific jobs, where higher major-specific earnings in the place of origin reduce migration towards other places. Another study supported the regional differences in wage are significant predictors of a decision to migrate (Liu, Shen, Xu, & Wang, 2017).

Ciriaci (2014) showed that the most crucial decision among graduates is the place to pursue higher education. They found that the vast majority of Italian graduates tended to stay behind to work at the location of study. In another study, using geographical information system in their three-stage simultaneous equation model, Faggian & McCann (2009) studied the connection between regional mobility and the innovative dynamism of a region, and found that higher education played a vital role in fostering local and regional economic development.

### **3. Methodology**

#### **3.1 Data Source**

Data for this analysis came from the Ministry of Higher Education's Tracer Study Survey for the year 2013. The full set of the questionnaire elicited information on graduates' socio-economic background (age, marital status, place of origin, family income, disability status); academic and skill competencies; educational experience (type of university, name of university, courses, field of study, industrial training status, financial assistance or funding, and mode of study); job information (employment status, reasons for unemployed, type of organisation, salary, industry, part-time job, job level, address of workplace); and retrospective questions on the satisfaction on university facilities, teaching environments and quality.

The annual survey was administered at each higher learning institution during graduation. In 2013, the total number of graduates produced by all higher learning institutions in the country stood at 220,931, where 96,745 were first-degree graduates. The sample size in this paper excluded the

disabled graduates, international students (who mostly went back to their respective countries), and those aged below 22 or above 27. The sample size was further reduced by including only full time and permanent workers, yielding a sample size of  $N = 12,872$ . Appendix 1 provides the descriptive statistics of the study variables.

The dependent variable is eight-categories of a graduate's monthly salary. The earning differentials by migration status was examined net of the academic and socio-economic characteristics. Graduate's academic achievement was measured through their Cumulative Grade Point Average (CGPA) upon graduation. The measurement of the English language ability was observed through the graduate's score in a national standardised English proficiency test, the Malaysian University English Test (MUET), which was taken before admission. Even though the graduates may have spent several years in education, but their MUET score remained a significant measure of their English language proficiency until graduation (see Rethinasamy & Chuah, 2011). Courses were grouped into five main subjects – Social Sciences, Technical, Engineering, Sciences, and Medical and Dentistry.

The measures of a graduate's socio-economic status included family monthly income, sex, and ethnic group. Job information was included to assess the effect of working in the public sector or a multinational corporation

### **3.2 Model Specification**

The Sjaastad General Framework viewed migration as one means of human capital investment where potential migrant behaves as though they seek to maximise the present value of net gains due to the change of location (Nakosteen & Zimmer, 1980). Individual's objective function is composed of earning differential and the cost of moving from region of origin to the migrated region. Individuals respond to positive values when the earning in the migrated region exceeds the earning in the region of origin, after subtracting the total costs of moving (Nakosteen & Zimmer, 1980).

The effect of migration on a graduate's wage was estimated separately for each job region by the wage equation (Equation 1).

$$W_{ij} = X'_{ij}\beta_j + \epsilon_{ij} \quad (1)$$

where  $i = 1, 2, \dots, n$  denotes individual workers and  $j = 1, 2, \dots, 5$  are the regions where the graduates obtained their job. The error is normally distributed with zero mean and variance  $\sigma_j^2$ . The dependent variable is the

monthly salary received by the graduates, while the explanatory variables  $X_{ij}$  are the matrix of individual and job characteristics, and migration, while  $\epsilon_{ij}$  are vectors of errors. Note that  $W_{ij}$  is not observed. Instead, we have a latent variable for eight ordinal categories of graduate salary where  $W_j, j = \{1: \leq \text{RM}500, 2: \text{RM}501 - \text{RM}1000, 3: \text{RM}1001 - \text{RM}1500, 4: \text{RM}1501 - \text{RM}2000, 5: \text{RM}2001 - 2500, 6: \text{RM}2500 - \text{RM}3000, 7: \text{RM}3000 - \text{RM}5000, 8: \geq \text{RM}5000\}$  (Refer Equatio 2). The grouping of graduate's income category follows the classification done by the Tracer Study's data collection unit

$$W_{ij}^* = \kappa \text{ if } \mu_\kappa \leq W_{ij} \leq \mu_{\kappa+1}, \kappa = 1, \dots, K \quad (2)$$

The unknown points  $\mu_1 < \mu_2 < \dots < \mu_8$  are estimated along with  $\beta$ . We do not address attrition and selection problems, although such problems could be severe. In this study, selection problem is not an issue given the homogenous nature of the cohorts who are all within the same age (indicating similar work experience level) and a similar educational level.

#### 4. Results

Interregional migrants refer to individuals who migrated to another state other than their state of origin. Table 1 shows graduates' state of origin and state of work. The most developed states such as Selangor, Kuala Lumpur, Penang, Putrajaya, and Labuan witnessed the inflow of graduates while the rest of the regions were losing out graduates to the more developed states. Kuala Lumpur had the most substantial net gains of graduates, while Perak, Kedah, and Kelantan had the most significant net loss. In the case of Kedah and Kelantan, approximately half of their graduates sought employment in another state.

Table 2 shows the linkage between university location and employment location. The most significant number of graduates pursued their tertiary education in Selangor, Kedah, and Kuala Lumpur. The third and fourth columns in Table 2 show the number of graduates who gained employment in the location where they pursued education. Data show that 42% of graduates who completed their tertiary education in Selangor had found a job in the same state upon graduation. In comparison, only 24% of the graduates who studied in Kuala Lumpur stayed back in the state for a job. The proximity between Kuala Lumpur and Selangor probably explains the high volume of movements between these two states. Besides Selangor, states with a high proportion of graduates taking up a job in the same state where they studied include Sarawak (42%), Sabah (39%) and Penang (37%). Table 2 shows that graduates who found a job at the same state where they studied



were mainly the local, except Kuala Lumpur and Negeri Sembilan). Of the graduates who attended a university in Kuala Lumpur and staying back to take up a job, only about a quarter were born in Kuala Lumpur. From the individuals' perspective, the movement of highly skilled graduate workers into the metropolitan city of Kuala Lumpur allowed them to make use of their skills and be rewarded with better remuneration. However, this exodus often resulted in overcrowding in the city. On the other hand, the movement of these highly skilled workers from non-KV states may cause brain drain issue in such states, and exacerbate regional inequality.

**Table 1:** Migration Between Home State and Place of Work

	State of origin	State of employment	Net migration
W.P. Kuala Lumpur	1,018	2,759	1,741
Selangor	3,506	4,347	841
Pulau Pinang	943	1,090	147
W.P. Putrajaya	77	174	97
W.P. Labuan	15	43	28
Perlis	74	29	-45
Sabah	418	352	-66
Melaka	515	411	-104
Sarawak	525	396	-129
Terengganu	365	234	-131
Negeri Sembilan	610	328	-282
Pahang	587	274	-313
Johor	1,667	1,347	-320
Kelantan	539	148	-391
Kedah	745	352	-393
Perak	1,268	587	-681

**Table 2:** Migration Between Home State and Place of Study

	(1) State of education	(2) Stay for job	(3) % from (1)	(4) Locals	(5) % from (2)
Johor	1066	292	27%	233	80%
Kedah	1583	115	7%	98	85%
Kelantan	78	4	5%	4	100%
Melaka	379	55	15%	31	56%
Negeri Sembilan	144	12	8%	4	33%
Pahang	307	15	5%	10	67%
Pulau Pinang	436	161	37%	90	56%
Perak	318	12	4%	10	83%
Perlis	183	2	1%	0	0%
Selangor	6034	2,564	42%	1,497	58%
Terengganu	253	23	9%	19	83%
Sabah	392	153	39%	137	90%
Sarawak	292	122	42%	116	95%
W.P. Kuala Lumpur	1407	353	25%	86	24%

Table 3 shows the mainstream of sequential migration from the place of origin to the place of study and employment among fresh graduates. The mainstream of migration flows is the movement from KV states studying and working in the KV states (24.3%), followed by those from non-KV states studying and working in non-KV states (23.4%), those from the non-KV states studying in KV states and working in non-KV state (18.2%), and those from non-KV states studying and working in the KV states (14.1%). Those from KV states working in non-KV state made up only 1.2% of the total sample, but they received the highest starting pay of about RM3,000 per month. In contrast, those from non-KV and working in non-KV received the lowest pay, regardless of the place of study. All those working in the KV received a starting pay of between RM2,275 and RM2,351.

**Table 3:** Stream of Migration from Place of Origin to Place of Study and Employment

Origin	Education	Job	N	%	Mean salary
KV	KV	KV	3,131	24.32	2,275
KV	KV	non-KV	151	1.17	3040
KV	non-KV	KV	1,240	9.63	2,349
KV	non-KV	non-KV	79	0.61	2918
non-KV	KV	KV	1,814	14.09	2,271
non-KV	KV	non-KV	2,345	18.22	2,082
non-KV	non-KV	KV	1,095	8.51	2,351
non-KV	non-KV	non-KV	3,017	23.44	2,058
			12,872	100	2215

The top panel of Table 4 shows the mean and median salaries among new graduates in the KV, while the bottom panel shows the mean and median starting salaries for graduates in the non-KV states. In terms of median salary, the three states with the highest starting salaries for graduates were in the Klang Valley. There were pronounced variations in the starting salaries of new graduates across the other states.

**Table 4:** Mean and Median Salary by the State (of Employment)

	N	Mean (salary)	Median (salary)	Rank
<i>Klang Valley states</i>				
W.P. Putrajaya	174	2816.1	2662.8	1
W.P. Kuala Lumpur	2,759	2399.1	2289.3	2
Selangor	4,347	2213.3	2162.0	3
<i>Non-KV states</i>				
Pulau Pinang	1,090	2142.7	2123.3	4
Negeri Sembilan	328	2261.4	2086.7	5
Johor	1,347	2109.9	2061.0	6
Terengganu	234	2319.4	2016.7	7

**Table 1:** (Continue)

	<b>N</b>	<b>Mean (salary)</b>	<b>Median (salary)</b>	<b>Rank</b>
W.P. Labuan	43	2488.4	1937.5	8
Melaka	411	1992.1	1901.9	9
Sarawak	396	2176.1	1890.0	10
Perak	587	2105.6	1869.5	11
Pahang	274	2021.9	1783.3	12
Kedah	352	2073.2	1779.8	13
Sabah	352	1983	1679.8	14
Kelantan	148	1739.9	1281.3	15
Perlis	29	1853.4	1159.1	16

**4.1 *The Effect of Migration Behaviour on Salary***

Many variables affect the starting salaries of graduates with confounding effects. Hence, this analysis employs ordinal logistic regression to examine the net effects of migration and each of the other variables on the starting salaries of graduates. Table 5 shows the empirical results on ordinal logistic regression of the wage equation. Using RemainO (non-movers in the non-KV regions) as the base category, the effects of migration on the starting pay were assessed with the relative odds of a higher earning for all the other migration behaviour. The first column in Table 5 shows the results for the pooled model, while columns (2) – (6) show the results for separate regional analysis based on graduates’ state of employment. The results show a higher odds for all migrating streams (include those remaining in their state of origin in KV), indicating a higher starting salary as compared to those who remained in the state of origin within the non-KV region. The highest odds ratios (3.967) was found among interstate migrants within the Klang Valley, followed by movers from a non-KV state to a KV state (odds ratios of 3.144). The result shows that migration towards a KV state substantially increases graduate earning regardless of the place of origin.

Column (2) shows that interstate migration within the Klang Valley had a higher impact on graduate starting salaries as compared to migration to the Klang Valley from outside the region. The impact of KV-KV and non-KV movement is mediated when we run the analysis on graduates who obtained jobs in the Central regions (Klang Valley areas) because the model computes the relative odds of migration compared to graduates who remained in their state of origin in Klang Valley (remain KV). Based on the results in column (2), similar patterns are found where migration from another KV state increases a graduate’s earning more than the migration from a non-KV state.

**Table 5:** Ordinal Logit Model on Different Migration Patterns

Migration pattern	(1)	(2)	(3)	(4)	(5)	(6)
	All	Central	East Malaysia	South	North	East
	<i>Odds ratio</i>	<i>Odds ratio</i>	<i>Odds ratio</i>	<i>Odds ratio</i>	<i>Odds ratio</i>	<i>Odds ratio</i>
	<i>(se)</i>	<i>(se)</i>	<i>(se)</i>	<i>(se)</i>	<i>(se)</i>	<i>(se)</i>
RemainO	1 (.)		1 (.)	1 (.)	1 (.)	1 (.)
RemainKV	2.829*** (0.132)	1 (.)				
non-KV - non-KV	1.820*** (0.117)		3.032*** (0.711)	1.176 (0.132)	1.561*** (0.153)	2.922*** (0.637)
non-KV - KV	3.144*** (0.145)	1.114* (0.0544)				
KV - non-KV	2.808*** (0.389)		3.905*** (1.576)	1.831** (0.381)	1.339 (0.443)	3.732*** (1.268)
KV-KV	3.867*** (0.237)	1.386*** (0.0870)				
Unistay	0.851*** (0.0314)	0.788*** (0.0357)	0.814 (0.115)	1.210 (0.145)	1.112 (0.135)	0.615 (0.188)
CGPA	2.202*** (0.103)	2.106*** (0.127)	1.781** (0.382)	2.394*** (0.297)	2.068*** (0.243)	2.295** (0.585)
MUET	1.267*** (0.0271)	1.392*** (0.0393)	1.146 (0.0941)	1.062 (0.0594)	1.124* (0.0621)	1.008 (0.103)
Social Sciences	<i>Base category</i>					
Technical	2.677*** (0.163)	2.704*** (0.193)	4.188*** (1.446)	1.786** (0.396)	2.200*** (0.392)	1.626 (0.638)
Engineering	3.775*** (0.161)	2.858*** (0.158)	10.09*** (1.982)	4.708*** (0.532)	5.072*** (0.600)	7.665*** (1.714)
Sciences	1.395*** (0.0785)	1.116 (0.0831)	1.850** (0.438)	2.598*** (0.384)	1.547** (0.214)	2.694*** (0.780)
Medical/Dentistry	23.07*** (2.969)	6.444*** (1.092)	24.57*** (10.00)	44.20*** (15.28)	233.9*** (88.15)	34.50*** (17.22)

**Table 5:** (Continue)

Migration pattern	(1)	(2)	(3)	(4)	(5)	(6)
	All	Central	East Malaysia	South	North	East
	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)
< RM 500	<i>Base category</i>					
RM 501 - RM 1000	0.990 (0.0838)	0.952 (0.112)	1.310 (0.395)	0.770 (0.160)	1.002 (0.219)	1.375 (0.447)
RM 1001 - RM1500	1.133 (0.0940)	0.976 (0.113)	2.038* (0.623)	1.012 (0.204)	1.050 (0.223)	1.503 (0.489)
RM 1501 - RM2000	1.451*** (0.120)	1.255* (0.143)	2.042* (0.618)	1.227 (0.252)	1.485 (0.314)	2.273* (0.777)
RM 2001 - RM2500	1.700*** (0.146)	1.467** (0.171)	2.301* (0.746)	1.706* (0.366)	1.739* (0.389)	1.462 (0.528)
RM 2501 - RM3000	1.805*** (0.151)	1.564*** (0.178)	2.152* (0.695)	1.660* (0.344)	1.979** (0.438)	3.398*** (1.235)
RM 3001 - RM5000	2.244*** (0.190)	1.909*** (0.218)	4.071*** (1.325)	1.912** (0.411)	2.672*** (0.613)	2.649** (0.891)
> RM 5000	3.129*** (0.283)	2.751*** (0.328)	4.241*** (1.537)	2.395*** (0.559)	3.658*** (0.981)	6.984*** (2.739)
Male	1.721*** (0.0613)	1.599*** (0.0745)	1.618*** (0.233)	1.994*** (0.180)	1.749*** (0.167)	2.227*** (0.399)
Malay	0.870* (0.0525)	0.818* (0.0703)	1.557* (0.296)	0.557** (0.102)	0.365*** (0.0719)	1.248 (0.731)
Chinese	1.966*** (0.122)	1.733*** (0.154)	1.593** (0.262)	1.482* (0.278)	1.623* (0.310)	4.832* (2.969)
Public sector	5.193*** (0.497)	3.312*** (0.421)	7.864*** (2.273)	8.880*** (2.247)	5.183*** (1.388)	5.815*** (2.009)
MNC	3.196*** (0.121)	2.704*** (0.132)	3.714*** (0.678)	3.599*** (0.340)	3.961*** (0.396)	3.540*** (0.755)

**Table 5:** (Continue)

Migration pattern	(1)	(2)	(3)	(4)	(5)	(6)
	All	Central	East Malaysia	South	North	East
	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)	Odds ratio (se)
N	12871	7280	791	2086	2058	656
Log likelihood	-17881.6	-10073.4	-1079.99	-2781.51	-2613.92	-862.941

Note: Exponentiated coefficients; Standard errors in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Columns (3) – (6) show results for migration towards the non-KV states where the analysis is divided into several regions based on their geographical location in the country. The results show that any migration types are generally positive and at a higher odds of increasing earning compared to the base category remains, where movement from a KV state had a higher odds compared to movement from a non-KV state. Hence, it may be concluded that migration had a positive impact on the earnings of graduates.

The above results were obtained after controlling for academic performance and social-economic status. All the results corroborate with Mincer's earning equation, which stated that an individual with a better human capital is more likely to have higher earning. Academic performance, measured by CGPA, showed that graduates with higher CGPA were more likely to have a higher earning. English is the business language in Malaysia, and it is very important in the private sector. English proficiency was measured using the MUET score. The result shows that higher MUET score was associated with higher earnings. For the field of study, using Social Sciences as the base category, Medical and Dentistry graduates earned a much higher salary than the rest. All the other fields of study (Engineering, Technical, and Sciences) were more likely to have higher earnings compared to graduates from the Social Sciences.

Male graduates were more likely to have higher earnings than their female counterparts. Compared with Indians, Chinese are more likely to have higher earning, but Malay were less likely to have a higher earning except for the East Malaysia regions. Graduates who worked in the public sector earned significantly more than those in the private sector. Those working with multinational corporations were more likely to have higher earnings compared to other types of private-sector employment.

Graduates had lower odds of a higher salary if they worked in the location where they attended university. This result holds even among those who attended universities in the Klang Valley.

Table 6 shows the impact of sequential movement from the place of origin to the place of education, and then to the place of employment. The base category is graduates who were born in a non-KV area and attended a university in a non-KV area, and then obtained a job in a non-KV area. Graduates who did not participate in any pre- or post-university migration were excluded from the analysis. The movement from KV to non-KV and then KV was associated with the highest odds of a higher starting pay. This pattern of migration was two times more likely to have a higher starting salary, as compared to migration within the non-KV state’s pre- and post-university. The general pattern showed that movement towards KV increased graduate starting salary, regardless of pre- and post-university migration.

**Table 6:** Ordinal Logit Model on Sequential Migration Patterns

	Odds ratio	S.E.
non-KV-non-KV-non-KV	1	(.)
KV-KV-KV	1.695***	(0.221)
KV-KV-non-KV	1.769	(0.574)
KV-non-KV-KV	2.005***	(0.258)
KV-non-KV-non-KV	1.499	(0.357)
non-KV-KV-KV	1.428***	(0.130)
non-KV-KV-non-KV	0.998	(0.124)
non-KV-non-KV-KV	1.722***	(0.171)

## 5. Conclusion

Two broad conclusions emerge from the empirical findings of this study. First, migration has a positive effect on the starting pay of graduates. Second, better job opportunities are associated with all forms of migration, which only strengthen the assumption that high-skilled graduates choose to migrate to take up higher-paid jobs which require their skills. In Malaysia, the concentration of institutions of higher learning in the Klang Valley, a vibrant region with plenty of job opportunities, has facilitated the migration of young people to the region.

A comparison of the earnings of new graduates involved in the internal migration revealed that migration tended to be associated with a higher starting pay. On the other hand, non-migrants within the non-KV region, and those moving from a non-KV state to another non-KV state for employment tended to earn less than other streams of migrants, regardless of where they studied. The results confirm that remaining in the non-KV states are associated with lower-earning. Our analysis also shows that working with a multinational corporation was associated with all migrating patterns, which further supports the assumption that graduates chose to migrate to obtain better jobs. While migration towards Klang Valley led to further urban

growth, the massive movement towards KV has also given rise to overcrowding in the cities that may result in safety concerns (such as rising crime), and health deterioration caused by pollution. The movement of the highly skilled workers with tertiary education may result in a further regional disparity between the KV-non-KV states. Hence, it is necessary to create more job opportunities in the non-KV states to alleviate the regional disparities.

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## Appendices

### Appendix 1: Descriptive Statistics

<b>Variable</b>	<b>Description</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
<i>KV-KV</i>	KV - KV	12871	0.101	0.301
<i>KV - non-KV</i>	KV - non-KV	12871	0.018	0.132
<i>non-KV - KV</i>	non-KV - KV	12871	0.226	0.418
<i>non-KV - non-KV</i>	non-KV - non-KV	12871	0.083	0.276
<i>RemainKV</i>	Remain in KV	12871	0.239	0.426
<i>RemainO</i>	Remain in non-KV	12871	0.334	0.472
<i>cgpa</i>	CGPA score	12872	3.197	0.417
<i>muet</i>	MUET score	12872	2.958	0.908
<i>socsci</i>	Social sciences	12872	0.477	
<i>tech</i>	Technical	12872	0.087	0.281
<i>engine</i>	Engineering	12872	0.269	0.444
<i>sci</i>	Sciences	12872	0.104	0.305
<i>med</i>	Medicine/Dentistry	12872	0.064	0.245
<i>faminc1</i>	< RM 500	12872	0.055	
<i>faminc2</i>	RM 501- RM 1000	12872	0.134	0.341
<i>faminc3</i>	RM 1001- RM 1500	12872	0.150	0.357
<i>faminc4</i>	RM 1501- RM 2000	12872	0.154	0.361
<i>faminc5</i>	RM 2001- RM 2500	12872	0.119	0.323
<i>faminc6</i>	RM 2501- RM 3000	12872	0.144	0.351
<i>faminc7</i>	RM 3001- RM 5000	12872	0.142	0.349
<i>faminc8</i>	> RM 5000	12872	0.103	0.304
<i>male</i>	Male	12872	0.406	0.491
<i>malay</i>	Malay	12872	0.569	0.495
<i>chinese</i>	Chinese	12872	0.340	0.474
<i>public</i>	Public sector	12872	0.087	0.282
<i>mnc</i>	Multinational Corp.	12872	0.298	0.457
<i>unistay</i>	If obtain a job in the state where they completed education.	12872	0.302	0.459

**Appendix 2: Graduate Migration by State for Employment**

	Johor	Kedah	Kelantan	Melaka	Negeri Sembilan	Pahang	Pulau Pinang	Perak	Perlis	Selangor	Terengganu	Sabah	Sarawak	W.P. Kuala Lumpur	W.P. Labuan	W.P. Putrajaya	Total
Johor	1,129	3	1	43	8	4	12	4	1	254	4	6	2	175	3	18	<b>1,667</b>
Kedah	14	284	0	3	4	1	197	17	4	126	4	2	3	84	0	2	<b>745</b>
Kelantan	29	2	138	8	9	14	10	6	0	176	17	1	4	121	1	3	<b>539</b>
Melaka	26	1	0	282	10	3	4	4	0	96	2	1	3	79	0	4	<b>515</b>
N. Sembilan	21	1	0	23	221	1	8	1	0	199	4	2	0	122	0	7	<b>610</b>
Pahang	21	5	1	6	8	182	8	5	0	191	5	1	3	144	0	7	<b>587</b>
Pulau Pinang	7	28	2	7	1	5	692	18	1	85	1	2	3	86	0	5	<b>943</b>
Perak	29	9	0	12	9	16	110	503	2	333	6	5	6	219	2	7	<b>1,268</b>
Perlis	3	5	0	0	0	1	21	1	21	16	1	0	0	5	0	0	<b>74</b>
Selangor	32	8	2	16	42	24	12	19	0	2,359	13	13	8	883	3	72	<b>3,506</b>
Terengganu	5	3	2	4	4	18	2	3	0	86	169	2	0	63	0	4	<b>365</b>
Sabah	7	1	0	1	1	1	5	2	0	39	0	307	6	30	14	4	<b>418</b>
Sarawak	17	1	1	3	4	1	7	1	0	71	4	8	355	42	6	4	<b>525</b>
W.P. Kuala Lumpur	6	1	1	3	7	3	2	3	0	276	3	2	3	690	1	16	<b>1,017</b>
W.P. Labuan	0	0	0	0	0	0	0	0	0	0	0	0	0	2	13	0	<b>15</b>
W.P. Putrajaya	1	0	0	0	0	0	0	0	0	40	1	0	0	14	0	21	<b>77</b>
<b>Total</b>	<b>1,347</b>	<b>352</b>	<b>148</b>	<b>411</b>	<b>328</b>	<b>274</b>	<b>1,090</b>	<b>587</b>	<b>29</b>	<b>4,347</b>	<b>234</b>	<b>352</b>	<b>396</b>	<b>2,759</b>	<b>43</b>	<b>174</b>	<b>12,871</b>

**Appendix 3: Graduate Migration by State for Education**

State of origin/place of study	Johor	Kedah	Kelantan	Melaka	Negeri Sembilan	Pahang	Pulau Pinang	Perak	Perlis	Selangor	Terengganu	Sabah	Sarawak	W.P.Kuala Lumpur	W.P.Labuan	W.P.Putrajaya <sup>a</sup>	Total
Johor	292	19	6	24	20	14	65	43	0	272	19	19	31	227	6	9	<b>1,066</b>
Kedah	165	115	32	43	45	54	293	119	8	339	25	30	35	265	5	10	<b>1,583</b>
Kelantan	8	2	4	2	3	2	6	3	0	23	2	2	2	18	0	0	<b>77</b>
Melaka	48	3	2	55	10	2	19	13	0	166	4	2	5	44	1	5	<b>379</b>
N. Sembilan	8	3	12	3	12	2	3	5	0	54	12	1	0	27	0	2	<b>144</b>
Pahang	39	7	0	12	8	15	24	10	0	113	9	4	2	60	0	4	<b>307</b>
P. Pinang	32	16	3	7	4	11	161	26	1	90	3	3	7	66	1	5	<b>436</b>
Perak	29	14	0	8	6	10	4	12	1	47	34	11	23	110	2	7	<b>318</b>
Perlis	17	14	0	1	6	2	47	7	2	51	10	4	0	22	0	0	<b>183</b>
Selangor	491	109	69	115	151	121	359	264	16	2,564	75	81	90	1,455	7	67	<b>6,034</b>
Terengganu	38	10	5	5	7	8	14	15	1	80	23	0	2	40	0	5	<b>253</b>
Sabah	25	6	1	10	9	6	25	13	0	45	5	153	33	40	18	3	<b>392</b>
Sarawak W.P.Kuala Lumpur	24	5	4	1	9	4	13	10	0	53	4	9	122	32	1	1	<b>292</b>
	131	29	10	125	38	23	57	47	0	450	9	33	44	353	2	56	<b>1,407</b>
	<b>1347</b>	<b>352</b>	<b>148</b>	<b>411</b>	<b>328</b>	<b>274</b>	<b>1090</b>	<b>587</b>	<b>29</b>	<b>4347</b>	<b>234</b>	<b>352</b>	<b>396</b>	<b>2759</b>	<b>43</b>	<b>174</b>	<b>12871</b>

**Appendix 4: Malaysian Population Mean and Median Salary for Each State**

	<b>Mean</b>	<b>Median</b>
W.P.Kuala Lumpur	9073	11692
W.P.Putrajaya	8275	11555
Selangor	7225	9463
W.P.Labuan	5928	8174
Johor	5652	6928
Melaka	5588	6849
Pulau Pinang	5409	6771
Terengganu	4694	5776
Negeri Sembilan	4579	5887
Perlis	4204	4998
Sarawak	4163	5387
Sabah	4110	5354
Perak	4006	5065
Pahang	3979	5012
Kedah	3811	4971
Kelantan	3079	4214

Source: Department of Statistics, Malaysia (2018)