

Vincent VERBAVATZ

Urban scientist

PERSONAL DATA

BIRTH: January, 4th, 1995 – Paris, France
ADDRESS: 276, boulevard Saint-Germain, Paris, France

[Website](#) [Scholar](#) [Gitlab](#) [LinkedIn](#)

EXPERIENCE

RESEARCH

AUG 2022 – PRESENT | Associate Researcher, *Institute for complex systems*, Paris, France
Conducted novel research on urban population dynamics, resulting in the completion of a handbook that combines both theoretical and empirical perspectives.

SEP 2019 – AUG 2022 | Doctoral Researcher, *French Alternative Energies and Atomic Energy Commission*, Paris-Saclay, France
Developed theoretical and predictive models for urban systems under the supervision of Dr. Marc Barthelemy, with a focus on population growth, car traffic, CO₂ mitigation, road network theory, and income dynamics within cities. Made significant contributions to the fields of statistical physics, particularly in percolation theory and graph theory. Collaborated with Pr. Carlo Ratti's team at the *MIT Senseable City Lab* on the question of city delineation. First-author of several journal publications, including an article in *Nature*.

SEP 2017 – AUG 2019 | Teaching assistant, Mathematics, *Lycée Jean-Baptiste Say*, Paris, France
Oral examiner for undergraduate students preparing French competitive exams.

MAR 2017 – AUG 2017 | Research intern, Biophysics Team, *McGill University*, Montréal, Canada
Developed dynamical systems models for T-cell regulation in the human body in Professor Paul François's team.

GOVERNMENT AND INDUSTRY

AUG 2022 – PRESENT | Deputy Head of Energy, Investment, Industry and Innovation, Department of Budget, *French Ministry of Finance*, Paris, France
Monitored public support for structured finance and infrastructure projects, including new French nuclear projects (€60 billion), state guarantees (€1,000 billion total loan amount and €2 billion cost annually) and export credits (200 private applications annually). Secured public funding for French industrial and digital engineering schools (€500 million euro annually), such as Institut polytechnique de Paris and Institut Mines-Télécom. Editor of each guarantee law article of the 2024 French budget.

- JAN – AUG 2018 | Project Manager, Department of Housing, *City of Paris*, Paris, France
Led data-driven analysis to reform social housing allocation criteria, enhancing process efficiency and fairness for 250,000 people. Contributed to social mix policies in urban planning in Paris.
- SEP 2017 – PRESENT | Lifetime civil servant in urban planning, transport and sustainable development, *Government of France*
Selected as one of the 50 annual *ingénieurs des ponts, des eaux et des forêts*, leading *corps* of lifetime civil servants in urban planning, transport and sustainable development.
- JUN – SEP 2016 | Summer Business Analyst, *Home24 AG*, Berlin, Germany
Developped short-selling algorithms, stock optimization strategies, and pricing optimization in the Pricing and Inventory Management department of a German e-commerce company.
- SEP 2014 – APR 2015 | Cadet Officier, *French Air Force*, Salon-de-Provence, France
Served as an officer in the Air Force for military service, with the role of Deputy Commanding Officer of a platoon of 30.

EDUCATION

- AUG 2022 | Doctor of Philosophy, **Paris-Saclay University**, Paris, France
Physics – Thesis: “[The modelling of urban systems](#)” – Supervisor: Dr. Marc BARTHELEMY
- AUG 2019 | Master of science, **École des ponts**, Paris, France
Public Policies and Actions for Sustainable Development.
Government executive program.
- AUG 2018 | Master of science, **École normale supérieure**, Paris, France
Theoretical physics – Stastical physics.
- AUG 2017 | Master of science and Engineering Degree, **École polytechnique**, Paris, France
Applied mathematics and physics in the French best *Grande École*.

COMPUTER SKILLS

PROGRAMMING LANGUAGES: Python, C/C++
OTHER: LINUX, \LaTeX , QGIS, HTML & CSS

LANGUAGES

FRENCH: Mother tongue GERMAN: Fluent RUSSIAN: Notions
ENGLISH: Fluent ITALIAN: Basic Knowledge

INTERESTS AND ACTIVITIES

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| 2021 – PRESENT | Political leader of Paris Mayor Anne Hidalgo's Party in the 14 th district
Leader of a group of 100 in the 14 th district of Paris. Committed to social progress and the transformation of Paris into a "15 minute city". |
| 2020 – PRESENT | Co-founder with French Congressman Philippe Brun of <i>École de l'Engagement</i>
Founded a political school inspired by the principles of <i>Brand New Congress</i> with the mission of empowering high-potential underprivileged individuals to pursue political careers. Assumed a key role in securing funding for a 2022 Congress campaign for one of the school's attendants. |

OTHER ACTIVITIES: a Fencer for 15 years, passionate about History and Literature.

PUBLICATIONS

HANDBOOK

Statistics and Dynamics of Urban Populations: Empirical Results and Theoretical Approaches, Verbavatz, V., & Barthelemy, M. *Oxford University Press*. Scheduled for issuance on December 21st, 2023.

JOURNAL PUBLICATIONS

1. What is a city? For a universal delineation of urban areas using cell phone data, Dong, Lei, ..., Verbavatz, V., et al., *preprint*.
2. [Modeling the spatial dynamics of income in cities](#), Verbavatz, V., & Barthelemy, M. *Environment and Planning B: Urban Analytics and City Science*, 23998083231171397 (2023).
3. [Betweenness centrality in dense spatial networks](#), Verbavatz, V., & Barthelemy, M. *Physical Review E*, 105 (5), 054303 (2021).
4. [From one-way streets to percolation on random mixed graphs](#), Verbavatz, V., & Barthelemy, M. *Physical Review E*, 103(4), 042313 (2021).
5. [The growth equation of cities](#), Verbavatz, V., & Barthelemy, M. *Nature*, 587(7834), 397-401 (2020).
6. [Access to mass rapid transit in OECD urban areas](#), Verbavatz, V., & Barthelemy, M. *Scientific Data*, 7(1), 1-6 (2020).
7. [Critical factors for mitigating car traffic in cities](#), Verbavatz, V., & Barthelemy, M. *PLoS one*, 14(7), e0219559 (2019).

ABOUT MY WORK

NOV 2022 | “La modélisation des villes : une approche physique du phénomène urbain”
in LA JAUNE ET LA ROUGE.

NOV 2020 | “Comment un village peut devenir une mégalopole” in THE CONVERSATION.

AUG 2019 | “Transit Can Save the Environment, Just Not How We Expected” in
BLOOMBERG.