

## **Analysis of Tourist Travel Behavior and Recommendation for Active Transport Encouragement Strategies, the Case of Hue City**

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**Abstract:** Over the past years, several transport encouragement strategies have been implemented to stimulate the mode shift from motorized transport to walking and cycling from international studies. However, information concerning the transport mode-shifting strategies in tourism cities in Vietnam is still limited. This study aims at recommending strategies to encourage active transport usage of tourists through the analysis of travel behavior. The travel interview survey was conducted in Hue city to understand the current travel status of 259 tourists and the possible encouragement measures on mode shifting to walking and cycling. Studies described intervention tools categorized into economic-based, behavior-based, physical-based, and service development. The study showed the core encouragement measures concerning the possibility of mode shift under tourist perception. The combination of more than one measures reveals the most possible effectiveness and applicability to implement mode-shift strategies.

**Keywords:** Tourist Travel Behavior, Active Transport, Mode Shift, Transport Demand Management, Tourism Cities

### **1. INTRODUCTION**

Locating at the center of Vietnam, Hue is famous for its heritage with peaceful culture and environment. The population is only 450.000 inhabitants (2017), Hue attract 3.800.000 tourists in 2017 which increasing 17% after one year. Because of the high speed increasing of tourists, traffic situation in Hue city is more congested during recent years. In many occasions, this city is fully covered by tourist buses, taxi and mini-vans. High level of motorization has been bringing negative impacts on transport system and quality of life.

A crucial question is “How to manage the traffic situation in a such typical tourism city as Hue to achieve sustainable development?” and active transport has been seen as a potential solution.

Active transport includes all forms of travel that do not rely on an engine or motor for movement. This includes walking and bicycle, and using small-wheeled transport (skates, skateboards, push scooters and cyclo/pedicab) and wheelchair. These modes of transport can provide both recreation and mobility.

The study aims at measuring the effectiveness of interventions to shift from motorized to active transport in a case of tourism city in Vietnam. To achieve this goal, the study firstly reviews the effectiveness of interventions designed to stimulate a shift from motorcycle and car usage to cycling or walking. Secondly, the travel behavior of tourists in Hue city is investigated then selected active transport encouragement strategies are recommended. The

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research framework is illustrated in Figure 1.

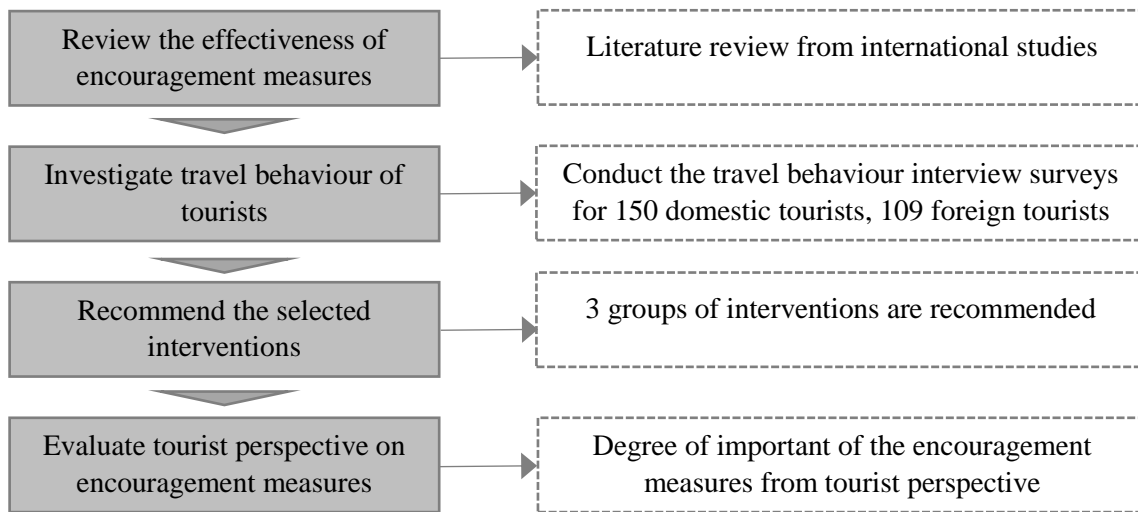


Figure 1. Research framework

## 2. LITERATURE REVIEW

From literature review, the effectiveness of encouragement measures is mapped aiming to induce a mode shift from private transport use to active modes of travel (walking or cycling). Measures were categorized in work-place-based, architectural and urbanistic adjustments, population-wide, and bicycle-renting systems measures. Many studies showed positive effects concerning a mode shift from car use to active transport. The tools used were either legal, economic (subsidy, reward system, penalty), communicative (written materials, behavioral tools) or physical tools (providing bicycles, providing better bicycle facilities at work, adjustment of the environment). In many cases, multiple measures were used. More detailed information about the included studies can be found in Table 1.

One of the behavioral intervention tools used in the included studies was mass media campaigns. All interventions using mass media campaigns, except for one, were showing positive effects on a mode shift. It has been argued that mass media campaigns are useful in increasing awareness and knowledge about the campaign, and are of importance in supporting other intervention tools (Kahn et al., 2002). In line with this, it was found that all mass media campaigns were used in combination with other intervention tools (i.e., economic and/or communicative tools). However, since evidence concerning the effectiveness of stand-alone mass media campaigns in increasing physical activity is modest and inconsistent overall (Buchanan et al., 2012), it can be questioned if this positive effect on a mode shift would also have been found in the event only a mass media campaign was used.

Four of the included studies (Alcott & DeCindis, 1991; Brockman & Fox, 2011; Meland, 1995; Wen, Orr, Bindon, & Rissel, 2005) using a communicative tool also used a reward (incentives) or penalty system. Incentives used were a healthy breakfast/lunch (Wen et al., 2005) and the opportunity to win prizes when participating in the intervention (Alcott & DeCindis, 1991). Two studies contained a penalty system by increasing parking charges (Brockman & Fox, 2011) or having to pay a toll fee when entering the city center (Meland, 1995). Three of the four studies showed a positive effect on a mode shift. It was mentioned by Jochelson that the use of incentives aimed at changing complex behavior (like inducing a

mode shift) was successful in that it increased participation in lifestyle change programs, but once an intervention ceased individuals relapsed into their former behavior patterns (Jochelson, 2007). In line with this, Kane et al. (Kane, Johnson, Town, & Butler, 2004) showed that there is less evidence that incentives sustain the long-term lifestyle change required for health promotion. Only the introduction of the Trondheim Toll Ring did show no effect on a mode shift. In this study the introduction of the Toll Ring caused a shift in the timing of the car trips instead of a mode shift. Since this Toll Ring has been designed to raise revenue for the ‘Trondheim package’, it can be argued that this intervention was not designed effectively for stimulating a mode shift. As mentioned by Meland, only about one-third of the car drivers in Trondheim pay these tolls regularly, which could also have influenced these results (Meland, 1995). Future research should focus on the effectiveness of the use and height of reward or penalty systems on stimulating a mode shift as well as the influence of terminating these reward or penalty systems on the obtained outcome.

Table 1. Active transport encouragement measures

|   | Legal tools | Economic tools |               |         | Communicative tools |                   | Physical tools     |   |                               |
|---|-------------|----------------|---------------|---------|---------------------|-------------------|--------------------|---|-------------------------------|
|   |             | Subsidy        | Reward system | Penalty | Written materials   | Behavioural tools | Providing bicycles | Providing better bicycle facilities at work | Adjustment of the environment |
| <b>Work-place based interventions</b>           |             |                |               |         |                     |                   |                    |   |                               |
| Mutrie et al. (2002)                            |             |                |               |         | x                   | x                 |                    |   |                               |
| Merom et al. (2005)                             |             |                |               |         | x                   | x                 |                    |   |                               |
| Brockman and Fox (2011)                         |             | x              |               | x       |                     | x                 | x                  | x   | x                             |
| Wen et al. (2005)                               |             |                | x             |         | x                   | x                 |                    |   |                               |
| O’Fallon (2010)                                 |             |                |               |         |                     | x                 | x                  | x   |                               |
| Shoup (2007)                                    | x           | x              |               |         |                     |                   |                    |   |                               |
| <b>Architectural and urbanistic adjustments</b> |             |                |               |         |                     |                   |                    |   |                               |
| Arentze et al. (2001)                           |             |                |               |         |                     |                   |                    |   | x                             |
| Burbridge and Goulias (2009)                    |             |                |               |         |                     |                   |                    |   | x                             |
| Topp and Pharoah (1994)                         | x           |                |               |         |                     |                   |                    |   | x                             |
| Weisbrod (1982)                                 | x           |                |               |         |                     |                   |                    |   | x                             |
| Meland (1995)                                   |             |                |               | x       |                     | x                 |                    |   |                               |
| Jones (2012)                                    |             |                |               |         |                     |                   |                    |   | x                             |
| Thakuriah et al. (2012)                         |             |                |               |         |                     |                   |                    |   | x                             |
| Goodman et al. (2013)                           |             |                |               |         | x                   | x                 |                    | x   | x                             |
| <b>Population-wide interventions</b>            |             |                |               |         |                     |                   |                    |   |                               |
| Thomas et al. (2009)                            |             |                |               |         |                     | x                 |                    |   |                               |
| Alcott and DeCindis (1991)                      |             |                | x             |         | x                   | x                 |                    |   |                               |
| James and Brög                                  |             |                |               |         |                     | x                 |                    |   |                               |

(2001)

**Bicycle renting system interventions**

Noland and Ishaque  
(2006)

x

Fuller et al. (2013)

x

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Another two studies show no positive effect on a mode shift. The development of a neighborhood trail was the only intervention with a negative effect on a mode shift. In this study, there was only an environmental adjustment and no promotional activities concerning the use of this trail were implemented. Though as a result of the trail a loop of 2.5 miles was created, adequate signposting was missing, which possibly limited the trail's effectiveness. In line with this the authors mentioned that a lack of information could have influenced the negative effects (Burbidge & Goulias, 2010). The extension of the UK National Cycle Network (Jones, 2012) was also implemented without any additional tools and could therefore have resulted in no effect on a mode shift. However, Ponjé et al. also used only an environmental adjustment and did show positive effects on a mode shift (Ponjé, Stams, Arentze, Timmermans, & Borgers, 2007). It might be expected that, for example, the opening of a new railway station affects more people than the development of a neighborhood trail and related to these less promotional activities are needed to stimulate the use of this railway station. Therefore, it can be argued, that it depends on the type of architectural and urbanistic adjustment whether other intervention tools are needed simultaneously.

The included studies support the notion that a combination of different intervention tools is more effective than using only one tool. More than half of the included interventions used a combination of several intervention tools. However, in the vast majority of these studies the intervention tools all focus on the same area, for instance, health promotion or an environmental adjustment. Interventions were implemented with, for example, the aim to increase physical activity levels, reduce air pollution or improve accessibility of a neighborhood. Only one intervention focused on multiple aims by using both behavioral intervention tools and an environmental adjustment. Previous research showed that a mode shift not only influences the level of physical activity, but also has beneficial health effects due to decreased air pollution emissions (de Hartog, Boogaard, Nijland, & Hoek, 2010), greenhouse emissions (Lindsay, Macmillan, & Woodward, 2011) and noise levels (Van Kempen, Swart, Wendel-Vos, Steinberger, & Knol, 2010). The effect of a mode shift on road safety is claimed to be an improvement by (Jacobsen, 2003), but other authors showed that this effect depends on age and gender (Stipdonk & Reurings, 2012). Because of this diversity in (beneficial) effects on health and environmental quality, collaboration between the health, transport, spatial planning and environmental sector and thus a more intersectoral approach would be beneficial in developing (cost-efficient) interventions stimulating active transport. Related to this, it may be argued that not only a multi-sectorial health approach is needed, but also multi-sectorial transport and parking approaches.

Based on the reviewed mode-shift interventions, the study proposes measures that specified for local travel characteristics which categorized into (1) Economic Tools, (2) Communicative Tools, and (3) Physical Tools, as shown in Table 2. These encouragement measures will be tested in the travel interview survey to understand the degree of importance under tourist perception. The communicative tools are excluded from the interview survey since they required specific and effective implementing process rather than tourist perception.

Table 2. The matrix of measures

| Categories                               | Economic Tools   |                     |  | Communicative Tools              |                                    | Physical Tools               |   |
|--|--|---------------------|--|----------------------------------|------------------------------------|------------------------------|---|
|  | Subsidy  | Reward system       | Penalty                                    | Mass media campaigns             | Written materials                  | Better bicycle facilities    | Adjustment of the environment               |
| Architectural and urbanistic adjustments |  |                     |  |                                  |                                    | separated lanes for bicycles | develop a new trail                         |
| Person-based                             | free bicycle parking   | discounted vouchers | increasing parking charges, pay a toll fee | increase awareness and knowledge | regulations from local authorities |                              | bicycle parking locates at good access area |
| Service development                      | Provide bicycle-renting services, develop bike-sharing systems |                     |  |                                  |                                    |                              |   |

### 3. DATA COLLECTION

#### 3.1. Transport Characteristics in Hue City

The development of Hue city highly focus along Huong River, which locate at the center of the city and plays as the “soul” of the city. Transport development, therefore, also highly focus on this area. There are 422 urban roads with the length of 216,5 km, serving transport demand at good quality. The capacity of road system is relatively high, enhance the development of private vehicles, especially motorcycles.

The bus system in Hue city has not been developed well, regarding both coverage area and the attractiveness of the system. There are only 5 bus lines with a total of 18 bus vehicles, operating at low quality facilities. Therefore, the local people mostly use motorcycles; whereas taxi, cars and big tourist buses are occupied by tourists.

Urban development and transport system are dissimilar between the north bank and the south bank of Huong River. The north bank is the imperial relic site where Hue Citadel locates. Therefore, this is the reserved zone with very limited development. New buildings, large entertainment centers and big roads are hardly to receive construction approvals.

The south bank is more modern and more developed area and has been seen as a tourist hub of Hue city. The core of the south bank is the French Quarter with high population density, a center of entertainment and tourists services. The urban planning and transport development are the focus of this area.

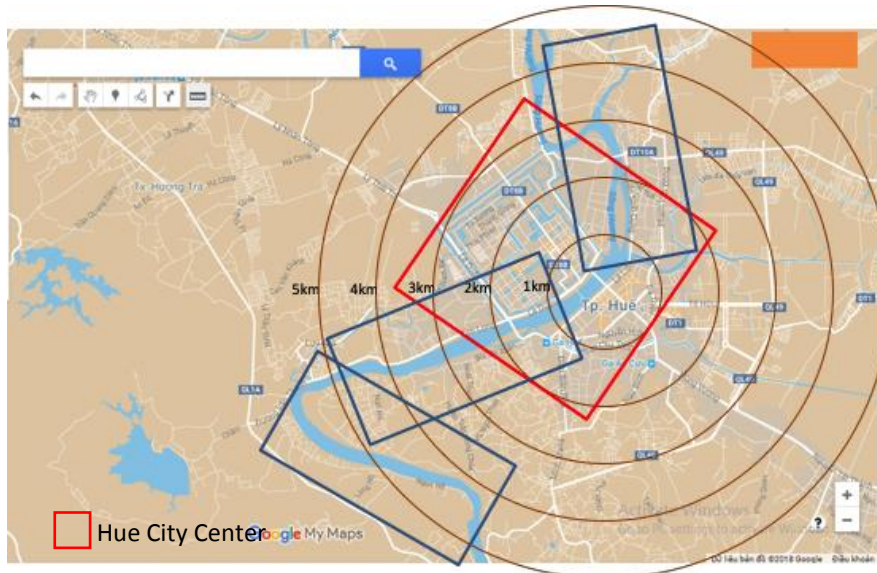


Figure 2. The location of Hue city center along Huong River

### 3.2. Travel Behaviour Interview Survey

A survey on tourist's behavior was conducted in September 2018. A total of 259 people was randomly selected at different tourist attraction areas, including 109 foreign tourists and 150 domestic tourists. They were directly interviewed to understand their travel behavior (for instance, number of time to visit, number of nights to stay, travel modes) and the willingness to shift from motorized transport (motorcycles, taxi, and cars) to active transport mode (walking and cycling). They are also asked for the evaluation of the important level of walking and cycling encouragement measures.

The willingness to pay for the bike-sharing service is also asked to understand one of important encouragement measures. This indicators is also important for local transport service investment in near future. The demographic of interviewed tourists is presented in Table 3.

Table 3. The demographic of interviewed tourists

| Variables       | Freq. | (%)  |
|-----------------|-------|------|
| <b>Tourists</b> |       |      |
| Foreign         | 150   | 57.9 |
| Domestic        | 109   | 42.1 |
| <b>Gender</b>   |       |      |
| Female          | 137   | 52.9 |
| Male            | 122   | 47.1 |
| <b>Age</b>      |       |      |
| <18             | 4     | 1.5  |
| 18-24           | 79    | 30.5 |
| 25-35           | 149   | 57.5 |
| 36-50           | 22    | 8.5  |

|                      |     |      |
|----------------------|-----|------|
| 51-60+               | 5   | 1.9  |
| <b>Visiting Time</b> |     |      |
| First time           | 193 | 74.5 |
| 2-3 times            | 38  | 14.7 |
| 4-5 times            | 24  | 9.3  |
| >5 times             | 4   | 1.5  |
| <b>Night of Stay</b> |     |      |
| a night              | 130 | 50.2 |
| 2-3 nights           | 103 | 39.8 |
| 4-5 nights           | 20  | 7.7  |
| > 5 nights           | 6   | 2.3  |

## 4. RESULTS

### 4.1. Current Transport Mode Usage of Tourists

To understand the current status of travel mode choice of tourists, ten options of travel vehicles are proposed for tourists to select that best fit with their visiting, including bicycles, motorcycle as drivers, motorcycle as passenger, motorcycle taxi, car as driver, car as passenger, taxi, dragon boat, walking and others. Based on the survey results, there is significantly different in the selection of transport mode between foreign and domestic tourists during the time they are in Hue.

Taxi and car (used as passenger) are the most popular mode that domestic tourists select for their travel during in Hue city, with 65% and 32% respectively. Whereas, only 38% of foreign tourists selected taxi as their travel mode. It is also interesting to see that foreign tourists prefer driving motorcycles during their travel that providing them better opportunities to explore local culture.

Dragon boat is also a popular mode to travel in Hue city, with 25% of domestic tourists and 19% of foreign tourists select this mode to travel along Huong River. Dragon Boat is the modern engine boat, which inspired from the decoration of Royal Boat of Nguyen Dynasty, using to serve tourists.



Single Dragon Boat (10-12 seats)



Double Dragon Boat (36 seats)

Foreign and domestic tourists are also dissimilar in choosing the travel mode regarding walking and cycling. Only 3% of domestic tourists choose to walk while 12% of foreign tourists do. Bicycle usage is much more different, of which 19% of foreign tourists selecting this mode while only 2% of domestic tourists do. A major concern of tourists to take bicycle is the available of bicycle renting services or bike-sharing system at visiting areas. This finding is meaningful for transport management authorities to plan for green transport system in Hue, especially serving for tourists.

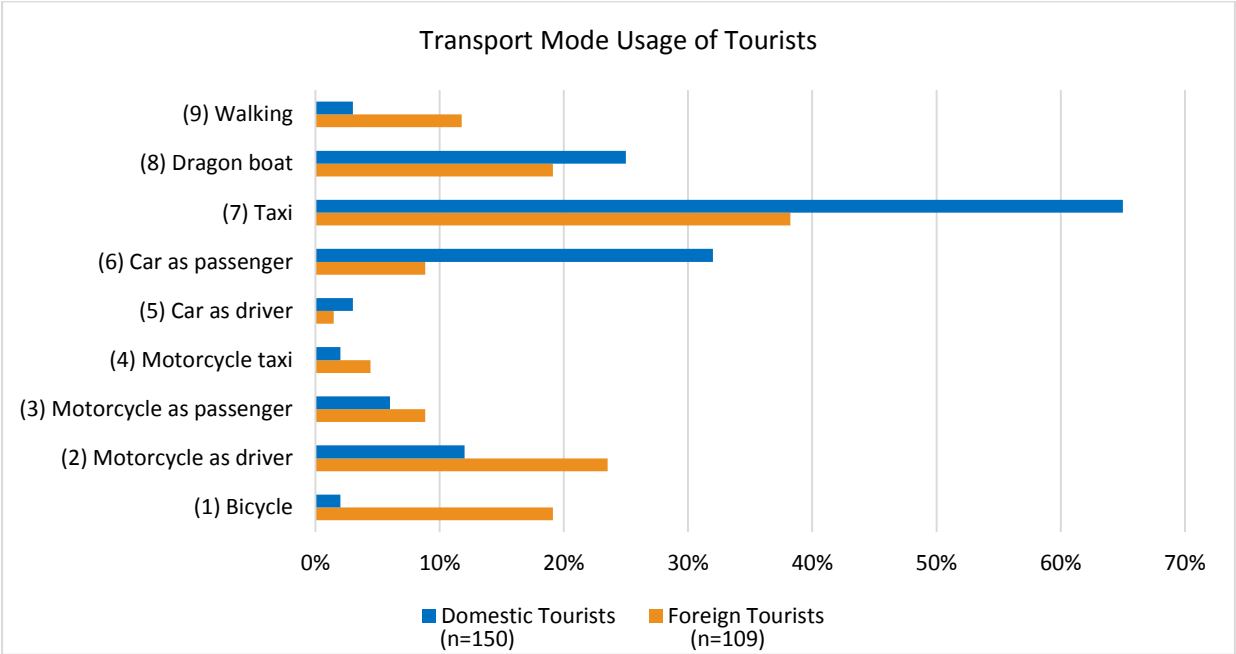


Figure 3. Transport usage of tourists

**4.2. Walking Distance**

The willingness to walk is significantly different between foreign and domestic tourists. Among 109 foreign tourists interviewed, 77% of them are willing to walk more than 1000m, whereas only 51% of domestic tourists under this survey are willing to walk in the same distance.

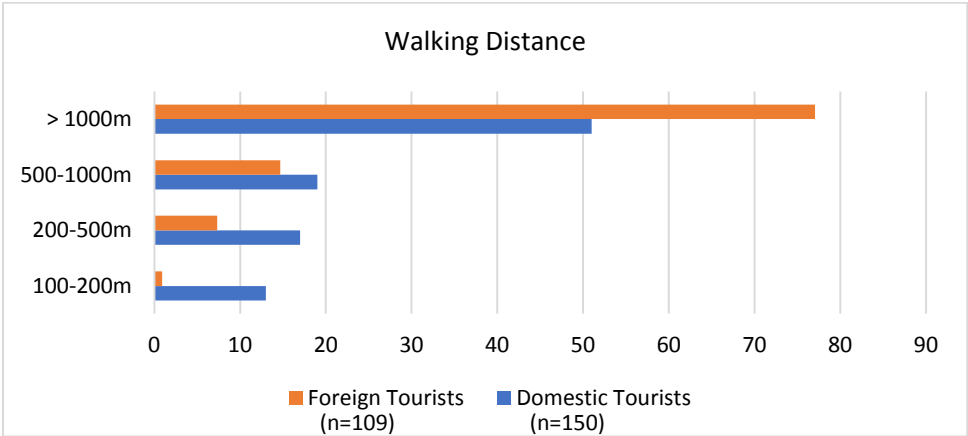


Figure 4. Walking distance of tourists



### 4.3. Cycling Distance

Foreign and domestic tourists are different at the willingness of cycling distance. Based on the travel behavior survey, 82% of foreign tourists are willing to cycle more than 10.000m for sight-seeing trip during the time they visit Hue city, whereas only 27% of domestic tourists are willing to cycle in the same distance. The most convenient cycle distance of domestic tourists is 5.000-8.000m with 52% of them select.

The willingness to cycle is an important information to plan for the bicycle renting service and location arrangement of renting stations that could serve both domestic and foreign tourists. The distance of renting station should best fit with the willingness to cycle and also conveniently access to the tourist attractions. There is a big advantage to encourage walking and cycling in Hue city since most of tourist attractions locating along Huong River with many green spaces, good walking access. The separated bicycle lanes are not available in Hue at this moment. However, the traffic volume is not very high. Hence, people are easy to travel by bicycles.

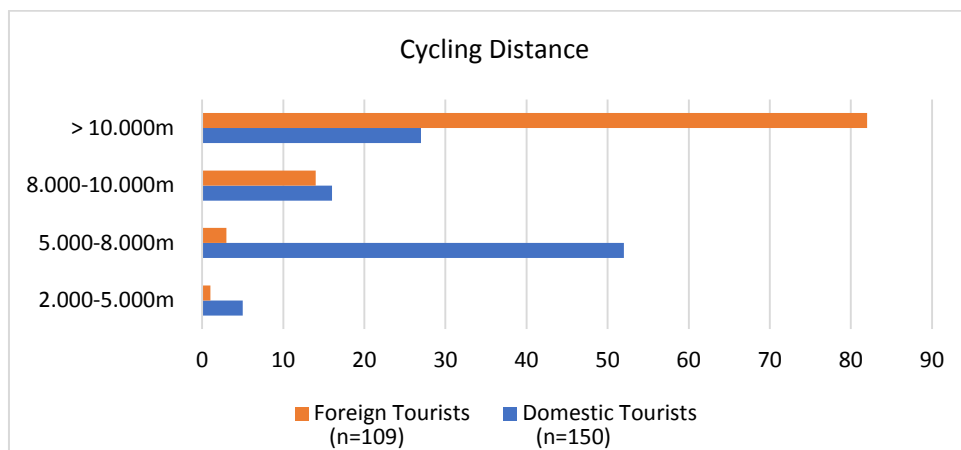


Figure 5. Willingness to go cycling of tourists

### 4.4. Tourist Perspective on the Important Level of Walking Encouragement Measures

Walking is an important part of the tourist experience and a significant element of sustainable mobility. Although the concept of walkability has substantial health, social, economic and environmental dimensions for permanent residents, little attention has been given to the concept of walkability from a tourist perspective. This study aims to find suitable pedestrian accessibility and attractiveness indicators for walkability assessment.

To encourage more tourists to walk, six most important measures are recommended and ask for the assessment of the important level from tourists, including (1) Construction of separated lane for walking; (2) Expansion of sidewalks, improvement of sidewalk quality; (3) Limitation of shopping on the sidewalk; (4) Limitation of parking on the sidewalk; (5) Safety and securities (no robbery, no pickpockets, good lighting at night); (6) Provision of benches and trees along the sidewalks.

Based on the survey results, it shows that the physical quality and the safety and securities of the sidewalk are the most important criteria for tourists to encourage them to walk more frequently. The important and very important level assessment for the construction of separated lane for walking and for the expansion of sidewalks and sidewalk quality are both 69%, and for the safety and securities is 76%. It is also interesting to know that the

limitation of shopping on the sidewalk not receiving strong supports from tourists, especially the foreign ones. It also means that they might prefer observing the real life of local people which can be seen as the authentic culture of Hue province. The important level of walking encouragement measures from tourist perspective is illustrated in Figure 6.

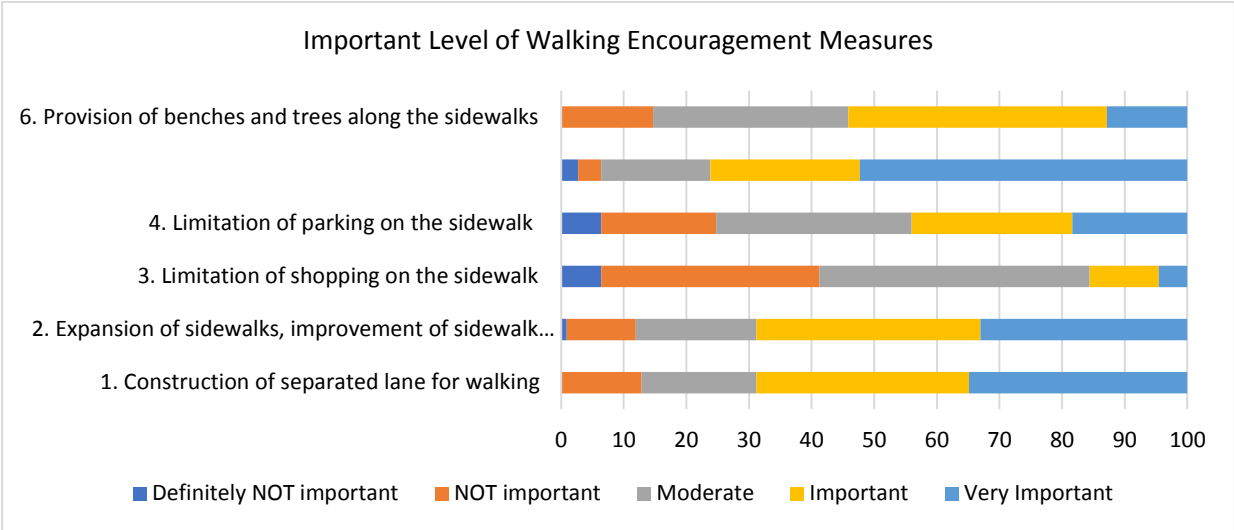


Figure 6. The important level of walking encouragement measures

**4.5. Tourist Perspective on the Important Level of Cycling Encouragement Measures**

To encourage the usage of bicycles, five most important measures are recommended and having the evaluation from tourists, including (1) Having separated lanes for bicycles on the roads, (2) Parking is free for bicycles, (3) Bicycles are freely to access the parks along Huong river, (4) Bicycle parking is priority in shopping areas and attraction areas, and (5) Provision of bicycle renting services.

Based on the survey results, having separated lanes for bicycles and no parking fee are evaluated as the most important indicators to promote cycling. Besides, the provision of bicycle renting services gets strong support from tourists in order to encourage them to bike more frequently.

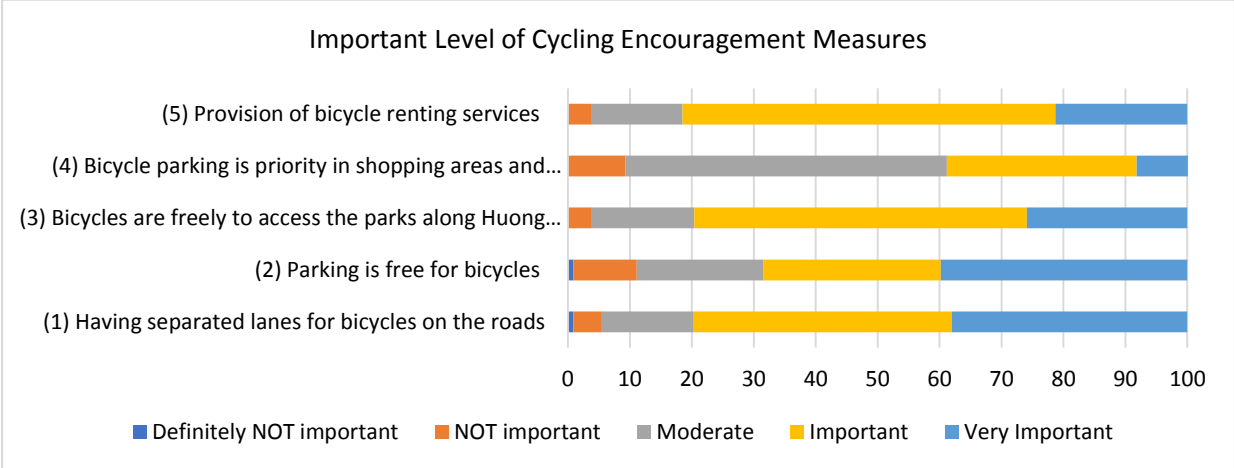


Figure 7. The important level of cycling encouragement measures

In summary, there are some interesting findings to discuss from the analysis of tourist travel behavior survey. Generally, motorized transport modes (taxi, car, and motorcycle) are

highly used by tourists during the time they visit Hue city. Specifically, walking and cycling are seldomly used by domestic tourists. Such kind of travel modes are more frequently used by foreign tourists. Importantly, tourists are more willing to walk and go cycling than their current travel behavior. Better provision of walking and cycling facilities will encourage tourists to use these modes. Besides, safety and security improvement are important issues under tourist perception. The development of bicycle renting services or bike-sharing systems are also significant to provide better choice of this active transport mode. In combination with the green environment along Huong River, walking and cycling have high potential to be the dominant modes in Hue city.

## 5. CONCLUSIONS

The study provides empirical evidences for effective strategies to encourage tourist shifting from motorized to active transport. Such results are beneficial for transport authorities and transport planning experts to achieve sustainable transport.

From the international literature reviews, the study recommends the selected strategies specified for the travel behavior of tourists in Hue. Even the active transport is not frequently used by the tourists at this current status, the potential to promote such kind of sustainable transport is very high. Based on the travel interview survey conducted with foreign and domestic tourists, their willingness to shift from motorized transport to walking and cycling is very potential. Therefore, sufficient encouragement strategies are significantly important.

The evidences reveal that improvement of physical quality, safety and securities, and the development of bicycle renting service are the keys to promote active transport in such tourism city as Hue. The outputs of this empirical research are also useful to other tourism cities in Vietnam, for instance, Da Nang, Hoi An, Nha Trang, Can Tho and many more.

## REFERENCES

- Alcott, R., & DeCindis, M. M. (1991). Clean Air Force Campaign 1989-1990: Programs, Attitudes, and Commute Behavior Changes. *Transportation Research Record*, (1321), 34–44. Retrieved from <http://onlinepubs.trb.org/Onlinepubs/trr/1991/1321/1321-006.pdf>[https://scholar.google.com/scholar\\_lookup?title=CLEAN+AIR+FORCE+CAMPAIGN+1989-1990%3A+PROGRAMS%2C+ATTITUDES%2C+AND+COMMUTE+BEHAVIOR+CHANGES&author=R.+Alcott&author=M.+DeCindis&publication\\_y](https://scholar.google.com/scholar_lookup?title=CLEAN+AIR+FORCE+CAMPAIGN+1989-1990%3A+PROGRAMS%2C+ATTITUDES%2C+AND+COMMUTE+BEHAVIOR+CHANGES&author=R.+Alcott&author=M.+DeCindis&publication_y)
- Brockman, R., & Fox, K. R. (2011). Physical activity by stealth? The potential health benefits of a workplace transport plan. *Public Health*, 125(4), 210–216. <https://doi.org/10.1016/j.puhe.2011.01.005>
- Buchanan, L. R., Lankford, T. J., Hopkins, D., Brown, D. R., Epping, J. M., Soares, J., ... Wallace, J. S. (2012). Stand-Alone Mass Media Campaigns to Increase Physical Activity. *American Journal of Preventive Medicine*, 43(5), 551–561. <https://doi.org/10.1016/j.amepre.2012.07.035>
- Burbidge, S., & Goulias, K. (2010). Evaluating the Impact of Neighborhood Trail Development on Active Travel Behavior and Overall Physical Activity of Suburban Residents. *Transportation Research Record: Journal of the Transportation Research Board*. <https://doi.org/10.3141/2135-10>
- de Hartog, J. J., Boogaard, H., Nijland, H., & Hoek, G. (2010). Do the health benefits of cycling outweigh the risks? *Environmental Health Perspectives*, 118(8), 1109–1116.

- <https://doi.org/10.1289/ehp.0901747>
- Jacobsen, P. L. (2003). Safety in numbers: more walkers and bicyclists, safer walking and bicycling. *Injury Prevention*, 9(3), 205–209. <https://doi.org/10.1136/ip.9.3.205>
- Jochelson, K. (2007). *Paying the Patient: Improving Health Using Financial Incentives. Kicking Bad Habits.*
- Jones, T. (2012). Getting the British back on bicycles-The effects of urban traffic-free paths on everyday cycling. *Transport Policy*, 20, 138–149. <https://doi.org/10.1016/j.tranpol.2012.01.014>
- Kahn, E. B., Ramsey, L. T., Brownson, R. C., Heath, G. W., Howze, E. H., Powell, K. E., ... Corso, P. (2002). The effectiveness of interventions to increase physical activity: A systematic review. *American Journal of Preventive Medicine*, 22(4 SUPPL. 1), 73–107. [https://doi.org/10.1016/S0749-3797\(02\)00434-8](https://doi.org/10.1016/S0749-3797(02)00434-8)
- Kane, R. L., Johnson, P. E., Town, R. J., & Butler, M. (2004). A structured review of the effect of economic incentives on consumers' preventive behavior. *American Journal of Preventive Medicine*, 27(4), 327–352. <https://doi.org/10.1016/j.amepre.2004.07.002>
- Lindsay, G., Macmillan, A., & Woodward, A. (2011). Moving urban trips from cars to bicycles: Impact on health and emissions. *Australian and New Zealand Journal of Public Health*, 35(1), 54–60. <https://doi.org/10.1111/j.1753-6405.2010.00621.x>
- Meland, S. (1995). GENERALISED AND ADVANCED URBAN DEBITING INNOVATIONS: THE GAUDI PROJECT. 1. OVERVIEW. *Traffic Engineering & Control*.
- Ponjé, M., Stams, A., Arentze, T., Timmermans, H., & Borgers, A. (2007). Assessing Urban Context-Induced Change in Individual Activity Travel Patterns: Case Study of New Railway Station. *Transportation Research Record: Journal of the Transportation Research Board*, 1752(1), 47–52. <https://doi.org/10.3141/1752-07>
- Stipdonk, H., & Reurings, M. (2012). The Effect on Road Safety of a Modal Shift From Car to Bicycle. *Traffic Injury Prevention*, 13(4), 412–421. <https://doi.org/10.1080/15389588.2012.660661>
- Van Kempen, E., Swart, W., Wendel-Vos, W., Steinberger, P., & Knol, A. (2010). Exchanging car trips by cycling in the Netherlands. A first estimation of health benefits. *RIVM Report*.
- Wen, L. M., Orr, N., Bindon, J., & Rissel, C. (2005). Promoting active transport in a workplace setting: Evaluation of a pilot study in Australia. *Health Promotion International*, 20(2), 123–133. <https://doi.org/10.1093/heapro/dah602>