David REY

Professor

Academy: Digitalization

Research center: SKEMA Centre for Analytics and Operations

Campus: Sophia Antipolis

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Research interests

Optimization, Mixed-integer programming, Bilevel optimization, Transportation, Logistics, Game theory, Stochastic optimization, Reinforcement learning

Education

2023	Habilitation à Diriger des Recherches, Operations Research, Université de Toulouse, France
2014	Ph.D. in Operations Research, Université Grenoble Alpes, France
2008	Master, Sciences, Mathematics, Pontifical Catholic University of Rio de Janeiro, Brazil
2005	Maîtrise, Engineering, Electrical Engineering and Information Technologies, University of Montpellier, France
2004	Licence, Engineering, Electrical Engineering and Information Technologies, University of Montpellier, France

Experience

Full-time academic positions

Since 2024	Professor, SKEMA Business School, France
2021 - 2023	Associate Professor, SKEMA Business School, France
2018 - 2021	Senior Lecturer, UNSW School of Civil and Environmental Engineering, Australia
2016 - 2018	Lecturer, UNSW School of Civil and Environmental Engineering, Australia

Research grants, Awards and Honors

Awards and Honors

2022	Adjunct Senior Lecturer, School of Civil and Environmental Engineering, UNSW Sydney, UNSW Sydney, Australia
2019	Invited Professor, I-SITE FUTURE, Université Gustave Eiffel, France

Research Grants

2022	URBANE UPSCALING INNOVATIVE GREEN URBAN LOGISTICS SOLUTIONS, CINEA - European Climate, Infrastructure and Environment Executive Agency
2021	Concrete Mixes for Durability: A Hybrid Mathematical Optimisation Approach., Australian Research Council, Australia

2021	Quantifying Ethics-related Metrics for Transport Network Systems., Australian Research Council, Australia
2020	Incentivised strategic traffic assignment: bi-level transport optimisation., Australian Research Council, Australia
2020	Stable on-demand optimization for workforce and fleet logistics management., Australian Research Council, Australia

Publications

Peer-reviewed journal articles

QIU, E., REY, D. and WALLER, S.T. (2026). Operationalizing social justice theory in transport resource allocation. *Transportation Research - Part D: Transport and Environment*, 153, pp. 105218.

NOURMOHAMMADI, Z., REY, D. and SABERI, M. (2026). E-cargo bike route optimization with rider fatigue considerations: A chance-constrained programming approach. *Computers & Operations Research*, 191, pp. 107460.

LEVIN, M. and REY, D. (2026). A spatial branch-and-price-and-cut algorithm for finding globally optimal solutions to the continuous network design problem. *Transportation Research - Part E: Logistics and Transportation Review*, 211, pp. 104870.

LUAN, M., RASHIDI, T.H., WALLER, S.T. and REY, D. (2026). Statistical regression-powered optimization methods for path-based congestion pricing at scale. *Transportation Research Part C: Emerging Technologies*, 182, pp. 105414.

AUSSEL, D., LATCHOOMUN, L., NOURMOHAMMADI, Z., REY, D. and SABERI, M. (2026). Sustainable EV charging infrastructure design for Tropical Islands: a case study of Mauritius. *Computational Management Science*, 23(23).

REY, D. and LEVIN, M. (2026). A branch-and-price-and-cut algorithm for discrete network design problems under traffic equilibrium. *Transportation Research - Part B: Methodological*, 212, pp. 103563.

FAJEMISIN, A., REY, D. and BRUSSET, X. (2026). A game-theoretical model for green urban logistics coordination: Exact and data-driven methods. *European Journal of Operational Research*.

LEVIN, M. and REY, D. (2025). Charging Station Location and Fleet Sizing for Shared Autonomous Electric Vehicles using Benders' Decomposition. *Networks and Spatial Economics*, 25, pp. 681–716.

NOURMOHAMMADI, Z., HU, B., REY, D. and SABERI, M. (2025). A data-driven preference learning approach for multi-objective vehicle routing problems in last-mile delivery. *Transportation Research Part C: Emerging Technologies*, 174, pp. 105101.

PAUL, A., LEVIN, M., WALLER, S.T. and REY, D. (2025). Data-driven optimization for drone delivery service planning with online demand. *Transportation Research - Part E: Logistics and Transportation Review*, 198, pp. 104095.

QIU, E., REY, D. and WALLER, S.T. (2025). Multi-period bus frequency optimization and fleet rebalancing based on equity over time. *Transportation*.

LUAN, M., RASHIDI, T., WALLER, S.T. and REY, D. (2025). Choice-driven bilevel optimization for multiclass traffic congestion management via eco-routing incentives. *Transportation Research - Part B: Methodological*, 200, pp. 103289.

DIAS, F., HIJAZI, H. and REY, D. (2025). A heuristic algorithm for aircraft conflict resolution based on closed-form analytical solutions of relaxed pairwise problems. *Operations Research Letters*, 63, pp. 107368.

XI, H., AUSSEL, D., LIU, W., WALLER, S.T. and REY, D. (2024). Single-leader multi-follower games for the regulation of two-sided Mobility-as-a-Service markets. *European Journal of Operational Research*, 317(3), pp. 718-736.

BARBARA, M., REY, D., RASHIDI, T. and NAIR, D. (2024). School choice modeling and network optimization in an urban environment. *Annals of Regional Science*, 72, pp. 927–958.

DIXIT, V., NIU, C., REY, D., WALLER, S.T. and LEVIN, M. (2024). Quantum computing to solve scenario-based stochastic time-dependent shortest path routing. *Transportation Letters*, 16(8), pp. 793-803.

GUILLOT, M., REY, D., FURNO, A. and EL FAOUZI, N.E. (2024). A stochastic hub location and fleet assignment problem for the design of reconfigurable park-and-ride systems. *Transportation Research - Part E: Logistics and Transportation Review*, 184, pp. 103469.

HUANG, W., JIAN, S. and REY, D. (2024). Non-additive network pricing with non-cooperative mobility service providers. *European Journal of Operational Research*, 318, pp. 802-824.

HU, Y., REY, D., MOHAJERPOOR, R. and SABERI, M. (2024). Optimizing traffic signal control for continuousflow intersections: Benchmarking against a stateofpractice model. *IET Intelligent Transport Systems*, 18(11), pp. 2152-2165.

DIAS, F. and REY, D. (2024). Aircraft conflict resolution with trajectory recovery using mixed-integer programming. *Journal of Global Optimization*, 90, pp. 1031–1067.

LEVIN, M. and REY, D. (2023). Branch-and-Price for Drone Delivery Service Planning in Urban Airspace. *Transportation Science*, 57(4), pp. 839-1114, C2.

REY, D., HAMMAD, A. and SABERI, M. (2023). Vaccine allocation policy optimization and budget sharing mechanism using reinforcement learning. *Omega*, 115, pp. 102783.

HAMMAD, A.W.A., REY, D., AKBARNEZHAD, A. and HADDAD, A. (2023). Integrated mathematical optimisation approach for the tower crane hook routing problem to satisfy material demand requests on-site. *Advanced Engineering Informatics*, 55, pp. 101885.

XI, H., LIU, W., WALLER, S.T., HENSHER, D.A., KILBY, P. and REY, D. (2023). Incentive-compatible mechanisms for online resource allocation in mobility-as-a-service systems. *Transportation Research - Part B: Methodological*, 170, pp. 119-147.

LUAN, M., WALLER, S.T. and REY, D. (2023). A non-additive path-based reward credit scheme for traffic congestion management. *Transportation Research - Part E: Logistics and Transportation Review*, 179, pp. 103291.

DIAS, F., HIJAZI, H. and REY, D. (2022). Disjunctive linear separation conditions and mixed-integer formulations for aircraft conflict resolution. *European Journal of Operational Research*, 296(2), pp. 520-538.

DONG, X., CHOW, J., WALLER, S.T. and REY, D. (2022). A chance-constrained dial-a-ride problem with utility-maximizing demand and multiple pricing structures. *Transportation Research - Part E: Logistics and Transportation Review*, 158, pp. 102601.

HENRY, E., FURNO, A., EL FAOUZI, N.E. and REY, D. (2022). Locating park-and-ride facilities for resilient on-demand urban mobility. *Transportation Research - Part E: Logistics and Transportation Review*, 158, pp. 102557.

DIAS, F. and REY, D. (2022). Robust aircraft conflict resolution under trajectory prediction uncertainty. *Operations Research Letters*, 50(5), pp. 503-508.

LILASATHAPORNKIT, T., REY, D., LIU, W. and SABERI, M. (2022). Traffic assignment problem for footpath networks with bidirectional links. *Transportation Research Part C: Emerging Technologies*, 144, pp. 103905.

SONG, C., MONTEIL, J., YGNACE, J.L. and REY, D. (2021). Incentives for Ridesharing: A Case Study of Welfare and Traffic Congestion. *Journal of Advanced Transportation*, pp. 106904.

RANAWEERA, M., SENEVIRATNE, A., REY, D. and SABERI, M. (2021). Detection of anomalous vehicles using physics of traffic. *Vehicular Communications*, 27, pp. 100304.

CHAKRABORTY, S., REY, D., LEVIN, M. and WALLER, S. (2021). Freeway network design with exclusive lanes for automated vehicles under endogenous mobility demand. *Transportation Research Part C: Emerging Technologies*, 133, pp. 103440.

BARBARA, M., REY, D. and AKBARNEZHAD, A. (2021). Optimizing Location of New Public Schools in Town Planning Considering Supply and Demand. *Journal of Urban Planning and Development*, (4).

REY, D., LEVIN, M. and DIXIT, V. (2021). Online incentive-compatible mechanisms for traffic intersection auctions. *European Journal of Operational Research*, 293(1), pp. 229-247.

SAXENA, N., RASHIDI, T. and REY, D. (2020). Determining the market uptake of demand responsive transport enabled public transport service. *Sustainability*, 12(12), pp. 4914.

CHEN, R., HU, J., LEVIN, M. and REY, D. (2020). Stability-based analysis of autonomous intersection management with pedestrians. *Transportation Research Part C: Emerging Technologies*, 114, pp. 463-483.

HAMMAD, A., REY, D., BU-QAMMAZ, A. and GRZYBOWSKA, H. (2020). Mathematical optimization in enhancing the sustainability of aircraft trajectory: A review. *International Journal of Sustainable Transportation*, 14(6), pp. 413-436.

NAJMI, A., REY, D., WALLER, S. and RASHIDI, T. (2020). Model formulation and calibration procedure for integrated multi-modal activity routing and network assignment models. *Transportation Research Part C: Emerging Technologies*, 121, pp. 102853.

DONG, X., REY, D. and WALLER, S. (2020). Dial-a-ride problem with users' accept/reject decisions based on service utilities. *Transportation Research Record: Journal of the Transportation Research Board*, 2674(10), pp. 55-67.

REY, D. and BAR-GERA, H. (2020). Long-term scheduling for road network disaster recovery. *International Journal of Disaster Risk Reduction*, 42, pp. 101353.

REY, D., BAR-GERA, H., DIXIT, V. and WALLER, S. (2019). A Branch-and-Price Algorithm for the Bilevel Network Maintenance Scheduling Problem. *Transportation Science*, 53(5), pp. 1455-1478.

ZLOJUTRO, A., REY, D. and GARDNER, L. (2019). A decision-support framework to optimize border control for global outbreak mitigation. *Scientific Reports*, 9, pp. 2216.

REY, D. and LEVIN, M. (2019). Blue phase: Optimal network traffic control for legacy and autonomous vehicles. *Transportation Research - Part B: Methodological*, 130, pp. 105-129.

ZHANG, X., WALLER, S., REY, D. and DUELL, M. (2019). Integrating uncertainty considerations into multi-objective transportation network design projects accounting for environment disruption. *Transportation Letters*, 11(7), pp. 351-361.

ZHANG, X., REY, D., WALLER, S. and CHEN, N. (2019). Range-Constrained Traffic Assignment with Multi-Modal Recharge for Electric Vehicles. *Networks and Spatial Economics*, 19, pp. 633-668.

JIAN, S., REY, D. and DIXIT, V. (2019). An Integrated Supply-Demand Approach to Solving Optimal Relocations in Station-Based Carsharing Systems. *Networks and Spatial Economics*, 19, pp. 611-632.

LEVIN, M., REY, D. and SCHWARTZ, A. (2019). Max-pressure control of dynamic lane reversal and autonomous intersection management. *Transportmetrica B: Transport Dynamics*, 7(1), pp. 1693-1718.

REY, D., ALMI'ANI, K. and NAIR, D. (2018). Exact and heuristic algorithms for finding envy-free allocations in food rescue pickup and delivery logistics. *Transportation Research - Part E: Logistics and Transportation Review*, 112, pp. 19-46.

CHAKRABORTY, S., REY, D., MOYLAN, E. and WALLER, S. (2018). Link Transmission Model-Based Linear Programming Formulation for Network Design. *Transportation Research Record: Journal of the Transportation Research Board*, 2672(48), pp. 139-147.

ZHANG, X., REY, D. and WALLER, S. (2018). Multitype Recharge Facility Location for Electric Vehicles. *Computer-Aided Civil and Infrastructure Engineering*, 33(11), pp. 943-965.

HAMMAD, A.W.A., REY, D. and AKBARNEZHAD, A. (2017). A cutting plane algorithm for the site layout planning problem with travel barriers. *Computers & Operations Research*, 82, pp. 36-51.

LEVIN, M. and REY, D. (2017). Conflict-point formulation of intersection control for autonomous vehicles. *Transportation Research Part C: Emerging Technologies*, 85, pp. 528-547.

CAFIERI, S. and REY, D. (2017). Maximizing the number of conflict-free aircraft using mixed-integer nonlinear programming. *Computers & Operations Research*, 80, pp. 147-158.

NAJMI, A., REY, D. and RASHIDI, T. (2017). Novel dynamic formulations for real-time ride-sharing systems. *Transportation Research - Part E: Logistics and Transportation Review*, 108, pp. 122-140.

HAMMAD, A.W.A., AKBARNEZHAD, A. and REY, D. (2017). Sustainable urban facility location: Minimising noise pollution and network congestion. *Transportation Research - Part E: Logistics and Transportation Review*, 107, pp. 38-59.

HAMMAD, A., AKBARNEZHAD, A. and REY, D. (2017). Bilevel Mixed-Integer Linear Programming Model for Solving the Single Airport Location Problem. *Journal of Computing in Civil Engineering*, 31(5).

NAIR, D., REY, D. and DIXIT, V. (2017). Fair allocation and cost-effective routing models for food rescue and redistribution. *IIE Transactions (Institute of Industrial Engineering)*, 49(12), pp. 1172-1188.

CHEN, N., REY, D. and GARDNER, L. (2017). Multiscale Network Model for Evaluating Global Outbreak Control Strategies. *Transportation Research Record: Journal of the Transportation Research Board*, 2626(1), pp. 42-50.

NAIR, D., GRZYBOWSKA, H., REY, D. and DIXIT, V. (2016). Food Rescue and Delivery: Heuristic Algorithm for Periodic Unpaired Pickup and Delivery Vehicle Routing Problem. *Transportation Research Record: Journal of the Transportation Research Board*, 2548(1), pp. 81-89.

HAMMAD, A., AKBARNEZHAD, A., REY, D. and WALLER, S. (2016). A Computational Method for Estimating Travel Frequencies in Site Layout Planning. *Journal of Construction Engineering and Management*, 142(5).

HAMMAD, A., AKBARNEZHAD, A. and REY, D. (2016). A multi-objective mixed integer nonlinear programming model for construction site layout planning to minimise noise pollution and transport costs. *Automation in Construction*, 61, pp. 73-85.

CHEN, N., GARDNER, L. and REY, D. (2016). Bilevel Optimization Model for the Development of Real-Time Strategies to Minimize Epidemic Spreading Risk in Air Traffic Networks. *Transportation Research Record: Journal of the Transportation Research Board*, 2569(1), pp. 62-69.

RASHIDI, T., REY, D., JIAN, S. and WALLER, S. (2016). A Clustering Algorithm for Bi-Criteria Stop Location Design with Elastic Demand. *Computer-Aided Civil and Infrastructure Engineering*, 31(2), pp. 117-131.

JIAN, S., REY, D. and DIXIT, V. (2016). Dynamic Optimal Vehicle Relocation in Carshare Systems. *Transportation Research Record: Journal of the Transportation Research Board*, 2567(1), pp. 1-9.

REY, D., RAPINE, C., FONDACCI, R. and EL FAOUZI, N.E. (2016). Subliminal Speed Control in Air Traffic Management: Optimization and Simulation. *Transportation Science*, 50(1), pp. 242-262.

REY, D., DIXIT, V., YGNACE, J.L. and WALLER, S. (2016). An endogenous lottery-based incentive mechanism to promote off-peak usage in congested transit systems. *Transport Policy*, 46, pp. 46-55.

REY, D., GARDNER, L. and WALLER, S. (2016). Finding Outbreak Trees in Networks with Limited Information. *Networks and Spatial Economics*, 16(2), pp. 687-721.

NARAYANAN, P., REY, D., MAGHREBI, M. and WALLER, S. (2015). Using Lagrangian Relaxation to Solve Ready Mixed Concrete Dispatching Problems. *Transportation Research Record: Journal of the Transportation Research Board*, 2498(1), pp. 84-90.

REY, D., RAPINE, C., DIXIT, V. and WALLER, S. (2015). Equity-Oriented Aircraft Collision Avoidance Model. *IEEE Transactions on Intelligent Transportation Systems*, 16(1), pp. 172-183.

GARDNER, L. and REY, D. (2014). A Scenario-Based Evaluation of the Middle East RespiratorySyndrome Coronavirus and the Hajj. *Risk Analysis*, 34(8), pp. 1391-1400.

REY, D., ALMI'ANI, K., VIGLAS, A. and LIBMAN, L. (2014). Transit Route Design Solved with Wireless Data Collection Algorithms. *Transportation Research Record: Journal of the Transportation Research Board*, 2466(1), pp. 42-51.

REY, D., RAPINE, C., FONDACCI, R. and EL FAOUZI, N.E. (2012). Minimization of Potential Air Conflicts through Speed Regulation. *Transportation Research Record: Journal of the Transportation Research Board*, 2300(1), pp. 59-67.

Book chapters

CERULLI, M., PELEGRIN, M., CAFIERI, S., D'AMBROSIO, C. and REY, D. (2023). Aircraft Conflict Resolution. In: Pardalos, P.M., Prokopyev, O.A. eds. *Encyclopedia of Optimization*. 1st ed. Springer.

HAMMAD, A., AKBARNEZHAD, A. and REY, D. (2018). Accounting for embodied carbon emissions in planning and optimization of transport operations during construction. In: Francesco Pomponi, Catherine De Wold, Alice Moncaster eds. *Embodied carbon in buildings: measurement, management, and mitigation*. 1st ed. Springer, pp. 301-323.

HAMMAD, A., AKBARNEZHAD, A. and REY, D. (2017). Estimation of input parameters used in site layout planning through integration of BIM and project schedules. In: Haijiang Li, Peng Wu, Xiangyu Wang eds. *Integrated building information modelling*. 1st ed. Bentham Science Publishers, pp. 121-153.

HAMMAD, A., AKBARNEZHAD, A. and REY, D. (2016). Accounting for noise pollution in planning of smart cities. In: *Handbook of research on smart cities as a solution for reducing urban waste and pollution*. 1st ed. IGI Global.

Conference proceedings

DIAS, F. and REY, D. (2020). A two-stage algorithm for aircraft conflict resolution with trajectory recovery.

RANAWEERA, M., SENEVIRATNE, A., REY, D., SABERI, M. and DIXIT, V. (2019). Anomalous data detection in vehicular networks using traffic flow theory.

BARBARA, M., REY, D. and AKBARNEZHAD, A. (2019). Multi-Period Location Optimization Of New Public Facilities To Maximize Equity In Access And Capacity-Saturation.

REY, D. (2019). Computational benchmarking of exact methods for the bilevel discrete network design problem.

REY, D. and HIJAZI, H. (2017). Complex number formulation and convex relaxations for aircraft conflict resolution.

ZHANG, X., REY, D. and WALLER, S. (2016). Multiobjective link-based equitable network design problem incorporating energy consumption.

REY, D., ZHANG, X. and WALLER, S. (2016). Sustainable transportation network design incorporating environment disruption under strategic user equilibrium.

Conference presentations

DIAS, F. and REY, D. (2020). A two-stage algorithm for aircraft conflict resolution with trajectory recovery. In: International Conference on Research in Air Transportation (ICRAT).

REY, D. (2019). Computational benchmarking of exact methods for the bilevel discrete network design problem. In: EURO Working Group on Transportation (EWGT). Barcelona.

RANAWEERA, M., SENEVIRATNE, A. and REY, D. (2019). Anomalous data detection in vehicular networks using traffic flow theory. In: IEEE 90th Vehicular Technology Conference 22. Honolulu, Hawaii.

BARBARA, M., REY, D. and AKBARNEZHAD, A. (2019). Multi-Period Location Optimization Of New Public Facilities To Maximize Equity In Access And Capacity-Saturation. In: Annual Conference of the Canadian Society for Civil Engineers. Laval.

REY, D. and HIJAZI, H. (2017). Complex number formulation and convex relaxations for aircraft conflict resolution. In: IEEE Conference on Decision and Control. Melbourne.

ZHANG, X., REY, D. and WALLER, S. (2016). Multiobjective link-based equitable network design problem incorporating energy consumption. In: Annual Meeting of Transportation Research Board (TRB). Washington DC.

ZHANG, X., WALLER, S. and REY, D. (2016). Sustainable transportation network design incorporating environment disruption under strategic user equilibrium. In: Annual Meeting of Transportation Research Board (TRB). Washington DC.

Faculty research seminar presentations

REY, D. (2023). Transport and Logistics Optimization. In: 9th St-Luc Operations Management Workshop.

REY, D. (2023). Facility Location for Green-Charging of Electric Vehicles. In: Green CEV Mauritius.

REY, D. (2023). Non-cooperative mobility network pricing: an application of bilevel optimization with generalized Nash equilibrium problems. In: Journée Programmation mathématique non linéaire (axe PMNL du GDR ROD). Toulouse.

Other research activities

Senior or associate editor

Since 2021	Transportation Letters

Editorial board member

2020 - 2023	Journal of Advanced Transportation
2016 - 2021	Transportation Letters

Reviewer for:

Dynamic Games and Applications, Omega, INFORMS Journal on Computing, Mathematical Programming, European Journal of Operational Research, Transportation Research - Part B: Methodological, Transportation Research - Part E: Logistics and Transportation Review, Computers & Operations Research, Transportation Research Part C: Emerging Technologies, Transportation Science

Organization of a conference or a seminar

2024	Bilevel optimization and its applications session at ROADEF 2024, France
2023	Bilevel optimization and its applications session at ROADEF 2023, France

Affiliations

Since 2025	2025 INFORMS TSL Best Paper Award Committee

PhD supervision

Since 2023	P. BEAUPUITS, SKEMA Business School, PhD thesis, Thesis director

Since 2022	Z. NOURMOHAMMADI, PhD thesis, Thesis co-director
Since 2021	E. QIU, PhD thesis, Thesis director
Since 2021	A. PAUL, PhD thesis, Thesis director
Since 2020	M. LUAN, PhD thesis, Thesis director
2024	M. ABDOLVAND, PhD thesis, Thesis Reviewer
2023	F. M. GONSALVES, PhD thesis, Thesis Reviewer
2023	D. VILLAMAR, PhD thesis, Thesis jury member
2022	H. XI, PhD thesis, Thesis co-director
2022	C. DANIEL, Université Gustave Eiffel, PhD thesis, Thesis jury member
2021	E. HENRY, Université Gustave Eiffel, PhD thesis, Thesis jury member
2021	F. H. C. DIAS, UNSW Sydney, PhD thesis, Thesis director
2020	S. CHAKRABORTY, UNSW Sydney, PhD thesis, Thesis director
2020	B. SHAHBAZI, UNSW Sydney, PhD thesis, Thesis director
2018	X. LIU, UNSW Sydney, PhD thesis, Thesis co-director
2017	X. ZHANG, UNSW Sydney, PhD thesis, Thesis co-director
2017	A. HAMMAD, UNSW Sydney, PhD thesis, Thesis co-director

Other academic activities

Since 2025	12th INFORMS Transportation Science and Logistics Society Workshop (TSL 2025)
2024	11th INFORMS Transportation Science and Logistics Society Workshop (TSL 2024), France