

BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan analisis yang telah dilakukan pada hasil penelitian, didapatkan beberapa kesimpulan untuk responden yang merupakan penghuni di kawasan perumahan jika menggunakan bus listrik sebagai moda transportasi, yaitu:

1. Variabel pendapatan, perjalanan harian, asal perjalanan, tujuan perjalanan, jarak, waktu, dan durasi aktivitas berpengaruh signifikan terhadap pengambilan keputusan mengenai jenis perjalanan yang dilakukan oleh responden dengan nilai signifikan yang diperoleh sebesar $0,000 < 0,05$.
2. Pada fungsi pertama, variabel tujuan perjalanan sangat berpengaruh terhadap jenis perjalanan yang dilakukan responden dengan nilai koefisien sebesar 0,922, sedangkan pada fungsi kedua, variabel jarak sangat berpengaruh terhadap jenis perjalanan dengan nilai koefisien sebesar 0,480.
3. Diperoleh model analisis diskriminan sebagai berikut:

- a. Model analisis untuk perjalanan *mandatory*,

$$Z_0 = -11,818 + 0,944X_1 + 4,744X_2 + 5,648X_3 + 0,704X_4 + 1,767X_5 + 4,068X_6$$

- b. Model analisis untuk perjalanan *dicretionary*,

$$Z_1 = -13,235 + 1,373X_1 + 3,355X_2 + 3,979X_3 + 3,871X_4 + 4,645X_5 + 6,729X_6$$

- c. Model analisis untuk perjalanan keduanya,

$$Z_2 = -24,475 + 0,882X_1 + 6,022X_2 + 5,656X_3 + 7,641X_4 + 2,566X_5 + 7,868X_6$$

4. Berdasarkan hasil analisis data, diperoleh pemilihan tujuan perjalanan berdasarkan aktivitas yang dilakukan adalah sebanyak 74 responden memilih perjalanan diskresioner, 91 responden memilih perjalanan wajib dan 95 responden memilih keduanya saat menggunakan bus listrik di kawasan perumahan.

5.2 Saran

Saran yang dapat diberikan untuk penelitian selanjutnya adalah:

1. Perlu adanya analisis lebih lanjut untuk melakukan pemilihan rute berdasarkan pilihan tujuan perjalanan yang telah tersedia, misalnya menggunakan analisis pemilihan diskrit (*discrete choice*).
2. Peningkatan variabel yang lebih bervariasi untuk mengetahui lebih banyak aspek yang mempengaruhi pemilihan tujuan perjalanan.



DAFTAR PUSTAKA

- Adheesh, S. R., Vasisht, M. S., & Ramasesha, S. K. (2016). Air-pollution and economics: Diesel bus versus electric bus. *Current Science*, *110*(5), 858–862.
- Ahmed, T., & Hyland, M. (2023). Exploring the role of ride-hailing in trip chains. *Transportation*, *50*(3), 959–1002.
- Anderson, M. K., Nielsen, O. A., & Prato, C. G. (2017). Multimodal route choice models of public transport passengers in the Greater Copenhagen Area. *EURO Journal on Transportation and Logistics*, *6*(3), 221–245.
- Badan Pusat Statistik. (2023). Statistik Indonesia 2023. Badan Pusat Statistik Jakarta.
- Babcock Jr, L. R. (1970). A combined pollution index for measurement of total air pollution. *Journal of the Air Pollution Control Association*, *20*(10), 653–659.
- Berndt, A. E. (2020). Sampling Methods. *Journal of Human Lactation*, *36*(2), 224–226.
- Budie Agung, Syaefulloh Syaefulloh, Iwan Moh. Ridwan, A. Muslim Hadi Mamun, Deden Sumpena, & Qiqi Yulianti Zakiah. (2019). Google Form-Based Learning Assessment. *Proceedings of the 3rd Asian Education Symposium (AES 2018)*, 529–531.
- Currans, K. M., Abou-Zeid, G., Clifton, K. J., Howell, A., & Schneider, R. (2020). Improving transportation impact analyses for subsidized affordable housing developments: A data collection and analysis of motorized vehicle and person trip generation. *Cities*, *103*, 102774.
- Daamen, W., Hoogendoorn, S. P., & Bovy, P. H. L. (2005). First-Order Pedestrian Traffic Flow Theory. *Transportation Research Record*, *1934*(1), 43–52.
- Dharmowijoyo, D. B. E., Susilo, Y. O., & Karlström, A. (2016). Day-to-day variability in travellers' activity-travel patterns in the Jakarta metropolitan area. *Transportation*, *43*(4), 601–621.

DJPPI. (2019). *Statistik 2019*. Jakarta

Djenno, M., Insua, G., & Pho, A. (2015). From paper to pixels: Using Google Forms for collaboration and assessment. *Library Hi Tech News*, 32, 9–13.

Durand, A., Harms, L., Hoogendoorn-Lanser, S., & Zijlstra, T. (2018). *Mobility-as-a-Service and changes in travel preferences and travel behaviour: A literature review*.

FARBSTEIN, J. (1974). The definition and description of activity. *Journal of Architectural Research*, 3(1), 18–25. JSTOR.

Fatihah Mohd Fauzi, N., & Dharmowijoyo, D. B. E. (2019). Activity-travel participation, multitasking in travel and daily well-being. *MATEC Web Conf.*, 270.

Gay, LR, Geoffrey E. Mills and Peter Airasian. (2009). *Educational Research, Competencies for Analysis and Application*. New Jersey: Pearson Education, Inc.

Granovskii, M., Dincer, I., & Rosen, M. A. (2006). Economic and environmental comparison of conventional, hybrid, electric and hydrogen fuel cell vehicles. *Journal of Power Sources*, 159(2), 1186–1193.

Hagerstrand, T. (1970). What about People in Regional Science? *Regional Science Association Papers*, Vol XXIV, pp. 7–21.

Hair, J. F. (2010). *Multivariate data analysis* (7th ed). Prentice Hall.

Hensher, D. A., & Reyes, A. J. (2000). Trip chaining as a barrier to the propensity to use public transport. *Transportation*, 27(4), 341–361.

Jiang, L., & Zhang, Y. (2019). Research on Route Planning of Electric Buses. *IOP Conference Series: Earth and Environmental Science*, 252(3), 032097.

Joewono, T., Larasati, N., & Rizki, M. (2020). PENGARUH LINGKUNGAN TEMPAT TINGGAL TERHADAP PERJALANAN BERBELANJA DI KOTA BANDUNG. *Jurnal Transportasi*, 20, 77–86.

Jones, P., & Clarke, M. (1988). The significance and measurement of variability in travel behaviour. *Transportation*, 15(1), 65–87.

- Juschten, M., & Hössinger, R. (2021). Out of the city – but how and where? A mode-destination choice model for urban–rural tourism trips in Austria. *Current Issues in Tourism*, 24(10), 1465–1481.
- Kaliyadan, F., & Kulkarni, V. (2019). Types of Variables, Descriptive Statistics, and Sample Size. *Indian dermatology online journal*, 10(1), 82-86.
- Karami, Z., & Kashef, R. (2020). Smart transportation planning: Data, models, and algorithms. *Transportation Engineering*, 2, 100013
- Kitamura, R., Chen, C., Pendyala, R. M., & Narayanan, R. (2000). Micro-simulation of daily activity-travel patterns for travel demand forecasting. *Transportation*, 27(1), 25–51.
- Kumar, D., Jaipurkar, R., Shekhar, A., Sikri, G., & Srinivas, V. (2021). Item analysis of multiple choice questions: A quality assurance test for an assessment tool. *SPECIAL ISSUE : TRENDS IN MEDICAL EDUCATION*, 77, S85–S89.
- Leng, N., & Corman, F. (2020). The role of information availability to passengers in public transport disruptions: An agent-based simulation approach. *Transportation Research Part A: Policy and Practice*, 133, 214–236.
- Lin, Y., Zhang, K., Shen, Z.-J. M., & Miao, L. (2019). Charging Network Planning for Electric Bus Cities: A Case Study of Shenzhen, China. *Sustainability*, 11(17).
- Liu, C., Susilo, Y. O., & Karlström, A. (2016). Measuring the impacts of weather variability on home-based trip chaining behaviour: A focus on spatial heterogeneity. *Transportation*, 43(5), 843–867.
- Liu, Y., Bunker, J., & Ferreira, L. (2010). Transit Users' Route-Choice Modelling in Transit Assignment: A Review. *Transport Reviews*, 30(6), 753–769.
- Luo, S., & Nie, Y. (Marco). (2020). On the role of route choice modeling in transit sketchy design. *Transportation Research Part A: Policy and Practice*, 136, 223–243.
- Mahmoud, M., Garnett, R., Ferguson, M., & Kanaroglou, P. (2016). Electric buses: A review of alternative powertrains. *Renewable and Sustainable Energy Reviews*, 62, 673–684.

- Mwale, M., Luke, R., & Pisa, N. (2022). Factors that affect travel behaviour in developing cities: A methodological review. *Transportation Research Interdisciplinary Perspectives*, 16, 100683.
- Nishii, K., Kondo, K., Kitamura, R. (1988). Empirical analysis of trip chaining behavior. *Transport. Res. Record*. 1203, 48–59.
- Pagliaro, M., & Meneguzzo, F. (2019). Lithium battery reusing and recycling: A circular economy insight. *Heliyon*, 5(6), e01866.
- Pamuła, T., & Pamuła, W. (2020). Estimation of the Energy Consumption of Battery Electric Buses for Public Transport Networks Using Real-World Data and Deep Learning. *Energies*, 13(9).
- Papa, G., Santo Zarnik, M., & Vukašinović, V. (2022). Electric-bus routes in hilly urban areas: Overview and challenges. *Renewable and Sustainable Energy Reviews*, 165, 112555.
- Pelletier, S., Jabali, O., Mendoza, J. E., & Laporte, G. (2019). The electric bus fleet transition problem. *Transportation Research Part C: Emerging Technologies*, 109, 174–193.
- Perrotta, D., Macedo, J. L., Rossetti, R. J. F., Sousa, J. F. de, Kokkinogenis, Z., Ribeiro, B., & Afonso, J. L. (2014). Route Planning for Electric Buses: A Case Study in Oporto. *Transportation: Can We Do More with Less Resources? – 16th Meeting of the Euro Working Group on Transportation – Porto 2013*, 111, 1004–1014.
- Pevec, D., Babic, J., & Podobnik, V. (2019). Electric Vehicles: A Data Science Perspective Review. *Electronics*, 8(10).
- Prato, C. G. (2009). Route choice modeling: Past, present and future research directions. *Journal of Choice Modelling*, 2(1), 65–100.
- Raux, C., Ma, T.-Y., & Cornelis, E. (2016). Variability in daily activity-travel patterns: The case of a one-week travel diary. *European Transport Research Review*, 8(4), 26.
- Rupp, M., Rieke, C., Handschuh, N., & Kuperjans, I. (2020). Economic and ecological optimization of electric bus charging considering variable electricity prices and CO₂eq intensities. *Transportation Research Part D: Transport and Environment*, 81, 102293.

- Silman, L. A., Barzily, Z., & Passy, U. (1974). Planning the route system for urban buses. *Computers & Operations Research*, 1(2), 201–211.
- Stopher, P. R. (1992). Use of an activity-based diary to collect household travel data. *Transportation*, 19(2), 159–176.
- Stopher, P.R., Hartgen, D.T., Li, Y-J. (1996). SMART: simulation model for activities, resources and travel. *Transportation* 23, 293–312.
- Strathman, J.G., Dueker, K.J. (1995). Understanding Trip Chaining. Special Reports on Trip and Vehicle Attributes, 1990 NPTS Report Series. Washington DC, US Department of Transportation
- Srinivan, S. (1998). Linking land use, transportation and travel behaviour: understanding trip chaining in terms of land uses and accessibility patterns.
- Sun, X., Li, Z., Wang, X., & Li, C. (2020). Technology Development of Electric Vehicles: A Review. *Energies*, 13(1).
- Sun, Z., Wang, Y., Zhou, H., Jiao, J., & Overstreet, R. E. (2021). Travel behaviours, user characteristics, and social-economic impacts of shared transportation: A comprehensive review. *International Journal of Logistics Research and Applications*, 24(1), 51–78.
- Susanto, A., Punia, D. P., Salim, S. P., Pangaribuan, J., Subekti, F., & Yudhanta, R. (2017). ANALISIS FAKTOR YANG BERPENGARUH TERHADAP PEMILIHAN RUTE JALAN TOL BALI MANDARA. *Jurnal Penelitian Sekolah Tinggi Transportasi Darat*, 8(1), 115–123.
- Susilo, Y. O., & Axhausen, K. W. (2014). Repetitions in individual daily activity–travel–location patterns: A study using the Herfindahl–Hirschman Index. *Transportation*, 41(5), 995–1011.
- Tamin, O. Z. (2000). Perencanaan dan Pemodelan Transportasi. Penerbit ITB
- Tamin, O. Z. (2008). Perencanaan, Pemodelan dan Rekayasa Transportasi. Bandung: ITB, 79-80 & 419-430.
- Tejada, J. J., & Punzalan, J. R. B. (2012). On The Misuse of Slovin's Formula. *The Philippine Statistician*, 61(1), 129-136.
- Thill, J. C., Thomas, I. (1997). Towards Conceptualising Trip-Chaining Behaviour: A Review. *Geogr. Anal.* 19, 1-17.

- Tillmanns, S., & Krafft, M. (2017). Logistic Regression and Discriminant Analysis. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of Market Research* (pp. 1–39). Springer International Publishing.
- Tirachini, A. (2020). Ride-hailing, travel behaviour and sustainable mobility: An international review. *Transportation*, 47(4), 2011–2047.
- Tumpu, M. (2022). *Sistem Transportasi*.
- Wardropper, C. B., Dayer, A. A., Goebel, M. S., & Martin, V. Y. (2021). Conducting conservation social science surveys online. *Conservation Biology*, 35(5), 1650–1658.
- Willumsen, Luis G. (1990). *Modelling Transport*. John Willey. England
- Xu, W., & Rong, W. (2021). Neural network model based on travel planning for travel time prediction. *Journal of Physics: Conference Series*, 1883(1), 012010.
- Yahya, R. G. (2019). Studi Permodelan Bangkitan Perjalanan di Perkotaan. *Jurnal Teknik Sipil*, 3(1), 92–100.
- Yoro, K. O., & Daramola, M. O. (2020). Chapter 1—CO₂ emission sources, greenhouse gases, and the global warming effect. In M. R. Rahimpour, M. Farsi, & M. A. Makarem (Eds.), *Advances in Carbon Capture* (pp. 3–28). Woodhead Publishing.
- Zhang, Q., Clifton, K. J., Moeckel, R., & Orrego-Oñate, J. (2019). Household Trip Generation and the Built Environment: Does More Density Mean More Trips? *Transportation Research Record*, 2673(5), 596–606.