

## References

- Abbaas, O., and J. A. Ventura. 2021. "An edge scanning method for the continuous deviation-flow refueling station location problem on a general network." *Networks*, 79(3), 264–291.
- Ali, A. 2022. "AI-based mode of transportation and destination classification and prediction in origin-destination surveys." M.S. thesis, Concordia University.
- Anstreicher, K. M., M. Fampa, J. Lee, and J. Williams. 1999. "Using continuous nonlinear relaxations to solve constrained maximum-entropy sampling problems." *Mathematical Programming*, 85(2), 221–240.
- Barbosa-Filho, H., M. Barthélemy, G. Ghoshal, C. R. James, M. Lenormand, T. Louail, R. Menezes, J. J. Ramasco, F. Simini, and M. Tomasini. 2018. "Human mobility: Models and applications." *Physics Reports*. 734, 1–74.
- BART (Bay Area Rapid Transit). 2022. "Ridership Reports." Accessed November 28, 2022. <https://www.bart.gov/about/reports/ridership>.
- Bell, M. G. 1983. "The estimation of an origin-destination matrix from traffic counts." *Transportation Science*, 17(2), 198–217.
- Bera, Sharmin, and K. V. K. Rao. 2011. "Estimation of origin-destination matrix from traffic counts: The state of the art." *European Transport, Institute for the Study of Transport within the European Economic Integration*, 49, 2–23.
- Bertsimas, D., and J. Yan. 2018. "From physical properties of transportation flows to demand estimation: An optimization approach." *Transportation Science*, 52(4), 1002–1011.
- Blum, J. J., A. Sridhar, and T. V. Mathew. 2010. "Origin-destination matrix generation from boarding-alighting and household survey data." *Journal of the Transportation Research Board*, 2183(1), 1–8.
- Borkowski, P., M. Jążdżewska-Gutta, and A. Szmelter-Jarosz. 2021. "Lockdowned: Everyday mobility changes in response to COVID-19." *Journal of Transportation Geography*, 90, 102906.
- Cascetta, E. 1984. "Estimation of trip matrices from traffic counts and survey data: A generalized least squares estimator." *Transportation Research Part B: Methodological*, 18(4–5), 289–299.
- CDC (Centers for Disease Control and Prevention). "COVID-19." Accessed November 28, 2022. <https://www.cdc.gov/coronavirus/2019-ncov/>.

CDC (Centers for Disease Control and Prevention). 2022. "COVID data tracker." Accessed November 28, 2022.  
[https://covid.cdc.gov/covid-data-tracker/#county-view?list\\_select\\_state=New+York&data-type=CommunityLevels&list\\_select\\_county=36061](https://covid.cdc.gov/covid-data-tracker/#county-view?list_select_state=New+York&data-type=CommunityLevels&list_select_county=36061).

CDC (Centers for Disease Control and Prevention). 2022. "Weekly trends in number of COVID-19 cases in the United States reported to CDC." [https://covid.cdc.gov/covid-data-tracker/#trends\\_weeklycases\\_select\\_00](https://covid.cdc.gov/covid-data-tracker/#trends_weeklycases_select_00).

Chakraborty, I., and P. Maity. 2020. "Covid-19 outbreak: Migration, effects on society, global environment and prevention." *Science of The Total Environment*, 728, 138882.

Cuomo, M. A. March 20, 2020. "Governor Cuomo signs the 'New York State on PAUSE' Executive Order." Accessed November 28, 2022. <https://www.governor.ny.gov/news/governor-cuomo-signs-new-york-state-pause-executive-order>.

Dey, S., S. Winter, and M. Tomko. 2020. "Origin-destination flow estimation from link count data only." *Sensors*, 20(18), 5226.

Dubiner, M., and Y. Singer. 2011. "Entire relaxation path for maximum entropy problems." *In Proceedings of the 2011 Conference on Empirical Methods in Natural Language Processing*, 941–948. Edinburgh, Scotland, UK: Association for Computational Linguistics.

Ebrahimpour, Z., W. Wan, J. L. Velázquez García, O. Cervantes, and L. Hou. 2020. "Analyzing social-geographic human mobility patterns using large-scale social media data." *ISPRS International Journal of Geo-Information*, 9(2), 125.

Egu, O., and P. Bonnel. 2020. "How comparable are origin-destination matrices estimated from automatic fare collection, origin-destination surveys and household travel survey? An empirical investigation in Lyon." *Transportation Research Part A: Policy and Practice*, 138, 267–282.

Essien, A., I. Petrounias, P. Sampaio, and S. Sampaio. 2020. "A deep-learning model for urban traffic flow prediction with traffic events mined from Twitter." *World Wide Web*, 24(4), 1345–1368.

Fekih, M., T. Bellemans, Z. Smoreda, P. Bonnel, A. Furno, and S. Galland. 2020. "A data-driven approach for origin-destination matrix construction from cellular network signaling data: A case study of Lyon region (France)." *Transportation*, 48(4), 1671–1702.

FHWA (Federal Highway Administration). 2017. "Understanding traditional origin-destination data: A survey." <https://rosap.ntl.bts.gov/view/dot/55804>.

- Ge, L., M. Sarhani, S. Voß, and L. Xie. 2021. "Review of transit data sources: Potentials, challenges and complementarity." *Sustainability*, 13(20), 11450.
- Gu, M., and Z. Duan. 2022. "Daily OD demand prediction in urban metro transit system: A convolutional LSTM neural network with multi-factor fusion channel-wise attention." *2022 IEEE 25<sup>th</sup> International Conference on Intelligent Transportation Systems*.
- Guo, J., Y. Liu, X. Li, W. Huang, J. Cao, and Y. Wei. 2019. "Enhanced least square based dynamic OD matrix estimation using radio frequency identification data." *Mathematics and Computer in Simulation*, 155, 27–40.
- He, K., X. Zhang, S. Ren, and J. Sun. 2016. "Deep residual learning for image recognition." *2016 IEEE Conference on Computer Vision and Pattern Recognition*.
- Hou, Y., Z. Deng, and H. Cui. 2021. "Short-term traffic flow prediction with weather conditions: Based on deep learning algorithms and data fusion." *Complexity*, 2021, 1–14.
- Hu, J., B. Yang, C. Guo, C. S. Jensen, and H. Xiong. 2020. "Stochastic origin-destination matrix forecasting using dual-stage graph convolutional, recurrent neural networks." *2020 IEEE 36<sup>th</sup> International Conference on Data Engineering*.
- Humagain, P., and P. A. Singleton. 2021. "Exploring tourists' motivations, constraints, and negotiations regarding outdoor recreation trips during COVID-19 through a focus group study." *Journal of Outdoor Recreation and Tourism*, 36, 100447.
- Hussain, E., A. Bhaskar, and E. Chung. 2021. "Transit OD matrix estimation using smartcard data: Recent developments and future research challenges." *Transportation Research Part C: Emerging Technologies*, 125, 103044.
- Hwang, S. W., S. J. Kweon, and J. A. Ventura. 2020. "An alternative fuel refueling station location model considering detour traffic flows on a highway road system." *Journal of Advanced Transportation*, 1–27.
- Jeong, I.-J., and D. Park. 2021. "Stochastic programming approach for static origin-destination matrix reconstruction problem." *Computers and Industrial Engineering*, 157, 107373.
- Jiang, W., and J. Luo. 2022. "Big data for traffic estimation and prediction: A survey of data and tools." *Applied System Innovation*, 5(1), 23.

- Jin, Z., Y. Chen, C. Li, and Z. Jin. 2022. "Trip destination prediction based on hidden Markov model for multi-day global positioning system travel surveys." *Transportation Research Record: Journal of the Transportation Research Board*, 036119812211079.
- Katranji, M., S. Kraiem, L. Moalic, G. Sanmarty, G. Khodabandelou, A. Caminada, and F. H. Selem. 2019. "Deep multi-task learning for individuals origin-destination matrices estimation from census data." *Data Mining and Knowledge Discovery*, 34(1), 201–230.
- Ke, J., X. Qin, H. Yang, Z. Zheng, Z. Zhu, and J. Ye. 2021. "Predicting origin-destination ride-sourcing demand with a spatio-temporal encoder-decoder residual multi-graph convolutional network." *Transportation Research Part C: Emerging Technologies*, 122, 102858.
- Khalil, S., C. Amrit, T. Koch, and E. Dugundji. 2021. "Forecasting public transport ridership: Management of information systems using CNN and LSTM architectures." *Procedia Computer Science*, 184, 283–290.
- Kumar, P., A. Khani, and G. A. Davis. 2019. "Transit route origin-destination matrix estimation using compressed sensing." *Journal of the Transportation Research Board*, 2673(10), 164–174.
- Li, T., D. Sun, P. Jing, and K. Yang. 2018. "Smart card data mining of public transport destination: A literature review." *Information*, 9(1), 18.
- Lin, Q., Z. Gong, Q. Wang, and J. Li. 2019. "RILNET: A reinforcement learning based load balancing approach for datacenter networks." *Machine Learning for Networking*, 44–55.
- Liu, F., X. Ren, Z. Zhang, X. Sun, and Y. Zou. 2020. "Rethinking skip connection with layer normalization." *Proceedings of the 28<sup>th</sup> International Conference on Computational Linguistics*.
- Liu, Z., Z. Wang, X. Yin, X. Shi, Y. Guo, and Y. Tian. 2019. "Traffic matrix prediction based on deep learning for dynamic traffic engineering." *2019 IEEE Symposium on Computers and Communications*.
- López-Ospina, H., C. E. Cortés, J. Pérez, R. Peña, J. C. Figueroa-García, and J. Urrutia-Mosquera. 2021. "A maximum entropy optimization model for origin-destination trip matrix estimation with fuzzy entropic parameters." *Transportmetrica A: Transport Science*, 18(3), 963–1000.
- Lu, B., X. Gan, H. Jin, L. Fu, and H. Zhang. 2020. "Spatiotemporal adaptive gated graph convolution network for urban traffic flow forecasting." *Proceedings of the 29th ACM International Conference on Information and Knowledge Management*.

- Luo, C., C. Huang, J. Cao, J. Lu, W. Huang, J. Guo, and Y. Wei. 2019. “Short-term traffic flow prediction based on least square support vector machine with hybrid optimization algorithm.” *Neural Processing Letters*, 50(3), 2305–2322.
- Ma, X., J. Zhang, B. Du, C. Ding, and I. Sun. 2019. “Parallel architecture of convolutional bi-directional LSTM neural networks for network-wide metro ridership prediction.” *IEEE Transactions on Intelligent Transportation Systems*, 20(6), 2278–2288.
- Maher, M. J. 1983. “Inferences on trip matrices from observations on link volumes: A Bayesian statistical approach.” *Transportation Research Part B: Methodological*, 17(6), 435–447.
- Mamei, M., N. Bicocchi, M. Lippi, S. Mariani, and F. Zambonelli. 2019. “Evaluating origin-destination matrices obtained from CDR data.” *Sensors*, 19(20), 4470.
- Miao, Y., Y. Xu, and D. Mandic. 2022. “Hyper-GST: Predict metro passenger flow incorporating GraphSAGE, hypergraph, social-meaningful edge weights and temporal exploitation.” *Machine Learning*. *arXiv preprint arXiv:2211.04988*.
- Mo, B., R. Li, and J. Dai. 2020. “Estimating dynamic origin-destination demand: A hybrid framework using license plate recognition data.” *Computer-Aided Civil and Infrastructure Engineering*, 35(7), 734–752.
- Moussavi-Khalkhali, A., and M. Jamshidi. 2019. “Feature fusion models for deep autoencoders: Application to traffic flow prediction.” *Applied Artificial Intelligence*, 33(13), 1179–1198.
- MTA (Metropolitan Transit Authority). 2019. “Subway and bus ridership for 2019.” Accessed November 28, 2022. <https://new.mta.info/agency/new-york-city-transit/subway-bus-ridership-2019>.
- MTA (Metropolitan Transit Authority). 2022. “Turnstile data.” Accessed November 28, 2022. <http://web.mta.info/developers/turnstile.html>.
- MTA (Metropolitan Transportation Authority). 2022. “The MTA network.” Accessed November 28, 2022. <https://new.mta.info/about-us/the-mta-network>.
- NYC (The official website of the City of New York). 2020. “Mayor de Blasio issues state of emergency.” Accessed November 28, 2022. <https://www.nyc.gov/office-of-the-mayor/news/138-20/mayor-de-blasio-issues-state-emergency>.
- NYC Planning (City of New York - Department of City Planning). “Community district profiles.” Accessed November 28, 2022. <https://communityprofiles.planning.nyc.gov/>.

- Osorio-Arjona, J., and J. C. García-Palomares. 2019. "Social media and urban mobility: Using Twitter to calculate home-work travel matrices." *Cities*, 89, 268–280.
- Ozer, D. J. 1985. "Correlation and the coefficient of determination." *Psychological Bulletin*, 97(2), 307–315.
- Papageorgiou, M., and P. Varaiya. 2009. "Link vehicle-count – the missing measurement for traffic control." *IFAC Proceedings Volumes*, 42(15), 224–229.
- Pelletier, M.-P., M. Trépanier, and C. Morency. 2011. "Smart card data use in public transit: A literature review." *Transportation Research Part C: Emerging Technologies*. 19(4), 557–568.
- Pitombeira-Neto, A., C. Loureiro, and L. Carvalho. 2018. "Bayesian inference on dynamic linear models of day-to-day origin-destination flows in transportation networks." *Urban Science*, 2(4), 117.
- Pourehbrahim, N., S. Sultana, J. C. Thill, and S. Mohanty. 2018. "Enhancing trip distribution prediction with Twitter data." *Proceedings of the 2nd ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery*.
- Ros-Roca, X., L. Montero, J. Barceló, K. Nökel, and G. Gentile. 2022. "A practical approach to assignment-free dynamic origin-destination matrix estimation problem." *Transportation Research Part C: Emerging Technologies*, 134, 103477.
- Selvarajah, K., K. Rangunathan, Z. Kobti, and M. Kargar. 2020. "Dynamic network link prediction by learning effective subgraphs using CNN-LSTM." *2020 International Joint Conference on Neural Networks*.
- Sharic, S., S. Bandara, and S. Fernando. 2021. "Methods to estimate bus revenue from passenger boarding and alighting data: case study for Sri Lanka." *2021 Moratuwa Engineering Research Conference*.
- Shi, H., Q. Yao, Q. Guo, Y. Li, L. Zhang, J. Ye, Y. Li, and Y. Liu. 2020. "Predicting origin-destination flow via multi-perspective graph Convolutional Network." *2020 IEEE 36<sup>th</sup> International Conference on Data Engineering*.
- Shuai, C., J. Shan, J. Bai, J. Lee, M. He, and X. Ouyang. 2022. "Relationship analysis of short-term origin-destination prediction performance and spatiotemporal characteristics in urban rail transit." *Transportation Research Part A: Policy and Practice*, 164, 206–223.
- Spiess, H. 1987. "A maximum likelihood model for estimating origin-destination matrices." *Transportation Research Part B: Methodological*, 21(5), 395–412.
- Sun, W., J.-D. Schmöcker, and K. Fukuda. 2021. "Estimating the route-level passenger demand profile from bus dwell times." *Transportation Research Part C: Emerging Technologies*, 130, 103273.

- Tang, J., X. Chen, Z. Hu, F. Zong, C. Han, and L. Li. 2019. "Traffic flow prediction based on combination of support vector machine and data denoising schemes." *Physica A: Statistical Mechanics and its Applications*, 534, 120642.
- Teixeira, J. F., C. Silva, and F. Moura e Sá. 2021. "The motivations for using bike sharing during the COVID-19 pandemic: Insights from Lisbon." *Transportation Research Part F: Traffic Psychology and Behaviour*, 82, 378–399.
- Tian, Y., K. Zhang, J. Li, X. Lin, and B. Yang. 2018. "LSTM-based traffic flow prediction with missing data." *Neurocomputing*, 318, 297–305.
- Toan, T. D., and V.-H. Truong. 2020. "Support vector machine for short-term traffic flow prediction and improvement of its model training using nearest neighbor approach." *Transportation Research Record: Journal of the Transportation Research Board*, 2675(4), 362–373.
- Tolstikhin, L., N. Houlsby, A. Kolesnikov, L. Beyer, X. Zhai, T. Unterthiner, J. J. Yung, A. Steiner, D. Keysers, J. Jszkoreit, M. Lucic, and A. Dosovitskiy. 2021. "MLP-Mixer: An all-MLP architecture for vision." *Computer Vision and Pattern Recognition*. <https://doi.org/10.48550/arXiv.2105.01601>.
- Twitter. 2022. "Advanced filtering with geo data." Accessed November 28, 2022. <https://developer.twitter.com/en/docs/tutorials/advanced-filtering-for-geo-data>.
- Wang, X., N. Zhang, Y. Zhang, and Z. Shi. 2018. "Forecasting of short-term metro ridership with support vector machine online model." *Journal of Advanced Transportation*, 2018, 1–13.
- Wang, Y., H. Yin, H. Chen, T. Wo, J. Xu, and K. Zheng. 2019. "Origin-destination matrix prediction via graph convolution." *Proceedings of the 25<sup>th</sup> ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*.
- Wang, Y., X. Ma, Y. Liu, K. Gong, K. C. Henrickson, M. Xu, and Y. Wang. 2016. "Correction: A two-stage algorithm for origin-destination matrices estimation considering dynamic dispersion parameter for route choice." *PLoS ONE*, 11(2).
- Yang, H., and H. Rakha. 2017. "A novel approach for estimation of dynamic from static origin-destination matrices." *Transportation Letters*, 11(4), 219–228.

- Yang, H., Y. Wang, and D. Wang. 2018. "Dynamic origin-destination estimation without historical origin-destination matrices for microscopic simulation platform in urban network." *2018 21<sup>st</sup> International Conference on Intelligent Transportation Systems*.
- Zagatti, G. A., M. Gonzalez, P. Avner, N. Lozano-Gracia, C. J. Brooks, M. Albert, J. Gray, S. E. Antos, P. Burci, E. Erbach-Schoenberg, A. J. Tatem, E. Wetter, and L. Bengtsson. 2018. "A trip to work: Estimation of origin and destination of commuting patterns in the main metropolitan regions of Haiti using CDR." *Development Engineering*, 3, 133–165.
- Zaragozí, B., S. Trilles, A. Gutiérrez, and D. Miravet. 2021. "Development of a common framework for analysing public transport smart card data." *Energies*, 14(19), 6083.
- Zargari, S. A., A. Memarnejad, and H. Mirzahosseini. 2021. "Hourly origin-destination matrix estimation using intelligent transportation systems data and deep learning." *Sensors*, 21(21), 7080.
- Zhang, Q., C. Li, C. Yin, H. Zhang, and F. Su. 2022. "A hybrid framework model based on wavelet neural network with improved fruit fly optimization algorithm for traffic flow prediction." *Symmetry*, 14(7), 1333.
- Zhang, Z., M. Li, X. Lin, and Y. Wang. 2020. "Network-wide traffic flow estimation with insufficient volume detection and crowdsourcing data." *Transportation Research Part C: Emerging Technologies*, 121, 102870.
- Zhao, J., H. Qu, J. Zhao, H. Dai, and D. Jiang. 2020. "Spatiotemporal graph convolutional recurrent networks for traffic matrix prediction." *Transactions on Emerging Telecommunications Technologies*, 31(11).
- Zhao, X., Y. Gu, L. Chen, and Z. Shao. 2019. "Urban short-term traffic flow prediction based on stacked autoencoder." *CICTP 2019*.