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**ACADEMIC CURRICULUM VITAE**

**NAME: Saccomanno, F. Frank** Professor

Tenured member of Civil Engineering, Core Program, University of Waterloo,  
Waterloo, Ontario, Canada

**DEGREES RECEIVED:**

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<u>Degree</u>	<u>Institution</u>	<u>Department</u>	<u>Year</u>
Bachelor	University of Manitoba	Civil Engineering	1970
Master's	University of Manitoba	City Planning	1972
Doctorate	University of Toronto	Civil Engineering (Transportation)	1979

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**EMPLOYMENT HISTORY:**

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<u>Dates</u>	<u>Position</u>	<u>Department</u>	<u>Institution/Firm</u>
1992 – Present	Full Professor	Civil Engineering	University of Waterloo
2007-Present	Advisory Appointment	Collegio dei Docenti del Dottorato di Ricerca	Universita' della Calabria, Italy
1999-2000	Visiting Scientist	Institute for Systems Analysis, Informatics and Statistics	European Joint Research Centre (Italy)
1992-93	Visiting Scientist	Major Hazards Unit	Health and Safety Executive and University of Sheffield (UK)
1985-86	Visiting Associate Professor	Civil Engineering and CIGGT	Queen's University
1980-81	Visiting Assistant Professor	Institute for Transportation Studies	Leeds University (UK)
1979-85	Assistant Professor	Civil Engineering	University of Waterloo

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**Current Research Grants/Contracts held (past to years):**

1. Natural Sciences and Engineering Research Council of Canada (Five year award, \$28,500/yr). Individual grant.
2. Transport Canada, Transportation Development Centre (Two year award, \$120,000). Principal investigator with Dr. Liping Fu.
3. Transport Canada, Motor Carrier Division, Safety Implications of Mandated Truck Speed Limiters on Canadian Highways (One year \$140,000). Principal investigator with B. Hellinga and iTRANS)
4. Transport Canada, Transportation Development Centre (One year \$ 25,000). Principal investigator: Gordon English of TranSys Research Ltd.)
5. Alberta Suncor Reactor Transportation Risk Assessment (Individual \$17,000)

**PROFESSIONAL COLLABORATIVE ACTIVITIES:**

- Associate Editor, Canadian Journal of Civil Engineering, Transportation Division. 2006-present.
- Member, Ontario Association of Professional Engineers (APEO), Registered P.Eng.
- Visiting Professor, Dipartimento di Pianificazione Territoriale, Università della Calabria, Rende, Italy, 2007. Adjunct, Unical College of Doctoral Researchers.
- Principal Investigator (Transport Canada), Safety implications of mandated truck speed limiters, 2009.
- US National Research Council, Committee of Experts, "Safe transport of spent nuclear fuel and high level radioactive wastes". November, 2005.
- Transport Canada (Transportation Development Centre), Research Steering Committee on Human Factors in Highway/Rail at grade crossing accidents, 2005.
- Principal Investigator (Transport Canada), Identifying highway-railway hotspots and countermeasures, 2006.
- US National Academy of Sciences and Transportation Research Board, Committee of Experts on Human Factors and Truck Driver Fatigue, 2003
- Consultant on transportation safety issues to a number of government and private sector agencies, including Ontario Ministry of Transportation, Transport Canada, Expert Witness on Transportation Safety, European Commission, DG-7, US-DOT, AAR, Ontario Trucking Association.
- Member, Canadian Society of Civil Engineering and Institute of Transportation Engineers (ITE) Canada

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- Member, Canadian Transportation Research Forum
  - Member, Canadian Centre for Pavement and Transportation Technology, University of Waterloo
  - Member, University of Waterloo, Institute for Risk Research.
  - Transportation Research Board Committees (friend/member).
  - Reviewer for: Journal of Transportation Engineering, Canadian Journal of Civil Engineering, Transportation Research Record, Journal of Risk Analysis
  - Peer Reviewer for AD Little QRA Model, Association of American Railroads
  - OECD/PIARC/EU Project No. ERS2
  - External PhD examiner: UBC, UToronto, Royal Military College, Ryerson University, Carleton University, Queens, University of Manitoba
  - Visiting Scientist, Eu. Joint Research Centre, Institute for Systems Analysis.
  - Peer reviewer, Canadian Transportation Development Agency
  - Ontario Ministry of Transportation, Safety Office

**PUBLICATIONS (Career Totals):**

Papers in Refereed Journals:	150+
Papers in Refereed Conference Proceedings:	100+
Major Invited Contributions and/or Technical Reports:	150+

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**PUBLICATION DETAILS (post-1998)****Refereed journals and proceedings**

1. Cunto, F. Saccomanno, F.F. (2009). Simulated Safety Performance of Rear-end and Angled Vehicle Interactions at Isolated Intersections, *Canadian Journal of Civil Engineering*, Vol. 36, pp. 1794-1803.
2. Ng, Oi Kei. (Mimi) and Saccomanno, F.F. (2010). Analysis of rear-end vehicle crashes at level crossings, *Transportation Research Record*, TRR 2149, pp. 108-114.
3. Astarita, V., Guido, P. and Saccomanno, F.F. (2010). A data collection methodology for calibrating traffic models for two-lane rural highways, *Proceedings of SIDT Annual Meeting, Scientific Seminars, Rome, Italy, June 17-18<sup>th</sup>*.
4. Duong, D., Saccomanno, F.F. and Hellinga, B. (2010). Calibration of microscopic traffic model for simulating safety performance, *Proceedings of the Transportation Research Board Annual Meeting, Washington, DC, January 2010*.
5. Cunto, F.J.C. and Saccomanno, F.F. (2009). Microscopic simulation model for the evaluation of safety performance. *Proceedings of the ANPET Annual Meeting, Fortaleza, Brazil, 2009*.
6. Park, P. Y-J, Miranda-Moreno, L.F. and Saccomanno, F.F. (2010). Estimation of speed differentials on rural highways using hierarchical linear regression models. *Canadian Journal of Civil Engineering*, No. 37, pp. 1-14.
7. Park, P. Y-J, Miranda-Moreno, L.F. and Saccomanno, F.F. (2010). Estimation of speed differentials on rural highways using multi-level models. *Transportation Research Record*, No. ??, 2010.
8. Ghods, A.H. and Saccomanno, F.F. (2010). Comparison of car-following models for safety performance analysis using vehicle trajectory data. *Proceedings of the Canadian Society of Civil Engineering Annual Meeting and the 8<sup>th</sup> International Transportation Specialty Conference. Winnipeg, Manitoba, June. 9-12<sup>th</sup>*.
9. Duong, D., Mandelzys, M., Saccomanno, F., and Hellinga, B. (2010). Assessing speed consistency of horizontal geometric design using a microscopic simulation approach. *Proceedings of Canadian Multidisciplinary Road Safety Conference, Niagara Falls, Ontario, June 7-9<sup>th</sup>*.

10. Saccomanno, F.F. Application of system dynamics in road safety studies. Invited paper presented to International workshop on Human Centered Highway Design, University of Naples and the Italian Society for Infrastructure Planning (SIIV), October 1-2, 2009
11. Astarita, V., Guido, G. and Saccomanno, F.F. (2010). Investigating safety issues in two-way rural highways. Proceedings of the SIDT 2010 – International Conference Rome, June 17-18.
12. Saccomanno, F.F., Duong, D., Cunto, F., Hellinga, B., Philp, C., and Pierre, T. Safety Implications of Mandated Truck Speed Limiters. In *Transportation Research Record: Journal of the Transportation Research Board, No. 2096*, Transportation Research Board of the National Academies, Washington, D.C., 2009. pp. 65–75.
13. Cunto, F., Duong, D, and Saccomanno, F.F. Comparison of Simulated Freeway Safety Performance to Observed Crashes. In *Transportation Research Record: Journal of the Transportation Research Board, No. 2103*, Transportation Research Board of the National Academies, Washington, D.C., 2009. pp. 88–97.
14. Morteza Bagheri, Saccomanno, F.F and Fu, L. (2009). Risk based model for marshalling DG railcars in a railyard. Accepted for presentation at the 88th. Annual Meeting of the Transportation Research Board (in Conference CD).
15. Morteza Bagheri, Saccomanno, F.F and Fu, L. (2009). Dangerous goods railcar placement model. Accepted proceedings of the International Conference on rail Safety to be held in Shanghai China, June 2009.
16. Guido, G., Saccomanno, F.F, Astarita, V., and Vitale, A. (2009) Measuring Safety Performance at Roundabouts Using Videotaped Vehicle Tracking Data, Accepted for presentation at the 88th. Annual Meeting of the Transportation Research Board (in Conference CD). Forthcoming in *Srade and Autostrade* (in Italian), 2009.
17. Cunto, F., Saccomanno, F.F. (2008). Calibration and validation of simulated vehicle safety performance at signalized intersections. *Accident Analysis and Prevention*. Vol. 40, pp 1171-1179.
18. Saccomanno, F.F., Cunto F. , Guido G., Vitale, A. (2008). Comparing Safety at Signalized Intersections and Roundabouts using Simulated Rear-end Conflicts. Forthcoming in the *Transportation Research Record*, N. 2078, pp. 90-95.
19. Cunto, F., Saccomanno, F.F. (2009). Simulated Safety Performance of Rear-end and Angled Vehicle Interactions at Isolated Intersections. *Canadian Journal of Civil Engineering*, 36(11), pp. 1794-1803.

20. Cunto, F., Saccomanno, F.F. (2008) Calibration and validation of simulated vehicle safety performance at signalized intersections. *Accident Analysis and Prevention*. Vol. 40, pp 1171-1179.
21. Saccomanno, F.F., Cunto, F., Guido, G. and Vitale, A. (2007). Confronto delle Performance di Sicurezza Tra le Rotatorie and le Intersezioni Semaforizzate. *Strade e Autostrade*, N. 66, Anno XI, Nov-Dec, pp. 184-187.
22. Peter Y-J Park and Frank Saccomanno (2006), “Reducing treatment selection bias for estimating treatment effects using propensity score method”, *Journal of Transportation Engineering*. American Society of Civil Engineering, Manuscript No. TE/2005/023489, Feb, 2007.
23. F. Saccomanno, P. Y-J Park and L. Fu (2006), “Estimating Countermeasure Effects for Reducing Collisions at Highway-Railway Grade Crossings” *Accident Analysis and Prevention*. Manuscript No. AAP-D-06-00163R1.
24. F.Saccomanno, Y-J Park and L. Fu (2006), “Analysis of Countermeasure Effects for Grade Crossings”, *Proceedings of the 9<sup>th</sup> International Level Crossing safety and Trespass Prevention Symposium*, Montreal, Sept 10 – 14<sup>th</sup>, 2006.
25. L. Fu and F. Saccomanno (2006), “GradeX – Web-based Decision Support Tool for Hotspot Identification and Countermeasure Analysis of Highway-Railway Grade Crossings”, *Proceedings of the 9<sup>th</sup> International Level Crossing safety and Trespass Prevention Symposium*, Montreal, Sept 10 – 14<sup>th</sup>, 2006.
15. Flavio Cunto and F. F. Saccomanno (2008). “Micro-level traffic simulation method for assessing crash potential at intersections” Submitted to *Canadian Journal of Civil Engineering* and presented at the 85<sup>th</sup> Annual Meeting of the Transportation Research Board, January (2007).
16. Frank Saccomanno and Xiaoming Lai (2005), “Model for Evaluating Counter-Measures at Highway-Railway Grade Crossings”. *Transportation Research Record*, No. 1918, pp. 18-26.
17. Peter Y-J Park and Frank Saccomanno (2005), “Collision frequency analysis using tree-based stratification”, *Transportation Research Record*, No. 1908, pp. 121-130. Awarded best paper in transportation safety by the Transportation Research Board at its annual meeting.

18. Luis Miranda-Moreno, Liping Fu, Frank Saccomanno and Aurelie Labbe (2005), “Alternative risk models for ranking locations for safety improvement”, *Transportation Research Record*, No. 1908, pp. 1-9.
19. Peter Y-J Park and Frank Saccomanno (2005), “Evaluating speed consistency between successive elements of a two-lane rural highway”, *Transportation Research Part A*. Elsevier Press Ltd., Vol 40 (5), pp. 375-385.
20. Anania Mbabazi; Tarek Hegazy and Frank Saccommanno (2005). “MBF: Modified But For Method for Delay Analysis”, *ASCE Journal of Construction Engineering and Management*, No. 131, 1142.
21. Young-Jin Park and F.F. Saccomanno (2005), “Evaluating Factors Affecting Safety at Highway-Railway Grade Crossings” *Transportation Research Record*, N 1918, pp. 1-10.
22. Young-Jin Park and F.F. Saccomanno (2005), “A structured model for evaluating countermeasures at highway-railway grade crossings”, *Canadian Journal of Civil Engineering*, Vol. 32, pp. 627-635.
23. Liping Fu, Frank F. Saccomanno and Yaping Xin (2005), “Assessing Transit Level of Service along Travel Corridors Using TCQSM – A Case Study”. *Transportation Research Record*, No. 1927, pp. 259-268.
24. Cunto, F., Saccomanno, F.F. 2005. Improved Traffic Signal Warrants For Crash Avoidance at Intersections. Proceedings, 3<sup>rd</sup> International SIIV Congress. Società Italiana Infrastrutture Viarie. Bari, Italy.
25. Jun Zhu and F.F. Saccomanno (2004), “Safety Impacts Analysis of Freeway Work Zone Lane Closures using Simulation”, *Transportation Research Record*. No. 1877, pp. 53-61.
26. Lee, C., Hellinga, B., and Saccomanno, F., Evaluation of Variable Speed Limits to Improve Traffic Safety. *Transportation Research Part C: Emerging Technologies* Vol. 14 No. 3, pp 213-228, 2006.
27. Chris Lee, Bruce Hellinga, and Frank Saccomanno (2004). “Assessing Safety Benefits of Variable Speed Limits.” *Transportation Research Record*. No. 1897, pp. 183-191.
28. F. F. Saccomanno and G. Hammouda (2004), “QRA Decision Support Model for Locating HazMat Teams”, *Transportation Research Record*. No. 1873, pp. 1-9..

29. F. F. Saccomanno, L. Fu and Luis Miranda (2004), "Risk-Based Model for Identifying Highway-Rail Grade Crossing Blackspots", *Transportation Research Record*, No. 1862, pp. 127-135.
30. Arif Mehmood, Frank Saccomanno and Bruce Hellinga (2003), "Application of Systems Dynamics in Car-Following Models", *Journal of Transportation Engineering*, American Society of Civil Engineers, Vol. 129, No. 6, December, 2003, pp. 625 –634.
31. Chris Lee, Bruce Hellinga, and Frank Saccomanno (2003). "Proactive Freeway Crash Prevention Using Real-Time Traffic Control." *Canadian Journal of Civil Engineering: Special Issue Innovations in Transportation Engineering*, Vol. 30, No. 6, 2003, pp. 1034-1041.
32. Chris Lee, Bruce Hellinga, and Frank Saccomanno (2003). "Real-Time Crash Prediction Model for Application to Crash Prevention in Freeway Traffic." *Transportation Research Record*, No. 1840, pp. 67-78.
33. Ren Conming., F. Saccomanno and L. Fu (2003), "Identifying Blackspots at Highway-rail Grade Crossings in Canada", Awarded Second Prize of Conference Paper Competition, Ottawa, Ontario, May 11-14, pp. 168-182.
34. C. Lee, F. Saccomanno, and B. Hellinga (2002). "Analysis of Crash Precursors on Instrumented Freeways". *Transportation Research Record*, No. 1784, National Academy Press, Washington, DC. pp. 1-8.
35. F. F. Saccomanno and P. Haastrup (2002). Influence of safety measures on the risks of transporting dangerous goods through road tunnels", December, *Journal of Risk Analysis*, Vol. ??, pp. ?? (approx. 20 pages).
36. A. Mehmood, F. Saccomanno and B. Hellinga (2001) "Simulation of Road Crashes using Systems Dynamics". *Transportation Research Record*, No. 1746. National Academy Press. Washington, D.C. pp. 37 - 46.
37. F.F. Saccomanno, R. Grossi, D. Greco, and A. Mehmood (2001) "Identifying black spots along highway SS107 in Southern Italy using two models". *ASCE Journal of Transportation Engineering*, Nov. 2001, Vol. 127, No. 6, pp. 515-522.
38. F.F. Saccomanno, L. Fu and R. K. Roy (2001), "GIS-Based Integrated Model for Road Accident Analysis and Prediction", *Transportation Research Record*, National Research Council, Washington D.C., 22 pages.



39. R.K. Roy, F.F. Saccomanno and L. Fu (2000). "GIS-Based road accident prediction model" Submitted to the ASCE, Journal of Transportation Engineering, November, 2000.
40. F.F. Saccomanno, R. Roy, and L.Fu (2001), "GIS-Based integrated model for road accident analysis and prediction", Transportation Research Record, Also presented at the 80<sup>th</sup> Annual Conference of the Transportation Research Board, Washington, DC, January.
41. F.F. Saccomanno, S. Kormendi, M. El-Herraoui and R.W. Lambie (1998), "Identifying high accident risk trucking firms using Roadcheck vehicle inspections", Canadian Journal of Civil Engineering, Vol. 25, pp. 1-7.
42. F.F. Saccomanno, K.C. Chong and S.A. Nassar (1998), "Geographic information system platform for road accident risk modeling", Transportation Research Record, No. 1581, pp. 18-26.
43. M.J. Corby and F.F. Saccomanno (1998), "Analysis of freeway accident detection", Transportation Research Record, No. 1603, pp. 80-90.
44. Lacroix, D., Cassini, P., Hall, R., and Saccomanno, F. (1999) Transport of dangerous goods through road tunnels: an integrated QRA model developed under joint OECD/PIARC Project ERS2. Proceedings of the International ESReDA Seminar on Safety and Reliability in Transport, Oslo, Norway, May 19-21.

*Note: All papers published in the Transportation Research Record were also presented at the Annual Meeting of the US Transportation Research Board in Washington for the year indicated.*

### **Major Research Reports**

1. Saccomanno, F.F., Philp, C., Cunto, F., Duong, D., Sooklall, R., Hellinga, B. (2008) Safety Implications of Mandated Truck Speed Limiters on Canadian Highways. Report PWGSC-T8080-060603/A. Ottawa, 150 pages.
2. Saccomanno, F.F and Fu, Liping, Park, Y-J P. Decision Support Tool for Prioritizing Safety Improvement Programs at High-Risk Grade Crossings, (2007), Volume 1: Collision Modification Factors for Countermeasure Effectiveness, Final Report No. TP14785E, Transportation Development Corporation, Transport Canada, June, 80 pages.
3. Fu, Liping and Saccomanno, F.F. Decision Support Tool for Prioritizing Safety Improvement Programs at High-Risk Grade Crossings, (2007), Volume 2: GradeX

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- User's Guide Final Report No. TP14785E, Transportation Development Corporation, Transport Canada, June, 40 pages.
4. F.F Saccomanno, F.C. Cunto and D. Duong (2007), Alberta-Suncor Reactor Transportation Risk Assessment, Final Report, Acuratek Consultants, Montreal, Quebec, October, pp 100.
  5. F.F.Saccomanno, Liping Fu and Peter Park (2006). "Decision-support tool for prioritizing safety improvement programs at high risk grade crossings: Part II Evaluating the effectiveness of countermeasures", Report submitted to the Transportation Development Centre, Transport Canada. April. 50 pages.
  6. Liping Fu, F.F. Saccomanno and Luis Miranda (2006). "Decision-support tool for prioritizing safety improvement programs at high risk grade crossings: Part 1 Hotspot identification ... an update", Report submitted to the Transportation Development Centre, Transport Canada. April. 50 pages.
  7. F.F. Saccomanno (2005). Review of US National Research Council study: "Going the Distance: The safe transport of spent nuclear fuel and high level radioactive wastes in the United States", November, 15 pages.
  8. F.F. Saccomanno, L. Fu, Congming Ren and Luis Miranda (2004), "Identifying Highway-Railway Grade Crossing Blackspots: Phase One", Final report submitted to: Transportation Development Centre, Safety and Security Branch, Transport Canada, December, Contract No. TP 14168E, 89 pages.
  9. Frank Saccomanno, Congming Ren and Liping Fu (2002) Highway-Rail grade crossing Blackspot identification. Phase One Final Report submitted to Transportation Development Centre, Safety and Security, Transport Canada, Contract Award No. 3164101. October, 38 pages.
  10. F.F. Saccomanno (2001), "Safety Deficiencies in the Amended Railway Safety Act", Final report prepared for the Canadian Trucking Alliance, University of Waterloo, June, 30 pages.
  11. F.F. Saccomanno (1999), "Safety Deficiencies in the Amended Railway Safety Act", Final report prepared for the Canadian Trucking Alliance, University of Waterloo, June, 30 pages.
  12. F.F. Saccomanno (2000), "Review of National Risk Assessment for selected Hazardous Materials in Transportation, Final report prepared for Argonne National Laboratories, and University of Illinois, June 2000, 35 pages.

13. F.F. Saccomanno (1999), "Safety Deficiencies in the Amended Railway Safety Act", Final report prepared for the Canadian Trucking Alliance, University of Waterloo, June, 30 pages.
14. F.F. Saccomanno and G. Taylor (1998), "Evaluation of Commercial Vehicle Safety in Ontario", Final report prepared for Ministry of Transportation of Ontario, Safety Policy Branch, UW Contract No. 9690-3040-8603, May, 96 pages + appendix.
15. F.F. Saccomanno, N.P. Button and R. Al Assar, (1998) "Release and fire incidents rates for the transport of dangerous goods through road tunnels and surface routes", Final report prepared for OECD/PIARC/EU, Project No. ERS2, November, 92 pages