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## **Research Report**

# **Test Routes at Driving Institutes in Malaysia**



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**MIROS**

MALAYSIAN INSTITUTE OF ROAD SAFETY RESEARCH

■ ASEAN ROAD SAFETY CENTRE ■

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## Contents

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	<b>Page</b>
<b>List of Tables</b>	<b>v</b>
<b>List of Figure</b>	<b>vi</b>
<b>Acknowledgements</b>	<b>vii</b>
<b>Abstract</b>	<b>ix</b>
<b>1. Introduction</b>	<b>1</b>
1.1 Objectives of Study	2
1.2 Study Scope	2
<b>2. Literature Review</b>	<b>3</b>
2.1 Testing in Driver Licensing	5
<b>3. Methodology</b>	<b>9</b>
3.1 Desktop Study	9
3.2 Sampling and Data Collection	9
<b>4. Results</b>	<b>11</b>
4.1 How to Read Table 3	11
4.2 Descriptive Analysis of Test Routes	12
4.3 LO-Route Mapping	12
4.4 Route Analysis	13
<b>5. Discussion</b>	<b>20</b>
5.1 Urbanity Status of Driving Institute	20
5.2 Test Route Components	22
5.3 Test Route Enhancement	23

**Test Routes at Driving Institutes in Malaysia**

<b>6. Conclusion</b>	<b>25</b>
<b>References</b>	<b>26</b>
<b>Appendices</b>	<b>29</b>

## List of Tables

		<b>Page</b>
Table 1	Sectors for driver training programmes and their progress status	4
Table 2	Driving institutes involved in this study	10
Table 3	LO-Route map and IM-based results	15
Table 4	Populations for district/municipality where driving institutes belong to	22

## List of Figure

	<b>Page</b>
Figure 1    Framework for licensing system in Malaysia (Buku Teks Kelas D Automatik, 2014)	7

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And indeed, Allah knows best.





## Abstract

In testing for driver licensing in Malaysia, test route plays an important role. Testers evaluate the competency of candidate drivers when they drive along the routes. Because each driving institute has different test routes the prominent question was on whether it gives sufficient opportunity for the evaluation. This study tries to address this question by profiling 22 test routes from 10 institutes and mapping the properties of each route with targeted learning outcomes (LOs) of the driving curriculum. Results reveal that despite variations across these routes, the routes still cover most of the intended LOs. This report further discusses the issue of urbanity status, the issue of balance between ideality and practicality, as a suggestion to enhance test routes in Malaysia, as well as potential directions for future study.



## 1. Introduction

Malaysia, while dashing towards a developed country status, faces several challenges – and road safety is one of them. Statistics from Royal Malaysia Police indicates that fatalities on Malaysian roads are 6,674 with an addition of 4,432 victims' sustained severe injuries in 2014 (PDRM, 2015). The government has established national road safety plans to address the key areas in improving road safety. In the latest plan, the aim is to bring down the number of casualties on Malaysian road to, at least, half of current figure (JKJR, 2014).

One of the interventions initiated in the older plan (i.e. National Road Safety Plan 2006-2010), which is ongoing, is to upgrade the driver training programme in Malaysia (Radin Umar, 2007). This is because; statistics shows that young road users (aged between 11 and 35) involved in crashes the most, i.e. with 63% of involvement in 2014 in all-severity cases (PDRM, 2015). Md Isa, Ariffin, Mohd Jawi, and Yeap (2013) further highlighted that more than 20% of riders who were killed or sustained serious injuries were riding without valid licenses. Thus, the effort to focus on driver training and licensing programmes certainly hold some water.

One of the elements of driver training programme is driver testing. In Malaysia, the testing process is on-road. During the testing process, a tester sits next to the candidate driver and evaluates his or her performance promptly while the driving takes place on a predefined route, which is also the route driving institutes use during the training programme. The question then: Do current test routes give sufficient opportunity for a fair and substantive testing?

The study intended to uncover this.

## 1.1 Objectives of Study

From this background, in other words, does the test route provide rooms for expected learning outcomes to be properly performed by candidates and evaluated by the tester?

To address this, present study specifically aimed:

- i. To make a mapping between LOs and route elements – this serves as the reference.
- ii. To profile sampled routes based on physical attributes, elements and traffic performance.
- iii. To contrast sampled elements (i.e. objective ii) with the reference (i.e. objective i).

## 1.2 Study Scope

This study focused only on licensing of car drivers. Other license classes may not be relevant.

## 2. Literature Review

Driver training programme varies across countries – while some offer a mandatory training programme, others make it as an option. In Malaysia, such programme falls into the former category. The idea of driver training programme can be traced back to the era of independence in 1957 when people went to driving schools (SM) to learn how to drive. With the inclusion of Sabah and Sarawak in 1963, and exclusion of Singapore in 1965, the coverage of driver training and licensing also changed accordingly. The dominance of SM continued until the early nineties when the government decided to upgrade the system by instigating driving institutes, i.e. *Institut Memandu* (IM) (Zulhaidi, Mohd Khairudin, Mohd Khairul Alhapi, & Mohd Rasid, 2010).

The concept of driving institutes is to upgrade the system by putting place a more systematic approach to learning and testing that includes proper facilities such as classrooms and training track within the compound of IM itself. Prior to the institutionalisation, all testing activities took place in Road Transport Department (JPJ)'s facilities. The upgrade saw a reduction of SMs from the original 1,512 units in 1992 to only 234 units afterwards (Azmi, 2015; Mohd Jawi, Md Deros, Osman, & Awang, 2015).

The history of driver training programme continued with another milestone in the year 2000 when JPJ introduced a new framework for driving curriculum enhancement to replace its previous. The framework materialised its first step in 2007 when a formation of an expert committee steer headed the enhancement plan and accreditation scheme for the system. Even though the accreditation experienced a delay, the enhancement plan was progressing smoothly.

One of the critical contributions from the committee was the establishment of a standard to define the minimum level of skill drivers need to acquire to be on Malaysian roads. Rooting on Bloom's Taxonomy, the definition declares that a driver on Malaysian road should be "*a driver with the knowledge and competency to drive safely and*

## Test Routes at Driving Institutes in Malaysia

*practising the safety culture on the road*" (Mohd Jawi, Md Deros, Osman, & Awang, 2015). The definition is aligned with the three components that central to Bloom's Taxonomy: Cognitive, psychomotor, and affective domains. The committee continued the progress with the development of enhanced driving curriculum (KPP). During the development process, the committee further elaborated the ingredients of a safe driver, clutching on the above definition, to give birth to several learning modules. The modules, afterwards, become the content of KPP. In general, driver training system is improving. The statuses of the progress are in Table 1.

The current study falls into the fourth sector, i.e. improvement of testing. Driver testing sector incorporates not only quality of tester, but equally important is the methodology of evaluation. The following section details out on present methodology, or process flow, that is being used for evaluating candidate drivers; and this includes standardised test route as its main instrument.

**Table 1** Sectors for driver training programmes and their progress status

Sector	Enhancement	Status
Institutional improvement	Upgrading of SM to IM	Number of SM decreases into manageable of about 200 units.
Content & Syllabus improvement	Improve <i>Kurikulum Bersepadu Sekolah Memandu</i> (KBSM) to <i>Kurikulum Pendidikan Pemandu</i> (KPP), and the revised version of KPP	Improved KPP has been implemented nationwide.
Quality Control & auditing	Upgrade of inspectorate system to star grading system	Pilot of star grading has commenced in 2015 and will be transformed into full accreditation in the near future.
Testing improvement	Upgrade the testing system to be more objective and effective (e.g. <i>E-testing</i> ). Strengthen testers' competency for both JPJ's Qualified Testing Officer (QTO) and IM's Qualified Testing Instructor (QTI).	<i>E-testing</i> and Accredited Tester are still in the proposal stage and required further study.

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Teaching improvement	Strengthen instructors' competency for both sections: Theoretical and practical.	Upgrade of instructors has commenced since the implementation of the latest version of KPP.
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## 2.1 Testing in Driver Licensing

The quintessence of driver training is to produce competent drivers with the aim to make the transportation environment safer and more civilised. And for this, the testing methodology serves as the gatekeeper in controlling who can graduate from the system and become legally valid drivers. Figure 1 summarises the process flow of driver licensing in Malaysia.

The process to get a valid driving license in Malaysia involves three stages – in-classroom learning session (KPP 01), on-track learning session (KPP 02), and on-road training session (KPP 03). The process begins with registration at an IM. After that, candidate drivers went thru 6-hours KPP 01 session. During this session, they are exposed to traffic rules and regulations in Malaysia, and other components to increase, in particular, knowledge about being good drivers. The completion of KPP 01 marks the eligibility of candidate drivers to sit for a written test with an option to retake it should they fail the earlier attempts.

For successful candidates, JPJ then issues a Learner Driver License (LDL), or more ubiquitous as “L license” among locals. The license allows candidates to begin KPP 02, which is practical coaching session on the track. This is where candidates sit behind the wheel and learn from the basic things of how to make car moves to more complex skills such as climbing gradients. The minimum amount of time for KPP 02 is 5 hours and 30 minutes. If candidate drivers need more time for the training, they are allowed to increase the learning hours, which usually comes with additional cost.

After gaining confidence and minimum competence to drive, candidate drivers proceed with KPP 03, which is the practical coaching session driving accompanied by the



## Test Routes at Driving Institutes in Malaysia

instructor on the road. Candidate drivers need to spend at least 10 hours in this session. The next stage is an on-road pre-test by IM's very own Qualified Testing Instructor (QTI) – a special instructor who has a qualification to do testing. Only after passing this stage candidate drivers can proceed with the actual testing with JPJ's Qualified Testing Officer (QTO). Candidates who fail the test always have another opportunity for re-testing, whereas candidates who pass obtain Probationary Driving License (PDL) which valid for two years. They are eligible for a conversion to Competent Driving License (CDL) after this probationary period, subjected to any law infringements or crash history.

Zooming into the testing session with QTO reveals more details including the test route. The session started when the QTO called the candidate, who is on standby at the waiting area, to begin the test. The candidate then needs to do pre-driving vehicle inspection before proceeding to preparation to drive such as adjusting the mirrors, seating position, etc. When he or she completes these tasks, QTO then informs on which route the candidate should go. This is because, in every IM, there are options of test routes – at least two, but the maximum is three routes. Prior to the test, candidates are to be made known to the route options. In fact, these routes are where they go during KPP 03 session. The test continues with the candidates driving throughout the route while QTO evaluates their performances based on a checklist. The evaluation checklist contains the expected outcomes of the learning modules inside the KPP. The number of targeted learning outcomes (LOs) varies according to the objective of each module.

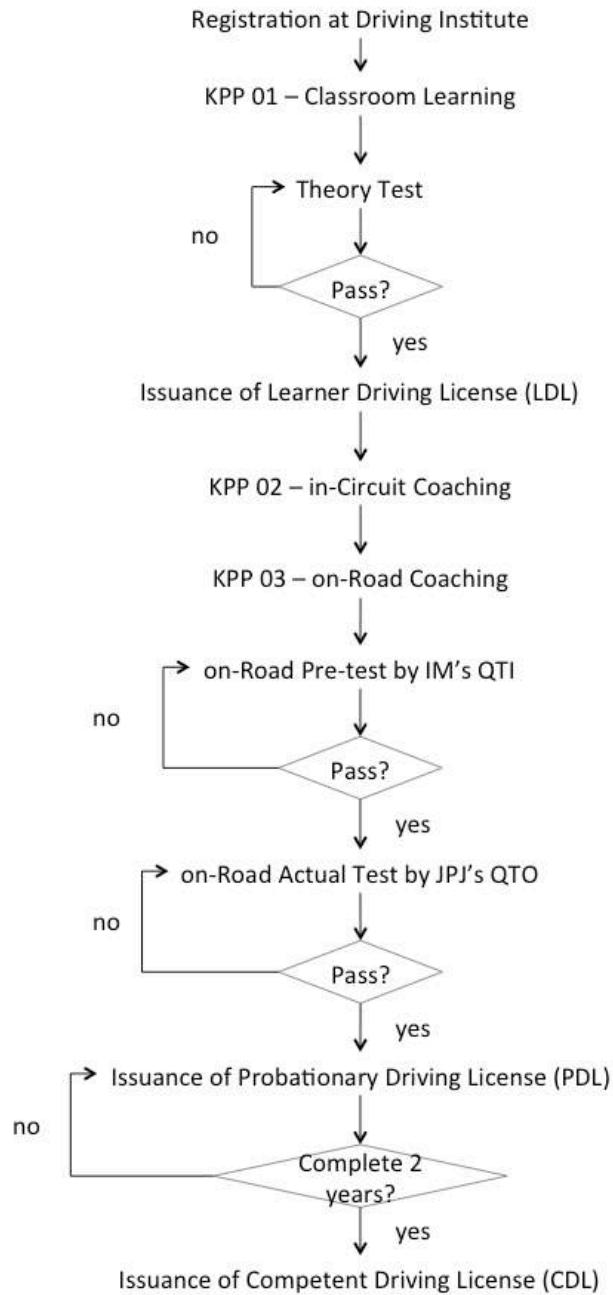


Figure 1 Framework for licensing system in Malaysia (Buku Teks Kelas D Automatik, 2014)

### Test Routes at Driving Institutes in Malaysia

In other words, the concept of the testing is based upon on-road evaluation approach where the subject is assessed on his or her performance with respect to a set of targeted learning outcomes on a pre-defined route. While this approach is yet to be completely free from subjectivity and bias of human judgment, it has been adopted in other driving assessment studies – in particular among elderly drivers (Di Stefano & Macdonald, 2012; Selander, 2012; Selander, Lee, Johansson, & Falkmer, 2011; Shechtman, Awadzi, Classen, Lanford, & Joo, 2010; Baldock, Berndt, & Mathias, 2008; McKenna, Jefferies, Dobson, & Frude, 2004; Di Stefano & Macdonald, 2003; Fox, Bowden, & Smith, 1998), or studies of brain lesion (Lundqvist, Alinder, Alm, Gerdle, Levander, & Rönnerberg, 1997; Schanke & Sundet, 2000).

Because the testing is based at respective IM, hence the test routes are in the vicinity of the IM. Since all IMs are not located at one place, of course; thus, the testing routes are in many variations. A consequent concern of this is a possible variation of testing outputs, and more critically does it reach to the intended standard.

## 3. Methodology

### 3.1 Desktop Study

The LOs specified in KPP are not associated with any location. Therefore, to profile the test routes according to LOs, researchers need to have a mapping of the LOs and potential situations and locations that may exist along the route. The mapping involved understanding the LOs; and then identifying potential road engineering elements, or traffic situations that is relevant to the LOs. In other words, the elements and situations serve as a proxy of opportunity for testing to happen along the route. This activity commenced before any data collection to produce a LO-Route mapping (see Table 3).

### 3.2 Sampling and Data Collection

This study employed a qualitative observation method to collect on-site primary data. Researchers went to the IMs and drove along the approved testing routes while recording it. The recorded video underwent analysis using the LO-route mapping scheme (i.e. outcome of 3.1). Specifically, researchers count the elements and situation that exist along the test route.

Table 2 shows the driving institutes involved in this study. The selection of these institutes encompassed non-probabilistic sampling method of data collection to address suggestions from the authority body (i.e. Road Transport Department).

## Test Routes at Driving Institutes in Malaysia

**Table 2** Driving institutes involved in this study

	<b>Driving institutes</b>	<b>Location</b>
IM <sub>1</sub>	Institut Memandu Kenderaan Darat	Cheras, Selangor
IM <sub>2</sub>	Akademi Memandu Nilai Sdn Bhd	Nilai, Negeri Sembilan
IM <sub>3</sub>	Arah Kencana Sdn Bhd	Rompin, Negeri Sembilan
IM <sub>4</sub>	Pusat Latihan Memandu Wawasan Sdn Bhd	Tanjung Malim, Perak
IM <sub>5</sub>	INMAJU Holdings Sdn Bhd	Seremban, Negeri Sembilan
IM <sub>6</sub>	SSDC Driving Academy Sdn Bhd	Jasin, Melaka
IM <sub>7</sub>	Pusat Latihan Memandu Shah Bandar Sdn Bhd	Klang, Selangor
IM <sub>8</sub>	Malacca Safety Driving Centre Sdn Bhd	Melaka, Melaka
IM <sub>9</sub>	Semangat Intrajaya Sdn Bhd	Krubong, Melaka
IM <sub>10</sub>	Pusat Latihan Memandu Melati (NT) Sdn Bhd	Seberang Prai, Pulau Pinang

## 4. Results

Table 3 summarises all the results for this study.

### 4.1 How to Read Table 3

The left-most columns are the LOs from the latest KPP, followed by the route criteria, i.e. the conditions (whether situational or elemental) along a route to allow the evaluation of the LOs. For example, the first LO *Memandu di lorong yang betul* (Driving incorrect lane) requires multiple lanes to permit its evaluation. The next 22 columns represent routes sampled in this study, while the rightmost column contains the summary *across* routes, for each respective LO.

The first two rows simply entail titles for each column. The next row includes the sampled time taken for us to complete each route from and back to IM. For instance, the sampled time to complete route A of IM<sub>1</sub> was 18 minutes and 34 seconds. The LO rows contain results that are either numbers or capital alphabets – the numbers represent the frequency of opportunity (usually road elements) for evaluation of the LO; while the alphabets represent subjective judgments of researchers about evaluation opportunity for the LO.

For example, consider LO *Memandu di selekoh dengan selamat* (Driving safely at curves). The upper row for this LO contains results for left curves, whereas the lower row is for right curves. The evaluation chance of this LO (left curves only) for route A, B and C of IM<sub>1</sub> are 7, 5, and 5 times, respectively. In other words, there are 7, 5, and 5 instances of left curves along routes A, B, and C, respectively, for testers to do the assessment. Similarly, candidate drivers need to negotiate 3, 2, and 2 right curves along these respective routes.

## Test Routes at Driving Institutes in Malaysia

For certain LOs researchers have to subjectively make judgments on the evaluation chance (more details and reasons of this are in the discussion section). The judgments are represented by alphabets which carry the following meaning: Y for 'yes', N for 'no', S for 'satisfactory', and L for 'less satisfactory'. Consider LO *Mengawal kereta dengan baik* (Good handling of the vehicle) for example. For this LO, researchers decided that all routes have satisfactory evaluation chance except route A of IM<sub>3</sub> – which gives a lesser opportunity for the tester to evaluate the competency of this LO.

### 4.2 Descriptive Analysis of Test Routes

Out of ten sampled IMs, only two IMs have three test route options for testing car driver candidates; the rest only have two options. In average, the time taken to go thru a test route is around 16 minutes 29 seconds ( $SD = 5$  minutes 30 seconds). The shortest travel time is 8 minutes 27 seconds of route B of IM<sub>10</sub>, and the longest travel time is 26 minutes 58 seconds of route B of IM<sub>2</sub>.

### 4.3 LO-Route Mapping

The first three columns of Table 3 refer to the exercise of mapping between LOs and route criteria. With this mapping, each LO can be directly inferred from the associated attributes and elements of a test route.

The LOs can be sub-divided into two categories: direct-referenced, indirect-referenced. The former entails LOs that are physically referenced to certain elements of the road, whereas the latter includes LOs that are not necessarily linked to any specific road elements. For example, one of the LOs constituting into the former category is "*Memandu di selekoh dengan selamat*" (Driving safely at curves). This LO is mapped to a physical feature of road element 'curve'. Because the LO does not make it explicit on which side of the curve, the analysis included each curve side separately (see rows 7 and 8 of Table 3). The mapping of LOs in this category is relatively straightforward because of its physically referenced activity. Out of 23 LOs, 17 LOs fall into this category.

In contrast, the indirect-referenced LOs pertain to activities that are dynamic and external situation dependent. For example, LO *Memastikan jarak selamat* (Ensuring safe following distance) requires a situation of which there exist front vehicle. Without a front vehicle, it would be impossible for a candidate driver to demonstrate a safe distance, and equally important is for the tester to evaluate the candidate. Therefore, the mapping of this LO is not straightforward, and consequently, demands some subjective judgment of researchers when analysing the routes. Six LOs fall into this category.

The sixth LO of *Memotong dengan selamat* (Overtaking safely), however, requires a very dynamic situation to be evaluated – for the tester to evaluate this LO, the driving situation demands slower vehicle to exist in front of candidate driver's car while testing. In fact, it is well known that candidate driver's car always travels below the average traffic speed. Because of its high degree of complexity, we omitted the LO from the analysis in this study.

### 4.4 Route Analysis

Analysis of the route adopted LO-Route mapping as a reference. For direct-referenced LOs, Table 3 contains the frequency of instances for the evaluation to happen. For instance, route A of IM<sub>1</sub>, route B of IM<sub>2</sub> and route C of IM<sub>5</sub> have, respectively, 6, 19, and 10 instances (i.e. locations) for the tester to evaluate LO *Menukar lorong dengan selamat* (Changing lane safely).

For indirect-referenced LOs, Table 3 entails qualitative judgment of researchers towards LOs when sampling the route. For example, researchers judge that except route A of IM<sub>3</sub>, all the other routes offer satisfactory room for evaluation of LO *Mengawal kereta dengan baik* (Good handling of the vehicle).

Qualitative observation of results in Table 3 reveals that even though, most routes cover most of the direct-referenced LOs, *Memandu di kawasan sekolah dengan selamat* (Driving safely at school vicinity), and *Membuat pusing U dengan selamat* (Making a U-turn safely), are two LOs with the least coverage. Out of 22 routes, only 10 routes include



## Test Routes at Driving Institutes in Malaysia

school area, whereas only 11 include U-turn. As for LO *Memberi laluan kepada pengguna lain* (Giving way to others), four routes do not entail neither pedestrian crossing nor merging into the major lane as the checkpoints to assess the LO. From the remaining 18, however, most of the routes are missing of pedestrian crossing even though they have to merge into lanes included.

Similarly, all routes offer lesser evaluation opportunity for all indirect-referenced LOs. Both routes of IM<sub>4</sub>, nonetheless, offer lesser chance evaluation chance for LO *Memastikan jarak selamat* (Ensuring safe following distance). Similarly, route A of IM<sub>3</sub> also offer lesser room for evaluation of LOs *Mengawal kereta dengan baik* (Good handling of the vehicle), and *Memberi tindak balas yang sesuai kepada hazard* (Responding appropriately to hazards).

Further scrutiny of Table 3 reveals that routes A of IM<sub>1</sub> and route A of IM<sub>10</sub> cover *all* of the LOs. However, both routes do not cover all road elements: route A of IM<sub>1</sub> is missing a right turn at signalised junction, whereas route A of IM<sub>10</sub> is missing a left turn at signalised junction and any merging onto the main road. Because of this, in overall, route A of IM<sub>1</sub> is the most complete.

In contrast, route A of IM<sub>5</sub> is the least complete with the exclusion of four LOs: *Memandu di kawasan sekolah dengan selamat*, *Memandu di kawasan perumahan dengan selamat* (Driving safely at housing area), *Membuat pusingan U dengan selamat*, and *Memandu di bulatan dengan selamat* (Driving safely at the roundabout). Route C of the same IM follows suit with the omission of the same three LOs except for *Membuat pusingan U dengan selamat* (Making a U-turn safely), of which it includes an instance of this LO.

**Table 3** LO-Route map and IM-based results

Learning outcomes	Route criteria		Situation-based Element-based																				IM <sub>summary</sub>				
	IM <sub>1</sub>	IM <sub>2</sub>	IM <sub>3</sub>	IM <sub>4</sub>	IM <sub>5</sub>	IM <sub>6</sub>	IM <sub>7</sub>	IM <sub>8</sub>	IM <sub>9</sub>	IM <sub>10</sub>	A		B		C		A		B		A			B			
Sampled time (mins:secs):	18:34	14:41	13:39	20:25	26:58	14:27	12:23	10:42	10:44	9:49	14:20	10:08	19:55	24:26	16:35	20:46	15:45	21:30	25:39	21:16	11:22	8:27	Min: 8:27	Max: 26:58	Mean: 16:29		
<b>Direct-referenced Los</b>																											
Memandu di lorong yang betul (Driving in correct lane)	-	Multiple lanes																				Y: 20					
		Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N: 2
																											∴ 0
Menukar lorong dengan selamat (Changing lane safely)	-	Multiple lanes																				Min: 3					
		6	8	7	8	19	3	5	7	6	13	5	10	7	7	6	3	9	5	12	11	4	6	Max: 19			
																										Mean: 8	
																										∴ 0	
Memandu di selekoh dengan selamat (Driving safely at curves)	-	Curve LEFT										Curve RIGHT										Min: 1					
		7	5	5	9	12	16	7	14	10	12	11	11	15	25	1	7	6	10	14	11	1	1	Max: 25			
																									Mean: 10		
																									∴ 0		
Memandu di persimpangan dengan selamat (Driving safely at junctions)	-	Junction LEFT										Junction RIGHT										Min: 2					
		12	2	7	13	21	9	8	10	8	14	16	11	43	64	26	29	21	27	51	40	12	1	Max: 64			
																								Mean: 21			
																									∴ 0		









## 5. Discussion

This study aims to explore the test routes at driving institutes. Considering only ten driving institutes, the study nonetheless uncovers important findings that certainly can improve the testing of new drivers in Malaysia. Firstly, with respect to test route, the LOs are subjected to two (2) categories: direct-referenced, and indirect-referenced. While the former refer to LOs with a straightforward association with physical road element, the latter group is traffic situation dependent, hence more dynamic and subjective.

After mapping the LOs with the sampled routes, in general, all of the routes cover most of the LOs. Nevertheless, variations persist between these routes. For example, the evaluation opportunity of indirect-referenced LO *Memastikan jarak selamat* (Ensuring safe following distance) for both routes of IM<sub>4</sub> is lesser than others. Why? An answer could be because the LO is traffic dependent. In other words, the chance of evaluation is dynamic depending on the situation of traffic. The tester can only evaluate the LO if there is a vehicle in front when driving. Not only that, the front vehicle should travel at an appropriate speed – not too slow to force the candidate driver to overtake, and not too fast that leaving candidate driver behind.

Certainly, the traffic situation is not the only explanation for the variations among driving institutes. One of the potential glaring explanations would be a broadening scope of urbanity status among these driving institutes.

### 5.1 Urbanity Status of Driving Institute

Is urbanity status of IMs matter? The more urban IMs are more likely to have most of the road elements relative to the rural counterpart. In an urban setting, the traffic situation is commonly livelier and has more interactions between and within vehicles

and their surroundings. This increases the number of hazards, which in turn escalates the risk of collision.

In contrast, a rural setting would usually have a calmer environment with less interaction with other vehicles. Nonetheless, this does not necessarily mean that test routes in this setting are less risky because hazards could be from other sources – e.g. livestock encroaching the road. Further, the rural setting normally involves federal or state roads that are much narrower, however, with relatively higher speed due to lighter traffic stream in contrast to an urban setting.

The above paragraphs offer a feasible postulation of what test routes in both urban and rural would be and their potential influence to driver testing. With that, the emerging question is what defines a location as urban? Department of Statistics Malaysia posit the definition of urban areas as "*gazetted areas with their adjoining built-up areas, which had a combined population of 10,000 or more at the time of the Census 2010 or the special development area that can be identified, which at least had a population of 10,000 with at least 60% of population (aged 15 years and above) were involved in non-agricultural activities*" (Population and Housing Census, n.d.).

This definition intends to cover two areas: *gazetted areas with their adjoining built-up areas*; and *special development area that can be identified*. Because the IMs involved in this study are not in the latter description, the definition of urban would rely only on the basis of 10,000 populations. Associated populations for each IM in this study are in Table 4.

The population from Table 4 would suggest that all of the visited IMs are in urban settings. This finding (i.e. having all IMs the same urbanity status), however, is contrary to our field observation, which suggests different status of urbanity among the IMs. This inconsistency could root to a simple binary classification of urbanity status, i.e. whether urban vs. non-urban. Alternatively, a more relevant approach (at least from the perspective of this study) could be to measure the degree of urbanity across a continuum with both extremes as 'urban' and 'rural' respectively.



## Test Routes at Driving Institutes in Malaysia

**Table 4** Populations for district/municipality where driving institutes belong to

Driving institutes	Population
Institut Memandu Kenderaan Darat	1,141,880 <sup>a</sup>
Akademi Memandu Nilai Sdn Bhd	200,988
Arah Kencana Sdn Bhd	110,286
Pusat Latihan Memandu Wawasan Sdn Bhd	60,791
INMAJU Holdings Sdn Bhd	555,935
SSDC Driving Academy Sdn Bhd	135,317
Pusat Latihan Memandu Shah Bandar Sdn Bhd	861,189
Malacca Safety Driving Centre Sdn Bhd	455,300
Semangat Intrajaya Sdn Bhd	455,300 <sup>b</sup>
Pusat Latihan Memandu Melati (NT) Sdn Bhd	818,197

**Notes:** Whenever possible, the table contains a population of the area of which IM belongs. In the case data for the area is unavailable, the population of its district/municipality is used.

<sup>a</sup> This is the population for Hulu Langat of which Cheras belongs to.

<sup>b</sup> Both IM 8 and 9 are in the same district of Melaka Tengah.

## 5.2 Test Route Components

Another noteworthy observation of the test routes sampled is that it entails two components: static features, and also dynamic contributors along the roads. While the former focuses more on physical features of the route including road elements, roadside infrastructures and signs, road geometry, etc.; the latter component covers variability such as traffic volume, traffic flow, roadside hazards, weather, etc.

The candidates are trained, prior to the test, to drive using the routes. Thus, the static component along the route is well learned. Consequently, they drive using rule-based strategy. Driving using this strategy means that the candidates move the car following a to-do list. A rule-based learning is necessary for habit formation, but should not be the emphasis. Certainly, it is beneficial when learning a small packet of driving activity such as looking into the mirror before giving signal sufficiently and only then make the

manoeuvre (i.e. CITO<sup>1</sup> as mentioned in KPP book). However, driving solely using that strategy is ridiculous, if not impossible, unless he or she will only be driving on the same route for the rest of his or her life.

Because this is very unlikely, instead, the dynamic component deserves more focus. This is aligned to the ethos of testing that it should *also* have the element of surprise to measure candidates' ability to reason, to judge and to make the best decision while driving. Only then our drivers would not only know how to follow steps but more importantly understand the motivation behind each action.

### 5.3 Test Route Enhancement

The results suggest that test routes vary from an IM to another, and the discrepancy may influence the quality of testing, hence the product of it, drivers. Current study sheds some lights on test routes addressing the LOs of the driving standard. While this clutches on an ideal principle that, the more LO, the better; it is yet to consider some practical issues of which determine the actual implementation of the ideal philosophy.

Let us take a step back and consider what would an ideal test route be. An ideal test route, as the names suggest, should include all of the possible risks that a driver will face when driving for the rest of his/her life. That is so the ability of the driver is properly assessed to ensure he or she is competent when facing the real situation later on. In addition, an ideal test route need to offer the opportunity for the evaluation to be 100% objective, and equally important is that every driver candidate is subjected to the same traffic situation and the same route elements. One may argue, what if we create an artificial track, and have the evaluation there. With this, everybody is subjected to the same situation. But as the name itself suggests, an *artificial* track will never be the same as a *real* road; making it, ironically, less ideal.

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<sup>1</sup> CITO stands for *Cermin* (mirror) – *Isyarat* (signal) – *Titik buta* (blind spot) – *Olah gerak* (manoeuvre)

## Test Routes at Driving Institutes in Malaysia

We do not live in an ideal world because there are always limitations and constraints not only in terms of technology but also from social-economic and social-technical aspects. Hence, the more appropriate question to ask is how idealistic we can push the testing system, specifically the route, to become?

Bringing in constraints into the picture reveals practical issues, which can be traced to the common issue of testing length. The length of testing throughout the route influences the timing for a tester to spend with candidate driver on the road. At certain IMs where the numbers of candidate driver are high, a long testing session would raise a concern of schedule. This is because the testers are required to finish evaluation for all candidates within the same day. According to our conversation with the managers, there is a history of evaluation sessions that finished only in the early evening. When this happens, related issues emerged include the quality of the evaluation: Taking into account fatigue of testers and candidates, we cannot rule out its influence to the testing activity and worse the results of it. In addition, from business entities (of which what constitutes the IMs are), a long test route would mean longer testing vehicles on the road burning more fuels, which then translates to more expenses.

Of course, the debate can go on, with everybody fights for own's benefit; however, the main point of this highlight is that the key to having a good test route is *balance* – between *ideality* and *practicality*. Only when the harmony between these extremes is achieved, the industry can operate more efficiently, and consequently, the standard of testing can excel further.

Considering this, thus, a bigger framework of the testing ecosystem (with the inclusion of a balanced guideline) is advisable for future study, enhancement and references.

## 6. Conclusion

This study reveals status quo of test routes at some driving institutes in Malaysia. The variations among these test routes, however, strengthen the results that most of the learning outcomes are covered regardless. Despite the results, further conclusion demands deeper analysis of the testing system, specifically test route, because even evidence to demonstrate whether these variations influence the actual product of testing (i.e. competency of candidate drivers) is absent to the best of our knowledge. Nonetheless, this study may serve as the foundation to further an exploration of finding a good balance between ideal and practical test routes in Malaysia, and how to draw a line of the minimal standard. To guide the exploration, a more elaborated framework of on-road testing is certainly necessary.

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### Test Routes at Driving Institutes in Malaysia

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## Appendices

### IM<sub>1</sub>: Institut Memandu Kenderaan Darat



Location: *Cheras, Selangor*

#### Summary:

	Route A	Route B	Route C
Sampled driving time	18:34	14:41	13:39
Total elements for Direct-referenced LOs	111	77	81
Elements for Indirect-referenced LOs coverage	7	5	5
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High	High



## IM<sub>2</sub>: Akademi Memandu Nilai Sdn Bhd



Location: Nilai, Negeri Sembilan

Summary:

	Route A	Route B
Sampled driving time	20:25	26:58
Total elements for Direct-referenced LOs	120	153
Elements for Indirect-referenced LOs coverage	8	6
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High

### IM<sub>3</sub>: Arah Kencana Sdn Bhd



Location: *Rompin, Negeri Sembilan*

#### Summary:

	<b>Route A</b>	<b>Route B</b>
Sampled driving time	14:27	12:23
Total elements for Direct-referenced LOs	95	119
Elements for Indirect-referenced LOs coverage	2	5
Subjective evaluation chances for Indirect-referenced LOs coverage	Medium	High

## IM<sub>4</sub>: Pusat Latihan Memandu Wawasan Sdn Bhd



Location: *Tanjung Malim, Perak*

### Summary:

	<b>Route A</b>	<b>Route B</b>
Sampled driving time	10:42	10:44
Total elements for Direct-referenced LOs	96	101
Elements for Indirect-referenced LOs coverage	8	8
Subjective evaluation chances for Indirect-referenced LOs coverage	Low	Low

## IM<sub>5</sub>: INMAJU Holdings Sdn Bhd



Location: Seremban, Negeri Sembilan

### Summary:

	Route A	Route B	Route C
Sampled driving time	9:49	14:20	10:08
Total elements for Direct-referenced LOs	96	102	84
Elements for Indirect-referenced LOs coverage	3	3	2
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High	High

## IM<sub>6</sub>: SSDC Driving Academy Sdn Bhd



Location: *Jasin, Melaka*

### Summary:

	<b>Route A</b>	<b>Route B</b>
Sampled driving time	19:55	24:26
Total elements for Direct-referenced LOs	168	232
Elements for Indirect-referenced LOs coverage	2	4
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High

## IM<sub>7</sub>: Pusat Latihan Memandu Shah Bandar Sdn Bhd



Location: *Klang, Selangor*

### Summary:

	<b>Route A</b>	<b>Route B</b>
Sampled driving time	16:35	20:46
Total elements for Direct-referenced LOs	110	127
Elements for Indirect-referenced LOs coverage	10	8
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High

## IM<sub>8</sub>: Malacca Safety Driving Centre Sdn Bhd



Location: *Melaka, Melaka*

### Summary:

	<b>Route A</b>	<b>Route B</b>
Sampled driving time	15:45	21:30
Total elements for Direct-referenced LOs	105	133
Elements for Indirect-referenced LOs coverage	6	3
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High



## IM<sub>9</sub>: Semangat Intrajaya Sdn Bhd



Location: *Krubong, Melaka*

Summary:

	Route A	Route B
Sampled driving time	25:39	21:16
Total elements for Direct-referenced LOs	166	151
Elements for Indirect-referenced LOs coverage	2	2
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High



## IM<sub>10</sub>: Pusat Latihan Memandu Melati (NT) Sdn Bhd



Location: *Seberang Prai, Pulau Pinang*

### Summary:

	<b>Route A</b>	<b>Route B</b>
Sampled driving time	11:22	8:27
Total elements for direct-referenced LOs	77	54
Elements for indirect-referenced LOs coverage	5	6
Subjective evaluation chances for Indirect-referenced LOs coverage	High	High



## Research Report

# Test Routes at Driving Institutes in Malaysia

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