

**Session 2A: Assoc. Prof. Dr. Sorawit Narupiti**

**Presentation entitled: Understanding Commuters' Mobility Needs and Promotion of Public Transport**

**Biographic Data of Speaker**



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Dr. Sorawit Narupiti is an Associate Professor at Department of Civil Engineering, Chulalongkorn University. He specializes in transportation and traffic engineering especially Intelligent Transportation Systems (ITS). He has been conducting research and development on Intelligent Transportation Systems (ITS) for more than 15 years.

He has numerous academic papers and made presentations on ITS topics at regional conference levels. He is currently a reviewer in some ITS-related journals/conferences and a coordinator of the ITS group at Chulalongkorn University.

After the establishment of Thailand ITS Forum in 2005, he has served as the acting chair of the forum. He led the meeting and ITS activities in Thailand. The forum becomes ITS Thailand and he now serves as the President from 2008-present. He directs many administrative as well as ITS development activities.

**Position:**

Associate Professor in Transport/Traffic Engineering, Chulalongkorn University President, ITS Thailand and Secretary, Intelligent Traffic Information Center Foundation

**Education:**

- 1996 Ph.D. (Civil) in Transportation Engineering, Michigan State University, East Lansing, Michigan, USA
- 1991 M.Eng. (Civil) in Traffic and Transportation Engineering, Chulalongkorn University, Bangkok, Thailand
- 1988 B.Eng. (Civil), Chulalongkorn University, Bangkok, Thailand

**Member, Board of Director:**

- 2010-present BOD of ITS Asia Pacific Forum
- 2008-present ITS Thailand
- 2007-present Member, Asian Transportation Research Society (ATrans), Thailand
- 2005-present Academic Committee, Thai Society for Transportation & Traffic Studies (TSTS)
- 2004-present Eastern Asia Society for Transportation Studies, International Scientific Committee
- 2001-present ITS Research Group, Chulalongkorn University, Coordinator
- 1997-present Transportation and Traffic Subcommittee, Engineering Institute of Thailand

**Professional Teaching Experience:**

August 1996 – present **Department of Civil Engineering, Chulalongkorn University**  
 Associate Professor and Director of Transportation Research Laboratory Teach undergraduate and graduate classes and conduct research in the areas of transportation and traffic engineering. Lead a research unit to organize and conduct research activities.

**Courses taught:**

- Intelligent Transport System
- Transportation Policy & Planning
- Road Transportation
- Highway Engineering
- Traffic Operations and Characteristics
- Fundamental of Traffic Engineering
- Mass Transit Engineering
- Traffic Flow Theory
- Traffic Engineering
- Materiel Testing Lab
- Traffic Model Simulation

November 1996 – 2000 **Department of Civil Engineering, Sirindhorn International Institute of Technology, Thammasat University**  
 Affiliated Professor. Teach transportation and traffic classes (in English)

**Courses taught:**

Transportation Engineering and Planning  
Traffic Engineering

November 1996 – March  
1997

**Department of Civil Engineering, Sripatum University**  
Adjunct Professor. Taught a highway engineering class

**Courses taught:**

Highway Engineering

## UNDERSTANDING COMMUTERS' MOBILITY NEEDS AND PROMOTION OF PUBLIC TRANSPORT

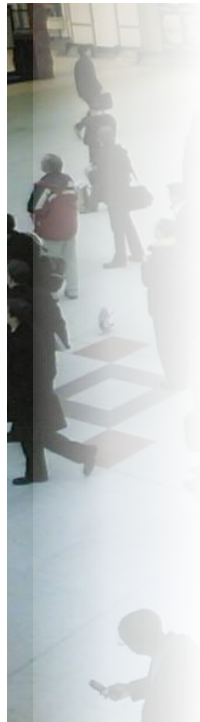
*Project leader :* Associate Professor Dr. Sorawit Narupiti  
*Advisor :* Prof. Dr. Wiroj Rujopakarn  
*Project members :* Assistant Professor Dr. Apiwat Rattanawaraha  
Assistant Professor Dr. Surames Piriyawat  
Assistant Professor Dr. Varameth Vichiensan  
Dr. Prapatpong Upala

Public Transport is viewed as the inevitable means of transport in urban areas. Public Transport provides eco-efficient passenger movements that help save country's energy, reduce greenhouse gas, make better use of land, and save individuals' travel expenses. However, one could currently see the unpopularity of public transport usage besides traffic congestion problems that cause economic and social damage to urban livings. Despite public transport promotion and public transport infrastructure development can be seen as major transport policy in Thailand and as experiences in many countries around the globe, one can still see unsuccessful story as public transport cannot turn into major means of transport for urban travelers.

This research attempts to fill the intelligence gap of how to make travelers be attracted to public transport usage. The research postulates that the use of public transport is not mainly due to provision and availability of public transport system, but it may come from several “concealed” factors that could be conscious in travelers' travel decision. The study explores person and travel characteristics and revealed behaviors on commuting to work of Bangkok travelers. Several factors are discovered and statistically proofed as subconscious factors influencing travel mode decisions.

The findings exhibit that many key travel factors affect mode choice decision. Moreover, attitudinal or psychological factors have a great influence on behavioral intention to switch mode from private vehicle to public transport. These factors vary by population subgroups, for example, high income people decide their mode use using different rationales from low income people.

The results of the research are very useful in planning and design of public transport system that conform to demand, with the ultimate goal of increasing the public transport patronage. Moreover, the research discovers several dimensions of travelers' behaviors that are long ignored, such as attitudinal and subjective norm. It shows that the promotion of public transport must consider not only the alteration of the public transport service, but also the creation of societal norm of using it. The conclusion leads to recommended steps forward that must be conducted to get desirable and happier urban travel.



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## Understanding Commuters Mobility Needs and Promotion of Public Transport

Associate Professor Dr. Sorawit Narupiti



### What shall we do in this situation?



- Let it be
- Do something
- Surrender





## Is this what we want?



Measures with push-effects  
Area-wide parking management, parking space restrictions in zoning ordinances, car limited zones, permanent or time-of-day car bans, congestion management, speed reductions, road pricing...

Measures with pull-effects  
Priority for buses and trams, high service frequency, passenger friendly stops and surroundings, more comfort, park-and-ride, bike-and-ride..., area-wide cycle-networks, attractive pedestrian connections...



Measures with push- and pull-effects  
Redistribution of carriageway space to provide cycle lanes, broader sidewalks, planting strips, bus lanes..., redistribution of time-cycles at traffic lights in favour of public transport and non-motorized modes, public-awareness-concepts, citizens' participation and marketing, enforcement and penalizing...

Source: Müller, P., Schleicher-Jester, F., Schmidt, M.-P. & Topp, H.H. (1992): Konzepte flächenhafter Verkehrsberuhigung in '16 Städten', Grüne Reihe des Fachgebiets Verkehrswesen der Universität Kaiserslautern No. 24.

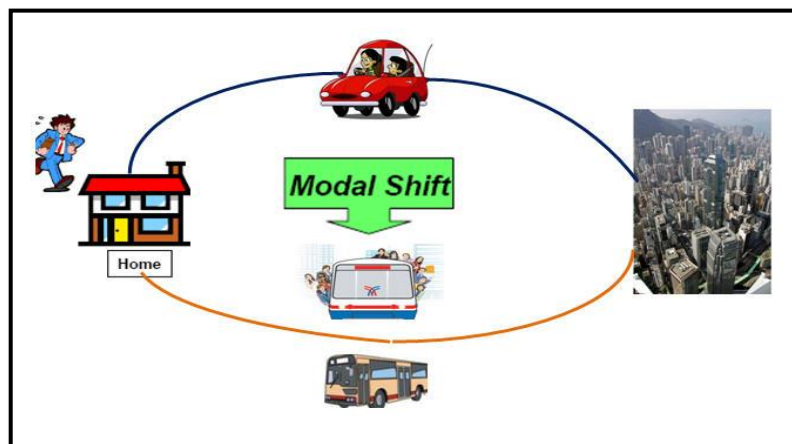


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## Yes, but How to ... change the habit of people from Private Car (PV) to Public Transport (PT)?



How people treat PT as a common means of Urban Travel?





## Fundamental Questions?



- ✓ Do we wish to promote Public Transport (PT)?
- ✓ Do we know why people take cars?
- ✓ Do we know why people not taking PT?
- ✓ Do we know exactly (for those who not taking PT) how to make them use PT?

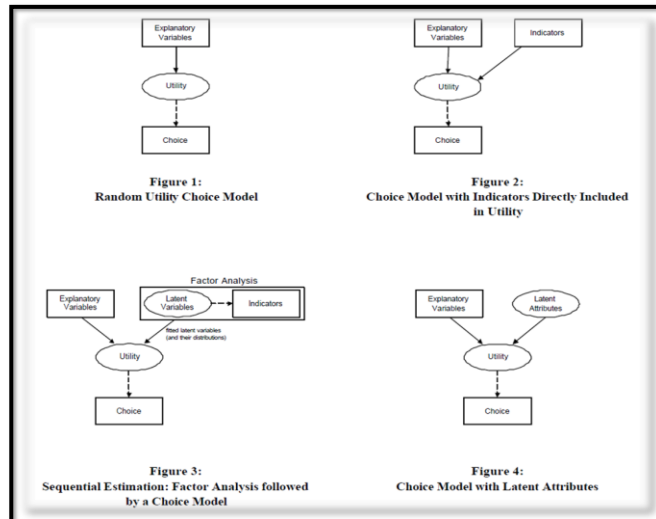
## Then, what else do we want to know?

- ❖ How people travel today (who, how, in what condition)?
- ❖ How do they think about current travel condition (current mode and alternative mode)?
- ❖ How do people feel about switching mode from Private Vehicle to Public Transport?





**Integration of Choice and Latent Variable Models**



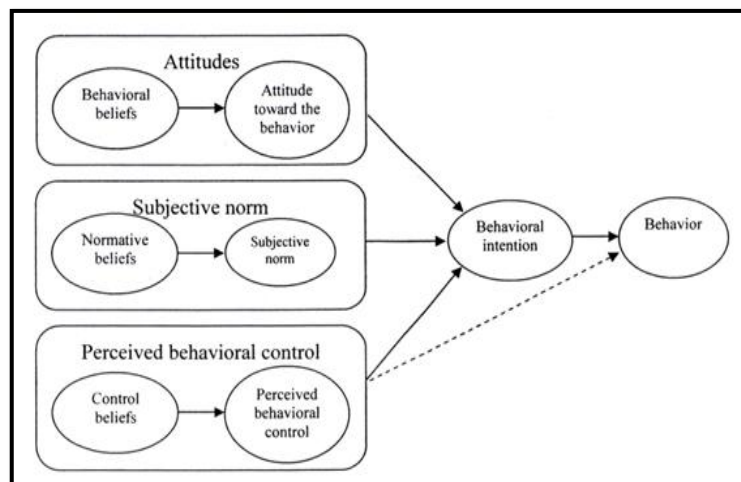
Moshe Ben-Akiva\*, Joan Walker, Adriana T. Bernardino, Dinesh A. Gopinath, Taka Morikawa, and Amalia Polydoropoulou



**Basic Theories Used For The Study**



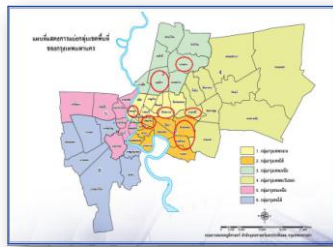
❖ Theory of Planned Behaviors (TPB) (Ajzen, 2006)







# Data and Analysis



| Mode         | Sample |
|--------------|--------|
| PV           | 600    |
| PT           | 600    |
| PT (captive) | 200    |
| Sum          | 1,400  |

Basic Data Analysis

Differences between PV and PT users

Differences between PV and PT choice of each travelers

Factors explaining the use of PV and PT

Factors explaining the intention to switch mode (PV users)



# Basic Data : PV vs PT

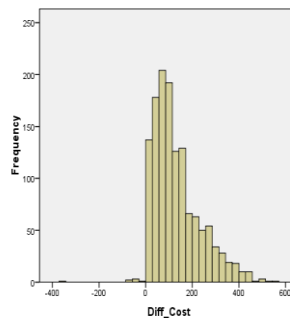


## Cost



PV is more costly than PT by 130 baht (per day)

Diff\_Cost



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# Basic Data : PV vs PT

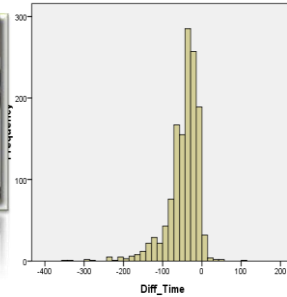


## Travel Time




PV is shorter than PT by 47 minutes (per day)

Diff\_Time



Of Course, PV is more expensive but it is faster  
 Do me a favor, build PT that is of faster and I will use it!






I will use PT if it were .....

- Faster
- Reliable
- Safer
- .....
- .....
- .....
- .....

The mode switch is really from the reason of.....

- Fast enough
- Reliable enough
- Safe enough
- OR it is just my mood
- my habit
- my attitude



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Will you use PT?

Of Course I will



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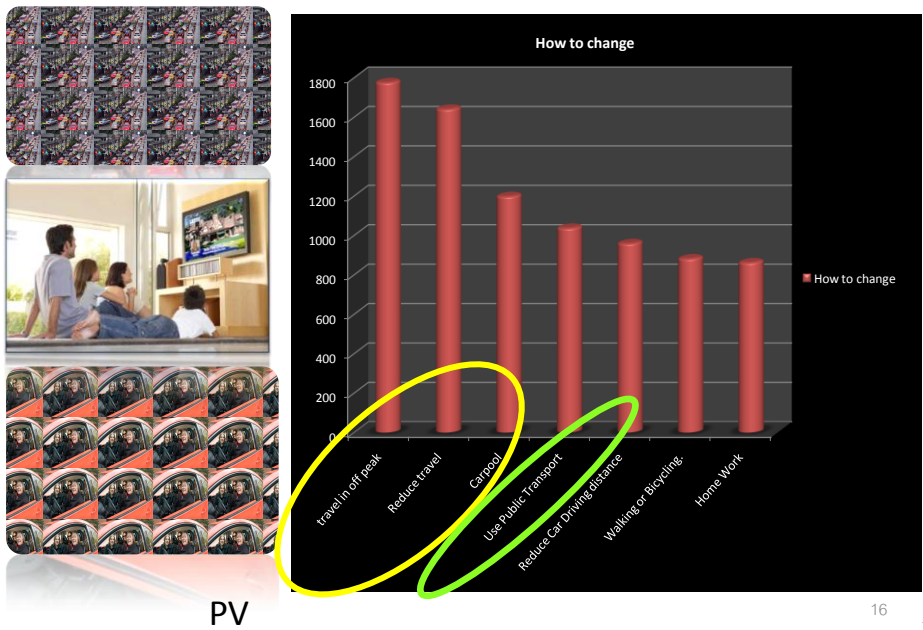
- Say I will
- Say I will
- Say I won't
- Say I won't

- Do what he said
- But apparently not
- And don't do
- And change his mind

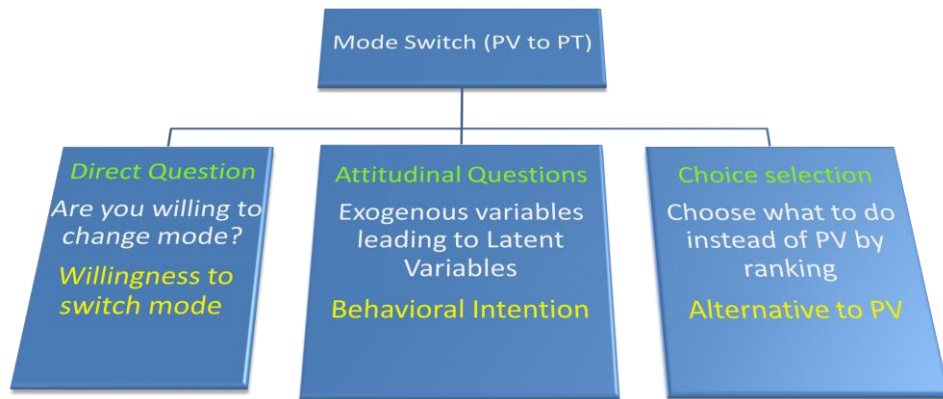



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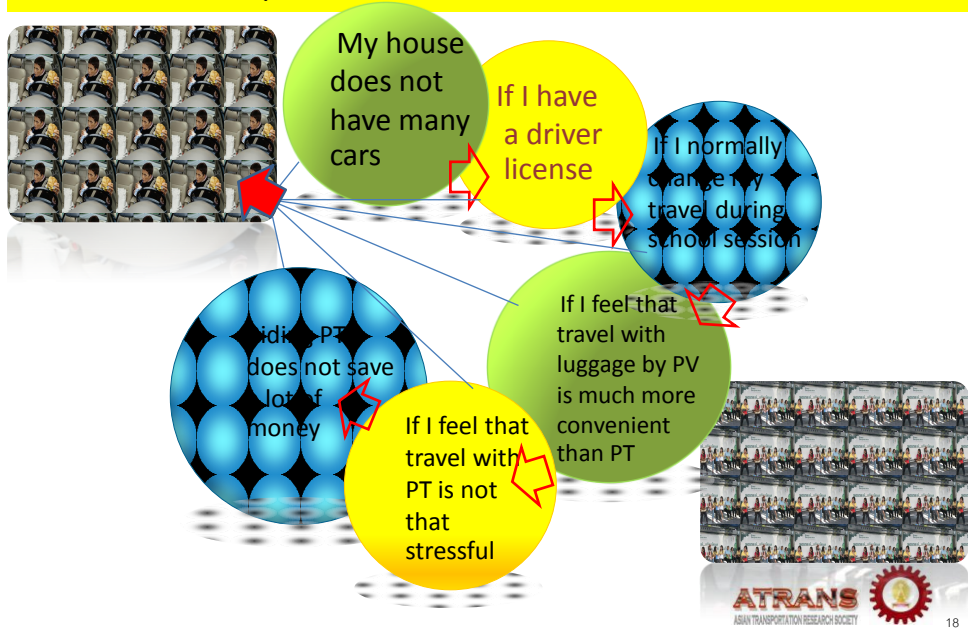
We learn that PT is not your first choice ...



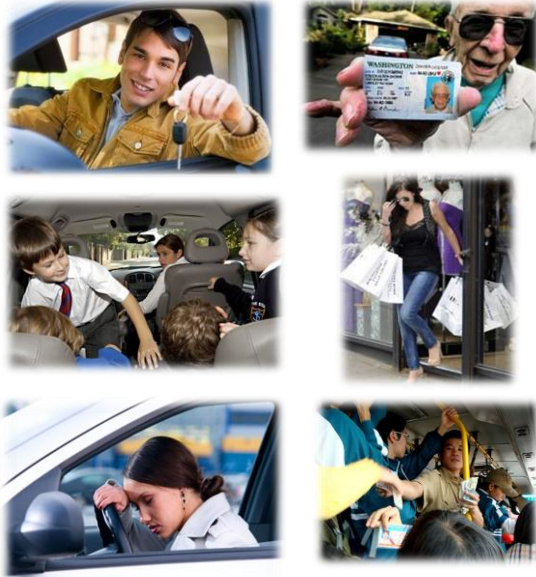
## Intention to switch mode (PV to PT)



## Possibility to switch from PV to PT

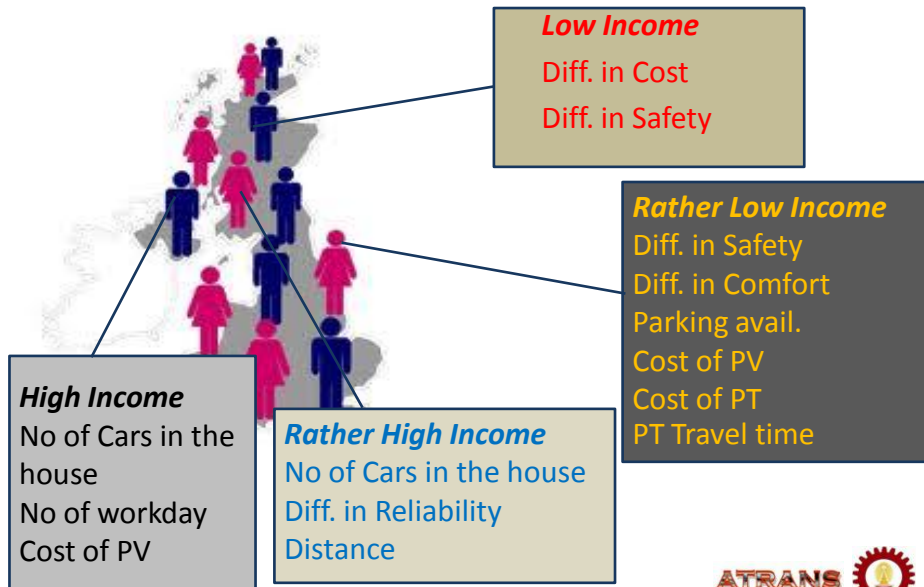


**Possibility to switch from PV to PT**



| Variables          |
|--------------------|
| Ncar               |
| License(1)         |
| Modech(1)          |
| Diff_TravelLuggage |
| Diff_Stress        |
| Diff_Moneysave     |

**Various Decision based on Who I am**

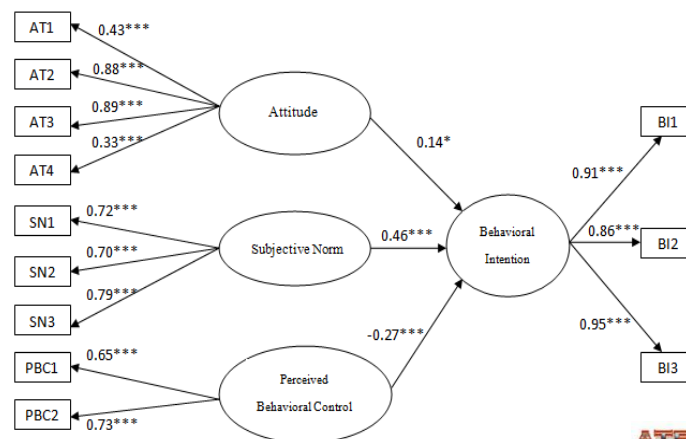




## Behavioral Intention to use PT



- Structural Equation Modeling
- The results indicate that Subjective norm has the greatest influence on Behavioral Intention to switch from PV to PT



## Findings (1)



- Current PV and PT users have different characteristics
  - Education, Income, Change travel pattern when school opens
- Current PV and PT users have similar travel demand
  - Amount of travel for work and other activities
- Current PV and PT users have different Perceptions on alternative modes
- Current PV and PT users have different Attitudes toward travel

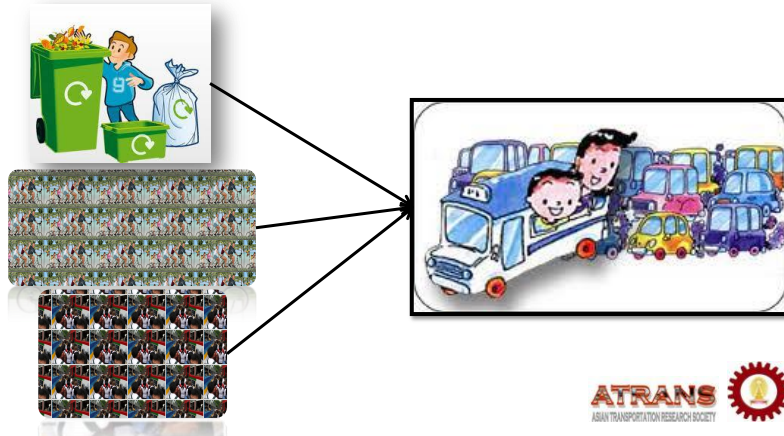




## Findings (2)



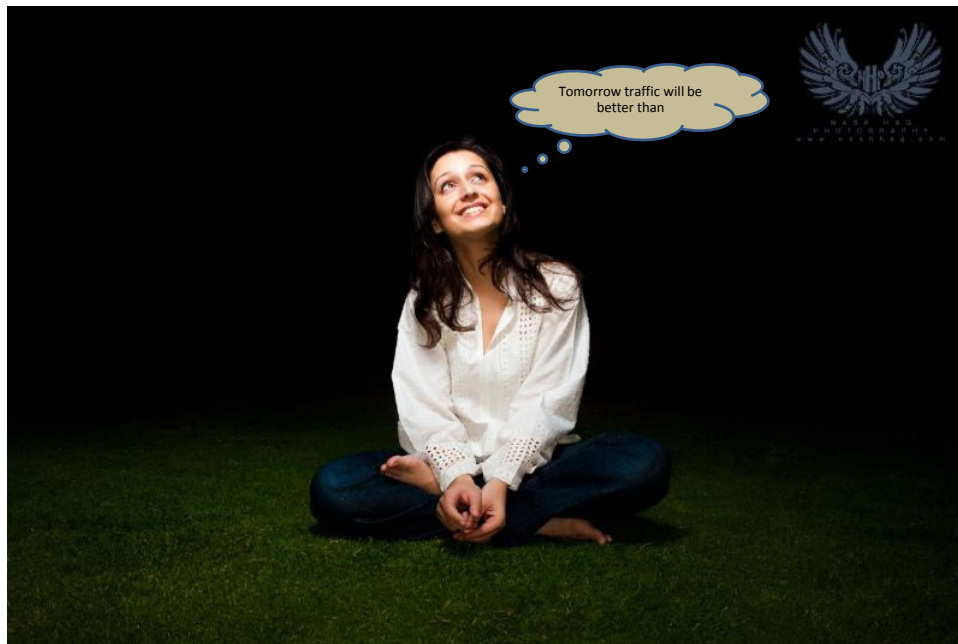
- What factors influence the mode switch from PV to PT
  - Characteristics as well as Attitudes



## Answers From This Research

- ❖ The original knowledge on commuters’ needs is realized
- ❖ Perception and attitudes of commuters’ toward public transport services can be identified
- ❖ Hopefully, the results from the study can identify potential public transport service characteristics that best suit commuters’ needs
- ❖ The methodology and results from this research can be used by many academics as well as practitioners to conduct the similar study to promote public transport
- ❖ The research’s ultimate goal is to discover a proper way to attract people to use public transport





Thank you