

# Dr Andrés Salomón Fielbaum Schnitzler

Senior Lecturer | ARC DECRA Fellow

School of Civil Engineering, University of Sydney

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## Academic Profile

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**Senior Lecturer** at the University of Sydney and **Australian Research Council DECRA Fellow** (20252027). Trained as a Mathematical Engineer, with an M.Sc. in Transport Engineering and Ph.D. in Systems Engineering (highest distinction, Universidad de Chile), and postdoctoral experience at TU Delft. Published 35+ peer-reviewed journal articles with over 1,300 citations and **ranked in the 2025 Stanford-Elsevier Top 2% of scientists worldwide**. Associate Editor, Transportation Research Part B. Recipient of Best Paper (IEEE T-ASE journal, 2023) and First Prize Young Researcher (World Conference on Transport Research 2019). Research focuses on public transport, shared and on-demand mobility, and optimisation-based network modelling, with regular interdisciplinary collaborations in robotics, operational research, and social sciences.

## Research Interests

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Public transport systems; shared and on-demand mobility; transport economics; optimisation and network dynamics; combinatorial optimisation; online algorithms.

## Current Academic Appointment

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**Senior Lecturer**, School of Civil Engineering, University of Sydney (2026-present)

## Previous Academic Positions

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- Lecturer, School of Civil Engineering, University of Sydney (2023-2025)
- Postdoctoral Researcher, Cognitive Robotics Department, TU Delft (2019-2023)
- Researcher, Universidad de OHiggins (2019)
- Researcher, ISCI Institute of Complex Systems Engineering, Universidad de Chile (2014-2015)
- External Lecturer in Probability and Statistics, Universidad Federico Santa María (2015-2018)

## Education

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**Ph.D. in Systems Engineering**, Universidad de Chile (2019)

Thesis: *Effects of the introduction of spatial and temporal complexity on the optimal design, economies of scale and pricing of public transport.*

**Master in Transport Engineering**, Universidad de Chile (2014)

**Mathematical Engineer**, Universidad de Chile (2014)

Ranked first in cohort across all degrees.

## Competitive Research Funding

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### As Chief Investigator

- ARC DECRA Fellowship (2025-2027)  
Next generation of on-demand public transport: Strategies and algorithms.  
AUD\$466,331.
- Fellowship with the Australian Public Policy Institute 2026, “Strategic Chargers Siting and Technology Choices for Ferry Electrification in Sydney”  
AUD\$10k.

### As Partner Investigator

- NWO Open Technology Program (2025-2028)  
Design of Mixed Flexible-Fixed Public Transport Networks (FlexMobility).  
900,000 (consortium grant).
- FTRG Collaboration Grant (2024), University of Sydney  
Dynamic pricing, routing, and charging in on-demand shared mobility. AUD\$10k.
- College Pilot Research Scheme, University of Newcastle  
Data-driven optimization of bus networks. AUD\$10k.

## Honours and Awards

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- Stanford-Elsevier Top 2% Scientists (2025).
- Co-author of the best 2023 paper published on IEEE Transactions on Automation Science  
“Group-Based Distributed Auction Algorithms for Multi-Robot Task Assignment”.
- Prize “Cátedra Abertis-PUC” 2020, to the best thesis in transportation science defended in Chile during 2019.
- First prize among PhD students worldwide to attend the World Conference on Transport Research 2019.
- Faculty Commendation for Teaching, University of Sydney (2024).
- Students Honour List, Universidad de Chile (2005-2009).
- National top score, Chilean University Entrance Examination (2004).

## Editorial and Scholarly Leadership

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- Associate Editor, Transportation Research Part B (2026-present).
- Main Guest Editor, Special Issue in Transportation Research Part C (2024-2026).
- Editorial Board Member, Journal of Public Transportation (2024-present).
- Editorial Board Member, Transport, Mobility & Society (2025-present).

- Chair, Organising Committee, TRANSW Symposium 2024.
- Organiser, TransportLab and School Seminar Series, University of Sydney.

Regular journal reviewer, including Nature Communications, Nature Cities, TR-A/B/C/D, Operations Research, IEEE T-ITS, Transportation, Journal of Public Economics, among others.

## Supervision

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### Current PhD / MPhil

Regine Tejada; Amir Elmi; Haoran Zhao; Ricardo Wang; Valentina Gómez; Zixuan Yang.

### Undergraduate and Master Theses

16+ theses supervised to completion (USyd, TU Delft, Universidad de Chile).

## Teaching

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### University of Sydney

- Transport Networks (Coordinator), 2023-present
- Transport Systems, 2024

### Universidad Federico Santa María

- Probability and Statistics, 2015-2018

Completed Principles & Practice Teaching and Learning Program (University of Sydney).

## Academic Presentations

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### A. Invited Talks

- School of Economics and Management, Tongji University (Shanghai, China), July 2025.  
*Temporal Friction in On-demand Assigned Mobility: Short-term decisions, long-term dynamics, and the limits of optimisation.*
- College of Transportation, Tongji University (Shanghai, China), July 2025.  
*Finding Modern Answers through a Classical Public Transport Model.*
- DSI Seminar Series, Universidad de Chile, May 2024.  
*Transforming Public Transport: The Role of On-Demand Mobility in Network Design.*
- Monash University, October 2023.  
*Transforming Public Transport: The Role of On-Demand Mobility in Network Design.*
- rCITI Seminar Series, University of New South Wales, May 2023.  
*Combining traditional public transport with on-demand shared mobility.*
- TransportLab Seminar Series, University of Sydney, April 2023.  
*Towards the utilisation of on-demand ridepooling in public transport systems.*

- Learning and Autonomous Control Seminar Series, TU Delft, January 2023.  
*Towards the utilisation of on-demand ridepooling in public transport systems.*
- Eindhoven AI Systems Institute, TU Eindhoven, November 2022.  
*Towards integrating on-demand pooled services into public transport networks.*
- AGCO Seminar Series, Universidad de Chile, April 2022.  
*How to split the costs and charge the travellers sharing a ride? Aligning systems optimum with users equilibrium.*
- Optimization and Algorithms Seminar Series, Universidad de OHiggins, March 2022.  
*Improving the assignments between users and vehicles in on-demand ridepooling.*
- Transportation Seminar Series, Universidad de Chile, March 2022.  
*On-demand ridepooling: Potential and challenges.*
- Georgia Institute of Technology, March 2022.  
*On-demand ridepooling: Potential and challenges.*
- University of Maryland, March 2022.  
*On-demand ridepooling: Potential and challenges.*
- Learning and Autonomous Control Seminar Series, TU Delft, November 2021.  
*Analysis and improvement of on-demand ridepooling systems.*
- Smart Public Transport Lab Webinar Series, TU Delft, September 2021.  
*Strategic design of public transport networks, frequencies and bus sizes.*
- Vrije Universiteit Amsterdam Eureka Webinar Series, January 2021.  
*New sources of unreliability in on-demand ridesharing systems.*
- Universidad Autónoma de Chile, October 2020.  
*Algorithms and workers rights.*
- AGCO Seminar Series, Universidad de Chile, June 2020.  
*A Water-Filling Primal-Dual Algorithm for Approximating Non-Linear Covering Problems.*
- Operations Research Privatissimum, Technical University of Munich, November 2018.  
*Optimal design for a public transport bus system considering routes, frequencies and vehicle sizes in a general city model.*
- Ph.D. Seminar Series, Universidad de Chile, May 2017.  
*Identification and analysis of optimal lines structures for public transport in representative networks with parametric demand.*

## B. Conference Presentations

- 46th Australasian Transport Research Forum, November 2025, Auckland, New Zealand.  
*Analysis of commuter mode choice with and without real-time Park-and-Ride information.*
- 12th Triennial Symposium on Transportation Analysis (TRISTAN XII), June 2025, Okinawa, Japan.  
*Selecting an optimal set of shared ridepooling stops.*

- 25th International Symposium on Transportation and Traffic Theory (ISTTT), July 2024, Ann Arbor, USA.  
*Design of mixed fixed-flexible bus public transport networks by tracking the paths of on-demand vehicles.*
- Dagstuhl Seminar on Dynamic Traffic Models in Transportation Science, July 2024, Wadern, Germany.  
*Optimising public transport networks that integrate on-demand mobility.*
- Transit Data Conference, July 2024, London, UK.  
*On the relationship between free public transport, stop spacing, and optimal frequencies.*
- Australasian Transport Research Forum, December 2024, Perth, Australia.  
*Quantifying the benefits of short-term reservations in on-demand ridepooling.*
- Bridging Transportation Researchers, August 2023, Online.  
*Pareto-improvement of public transport via line-based integration of on-demand ridepooling.*
- World Conference on Transport Research, July 2023, Montreal, Canada.  
*Will shared automated vehicles reduce the total vehicle kilometres? A theoretical analysis.*
- IFORS 2023, July 2023, Santiago, Chile.  
*Pareto-improvement of public transport via line-based integration of on-demand ridepooling.*
- IATBR 16th Conference, December 2022, Santiago, Chile.  
*How Openness to Sharing Impacts Total Vehicle Kilometres with Shared Automated Vehicles.*
- hEART Symposium, June 2022, Leuven, Belgium.  
*The job of public transport, ride-hailing and delivery drivers during COVID-19.*
- INFORMS Annual Meeting 2021 (Online).  
*How to split the costs among travellers sharing a ride?*
- World Conference on Transport Research 2019, Mumbai, India.  
*The technical dimensions behind scale economies induced by transit line structures design.*
- ICALP 2020 (Online).  
*A Water-Filling Primal-Dual Algorithm for Approximating Non-Linear Covering Problems.*
- ITEA Conference, June 2018, Hong Kong, China.  
*Optimal fleet size, frequencies and vehicle capacities considering peak and off-peak periods.*
- ITEA Conference, June 2017, Barcelona, Spain.  
*Optimal transit line structures on a general parametric city: the role of heuristics.*
- Urbanics 3, March 2017, Pucón, Chile.  
*A parametric description of cities for the normative analysis of transport systems.*
- Chilean 6th Urban Design Conference, November 2016, Valparaíso, Chile.  
*Proposal of an urban model for the design of public transport.*

## Policy and Public Impact

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- Presented research at the Chilean Senate; findings cited in regulatory debates.
- Participation in parliamentary discussions, media interviews, and international policy panels.
- Public engagement on labour conditions in ride-hailing and transport platform regulation.
- Spokesman of Chilean University students (Confech, 2013).

## Book Chapters (General Interest / Public Debate)

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- Fielbaum, A. (2017). *The Emergence of Youth in Criticism and Power Building: The Chilean Experience*. In Soto, O., & Sánchez Díaz de Rivera, M. (eds.), *The Power Today*. Editorial Universidad Iberoamericana, Mexico. ISBN: 978-607-7901-68-6.
- Fielbaum, A. (2016). *Struggle for rights is to defend democracy*. In *Otra política es posible: buscando alternativas*. Le Monde Diplomatique / Editorial Aún Creemos en los Sueños, Santiago, Chile.
- Fielbaum, A. (2013). *The challenges for a new cycle of struggle*. In *Alternativas: movimientos sociales, luchas políticas*. Le Monde Diplomatique / Editorial Aún Creemos en los Sueños, Santiago, Chile.

## Languages and Technical Skills

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Spanish (native); English (fluent); German (basic); French (basic).

Matlab (advanced); LaTeX (advanced); QGIS (basic).

## Citation Metrics

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- Google Scholar citations: 1300+
- h-index: 20
- i10-index: 27
- 35+ peer-reviewed journal publications

## Publications

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### Journal papers

1. Gao, Y., A. Fielbaum, and D. Levinson (2026). “Roadspace allocation between autos, buses, and bicycles with heterogeneous demand”. *Transportation Research Part A: Policy and Practice* 205, 104884.
2. Shaer, A., A. Fielbaum, and D. Levinson (2026). “Detecting dangerous driving via computer vision: Linking video-based indicators to road crashes”. *Journal of Transportation Safety & Security*. DOI: 10.1080/19439962.2025.2608002.
3. Fielbaum, A. (2025). “Coordination costs in spatial matching: Assigned versus onsite transport modes”. *Transportation Research Part A: Policy and Practice* 199, 104556.

4. Fielbaum, A., D. Salas, R. Zhang, and F. Castro (2025). “Idle wage as a tool to regulate the relationship between ride-hailing platforms and drivers”. *Transportation Research Part C: Emerging Technologies* 174, 105113.
5. Pellegrini, A. and A. Fielbaum (2025). “Are users ready to accept fully flexible walking in on-demand mobility?” *Transportation Research Part C: Emerging Technologies* 178, 105210.
6. Zhang, K., J. Alonso-Mora, and A. Fielbaum (2025). “What do walking and e-hailing bring to scale economies in on-demand mobility?” *Transportation Research Part B: Methodological* 192, 103156.
7. Correa, José, Andrés Cristi, Andrés Fielbaum, Tristan Pollner, and S. Matthew Weinberg (2024). “Optimal item pricing in online combinatorial auctions”. *Mathematical Programming* 206, 429–460.
8. Fielbaum, A. (2024). “On the relationship between free public transport, stop spacing, and optimal frequencies”. *Transportation Research Part B: Methodological* 183, 102924.
9. Fielbaum, A. and J. Alonso-Mora (2024). “Design of mixed fixed-flexible bus public transport networks by tracking the paths of on-demand vehicles”. *Transportation Research Part C: Emerging Technologies* 168(3), 104580.
10. Fielbaum, A., S. Jara-Díaz, and J. Alonso-Mora (2024). “Beyond the last mile: different spatial strategies to integrate on-demand services into public transport in a simplified city”. *Public Transport* 16(3), 855–892.
11. Fielbaum, A. and B. Pudane (2024). “Are shared automated vehicles good for public- or private-transport-oriented cities (or neither)?” *Transportation Research Part D: Transport and Environment* 136, 104373.
12. Fielbaum, A., A. Tirachini, and J. Alonso-Mora (2024). “Improving public transportation via line-based integration of on-demand ridepooling”. *Transportation Research Part A: Policy and Practice* 190, 104289.
13. Kronmueller, M., A. Fielbaum, and J. Alonso-Mora (2024). “Reducing the Minimal Fleet Size by Delaying Individual Tasks”. *IEEE Transactions on Intelligent Transportation Systems* 25(9), 11011–11022.
14. Kronmüller, M., A. Fielbaum, and J. Alonso-Mora (2024). “Online flash delivery from multiple depots”. *Transportation Letters* 16(10), 1188–1204.
15. Shaer, A., A. Fielbaum, and D. Levinson (2024). “Choosing to drive from alcohol serving establishments (ASEs)”. *Traffic Injury Prevention* 25(8), 1013–1022.
16. Bai, X., A. Fielbaum, M. Kronmueller, L. Knoedler, and J. Alonso-Mora (2023). “Group-based Distributed Auction Algorithms for Multi-Robot Task Assignment”. *IEEE Transactions on Automation Science and Engineering* 20(2), 1292–1303.
17. Fielbaum, A., F. Ruiz, G. Boccardo, D. Rubio, A. Tirachini, and J. Rosales-Salas (2023). “The job of public transport, ride-hailing and delivery drivers: conditions during the COVID-19 pandemic and implications for a post-pandemic future”. *Travel Behaviour and Society* 31, 63–77.
18. Fielbaum, A., A. Tirachini, and J. Alonso-Mora (2023). “Economies and diseconomies of scale in on-demand ridepooling systems”. *Economics of Transportation* 34, 100313.
19. Fielbaum, A., M. Kronmueller, and J. Alonso-Mora (2022). “Anticipatory routing methods for an on-demand ridepooling mobility system”. *Transportation* 49, 1921–1962.
20. Fielbaum, A., R. Kucharski, O. Cats, and J. Alonso-Mora (2022). “How to split the costs and charge the travellers sharing a ride? Aligning systems optimum with users equilibrium”. *European Journal of Operational Research* 301(3), 956–973.

21. Fielbaum, A., I. Morales, and J. Verschae (2022). “A Water-Filling Primal-Dual Algorithm for Approximating Non-Linear Covering Problems”. *SIAM Journal on Discrete Mathematics* 36(4), 2889–2915.
22. Fielbaum, A. (2021). “Optimizing a vehicles route in an on-demand ridesharing system in which users might walk”. *Journal of Intelligent Transportation Systems: Technology, Planning and Operation* 26(4), 432–447.
23. Fielbaum, A., X. Bai, and J. Alonso-Mora (2021). “On-demand ridesharing with optimized pick-up and drop-off walking locations”. *Transportation Research Part C: Emerging Technologies* 126, 103061.
24. Fielbaum, A. and S. Jara-Díaz (2021). “Assessment of the socio-spatial effects of urban transport investment using Google Maps API”. *Journal of Transport Geography* 91, 102993.
25. Fielbaum, A., S. Jara-Díaz, and A. Gschwender (2021). “Lines spacing and scale economies in the strategic design of transit systems in a parametric city”. *Research in Transportation Economics* 90, 100991.
26. Fielbaum, A. and A. Tirachini (2021). “The sharing economy and the job market: the case of ride-hailing drivers in Chile”. *Transportation* 48(5), 2235–2261.
27. Kucharski, R., A. Fielbaum, J. Alonso-Mora, and O. Cats (2021). “If you are late, everyone is late: late passenger arrival and ride-pooling systems performance”. *Transportmetrica A: Transport Science* 17(4), 1077–1100.
28. Fielbaum, A. (2020). “Strategic Public Transport Design Using Autonomous Vehicles and Other New Technologies”. *International Journal of Intelligent Transportation Systems Research* 18, 193–201.
29. Fielbaum, A. and J. Alonso-Mora (2020). “Unreliability in ridesharing systems: Measuring changes in users times due to new requests”. *Transportation Research Part C: Emerging Technologies* 121, 102831.
30. Fielbaum, A., S. Jara-Díaz, and A. Gschwender (2020). “Beyond the Mohring effect: Scale economies induced by transit lines structures design”. *Economics of Transportation* 22, 100163.
31. Jara-Díaz, S., A. Fielbaum, and A. Gschwender (2020). “Strategies for transit fleet design considering peak and off-peak periods using the single-line model”. *Transportation Research Part B: Methodological* 142, 1–18.
32. Fielbaum, A., S. Jara-Díaz, and A. Gschwender (2018). “Transit line structures in a general parametric city: The role of heuristics”. *Transportation Science* 52(5), 1092–1105.
33. — (2017). “A parametric description of cities for the normative analysis of transport systems”. *Networks and Spatial Economics* 17(2), 343–365.
34. Jara-Díaz, S., A. Fielbaum, and A. Gschwender (2017). “Optimal fleet size, frequencies and vehicle capacities considering peak and off-peak periods in public transport”. *Transportation Research Part A: Policy and Practice* 106, 65–74.
35. Fielbaum, A., S. Jara-Díaz, and A. Gschwender (2016). “Optimal public transport networks for a general urban structure”. *Transportation Research Part B: Methodological* 94, 298–313.

## Conference papers

1. Awad, M. and A. Fielbaum (2025). “Analysis of commuter mode choice with and without real-time park-and-ride information”. *Australasian Transport Research Forum (ATRF), 46th*. Auckland, New Zealand.
2. Correa, J., A. Cristi, A. Fielbaum, T. Pollner, and S. M. Weinberg (2022). “Optimal Item Pricing in Online Combinatorial Auctions”. *International Conference on Integer Programming and Combinatorial Optimization*. Springer, Cham, 126–139.

3. Kronmueller, M., A. Fielbaum, and J. Alonso-Mora (2022). “Routing of Heterogeneous Fleets for Flash Deliveries via Vehicle Group Assignment”. *2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*. IEEE, 2286–2291.
4. Theodoridis, N., A. Fielbaum, J. Alonso-Mora, and B. Atasoy (2022). “Quantifying the benefits of short-term reservations in on-demand ridepooling”. *44th Australian Transport Research Forum*.
5. Kronmueller, M., A. Fielbaum, and J. Alonso-Mora (2021). “On-Demand Grocery Delivery From Multiple Local Stores With Autonomous Robots”. *2021 International Symposium on Multi-Robot and Multi-Agent Systems (MRS)*, 29–37.
6. Schuller, P., A. Fielbaum, and J. Alonso-Mora (2021). “Towards a geographically even level of service in on-demand ridepooling”. *2021 IEEE International Intelligent Transportation Systems Conference (ITSC)*, 2429–2434.
7. Fielbaum, A., I. Morales, and J. Verschae (2020). “A Water-Filling Primal-Dual Algorithm for Approximating Non-Linear Covering Problems”. *Proceedings of The 47th International Colloquium on Automata, Languages and Programming (ICALP 2020)*.