

# Exploring the Relationship Between Perceived Bikeability and Gender-Inclusive Micromobility Usage A Study Across 53 French Cities

**Scientific Seminar:** *Accessibility and Connectivity of the 15-minute-city  
ACUTE / UERA TWG Urban Accessibility and Connectivity*

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Dylan MOINSE

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# Background

**Gendered** environmental practices and preferences in favor of women, with the exception of **mobility** [1]:

- Lower carbon footprint than men because women favor walking and transit and make shorter journeys [2];
- Less willing to reduce car use and especially to opt for **cycling** [1].

Observation of a **cycling gender gap** compared to other modes:

- In a myriad of studies, especially in **Western countries** [3, 4];
- Emergence of electric **micromobility** devices reinforcing gender inequalities [5, 6];
- Pronounced gender contrast in intermodal travel combining cycling with transit [6];
- Differs from the typically higher female participation in **walking and public transportation** [7].

Are the promotion of inclusive mobility and the **15-minute City** compatible?

- A paradigm shift emphasizing nodes accessible by foot and bike in *X minutes* [8];
- Parity achieved by a handful of **Northern European countries** [9];
- Gender inequalities cannot simply be ascribed to cultural differences [10];
- Impacts of disseminated **social norms** and the **configuration and design of public spaces** [11].

[1] Pech, T., & Witkowski, D. (2021). *Les femmes et le changement climatique* (p. 32). Terra Nova

[2] Shaw, C. et al. (2020). Beyond the Bicycle: Seeing the Context of the Gender Gap in Cycling. *Journal of Transport & Health*, 18, 100871

[3] Handy, S. L., & King, Y. (2011). Factors Correlated with Bicycle Commuting: A Study in Six Small U.S. Cities. *International Journal of Sustainable Transportation*, 5(2), 91-110

[4] Codina, O., Maciejewska, M., Nadal, J., & Marquet, O. (2022). Built Environment Bikeability as a Predictor of Cycling Frequency: Lessons from Barcelona. *Transportation Research Interdisciplinary Perspectives*, 16, 100725.

[5] Laa, B., & Leth, U. (2020). Survey of e-Scooter Users in Vienna: Who They Are and How They Ride. *Journal of Transport Geography*, 89, 102874.

[6] Moïnse, D., Goudeau, M., L'Hostis, A., & Leysens, T. (2022). Intermodal Use of (e-)Scooters with Train in the Provence-Alpes-Côte d'Azur Region: Towards Extended Train Stations Areas? *Environmental Economics and Policy Studies*, 34.

[7] Pollard, T. M., & Wagnild, J. M. (2017). Gender Differences in Walking (for Leisure, Transport and in Total) across Adult Life: A Systematic Review. *BMC Public Health*, 17(1), 341.

[8] Allam, Z., Bibri, S. E., Chabaud, D., & Moreno, C. (2022). The '15-Minute City' concept can shape a net-zero urban future. *Humanities and Social Sciences Communications*, 9(1).

[9] Nelson, A. C., & Allen, D. (1997). If You Build Them, Commuters Will Use Them: Association Between Bicycle Facilities and Bicycle Commuting. *Transportation Research Record*, 1578(1), 79-83.

[10] Héran, F. (2015). *Le retour de la bicyclette. Une histoire des déplacements urbains en Europe, de 1817 à 2050* (La Découverte).

[11] Sayagh, D. (2018). Les adolescentes font-elles moins de vélo en raison de moindres possibilités réelles d'investir l'espace public? *Enfances Familles Générations. Revue interdisciplinaire sur la famille contemporaine*, 30.

# Research Aim

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Discrepancies in the research:

- Positive association between gender-neutral cycling usage and the **level of cycling** across cities and countries [12];
- An increase in cycling modal share does **not systematically** diversify the user profile in terms of gender distribution [13, 14];
- A mismatch between **objective and perceived built environment** regarding bikeability and safety experienced by cyclists [15, 16].

Research problem:

- Can we observe a relationship between the gender distribution of cycling and the **objective and perceived built environment**?
- Does **urban planning for proximity** serve as a catalyst for enhancing a more inclusive mobility system?
- Are there differences based on the **type of micromobility and trip pattern**?

Objectives:

1. **Quantifying** gender-based disparities in the use of micromobility, focusing on commuting patterns;
2. Assessing the **impact of perceived bikeability** on the gender-influenced micromobility use;
3. Employing a **comparative approach** to identify and categorize the examined areas;
4. Formulating an **indicator** that captures the key interactions among the analyzed variables and gender-specific use of micromobility.

[12] Goel, R., Goodman, A., Aldred, R., Nakamura, R., Tatah, L., Garcia, L. M. T., Zapata-Diomed, B., de Sa, T. H., Tiwari, G., de Nazelle, A., Tainio, M., Buehler, R., Götschi, T., & Woodcock, J. (2022). Cycling Behaviour in 17 Countries Across 6 Continents: Levels of Cycling, who Cycles, for What Purpose, and How Far? *Transport Reviews*, 42(1), 58-81.

[13] Avila-Palencia, I., de Nazelle, A., Cole-Hunter, T., Donaire-Gonzalez, D., Jerrett, M., Rodriguez, D. A., & Nieuwenhuijsen, M. J. (2017). The Relationship between Bicycle Commuting and Perceived Stress: A Cross-Sectional Study. *BMJ Open*, 7(6), e013542.

[14] Aldred, R., Woodcock, J., & Goodman, A. (2016). Does More Cycling Mean More Diversity in Cycling? *Transport Reviews*, 36(1), 28-44.

[15] Ma, L., & Dill, J. (2017). Do People's Perceptions of Neighborhood Bikeability Match "Reality"? *The Journal of Transport and Land Use*, 10(1), 291-308.

[16] Garrard, J., Rose, G., & Lo, S. K. (2008). Promoting Transportation Cycling for Women: The Role of Bicycle Infrastructure. *Preventive Medicine*, 46(1), 55-59.

# Mixed Methods

Geographical scope: **French context**;

- Case study: **Hauts-de-France Region**.

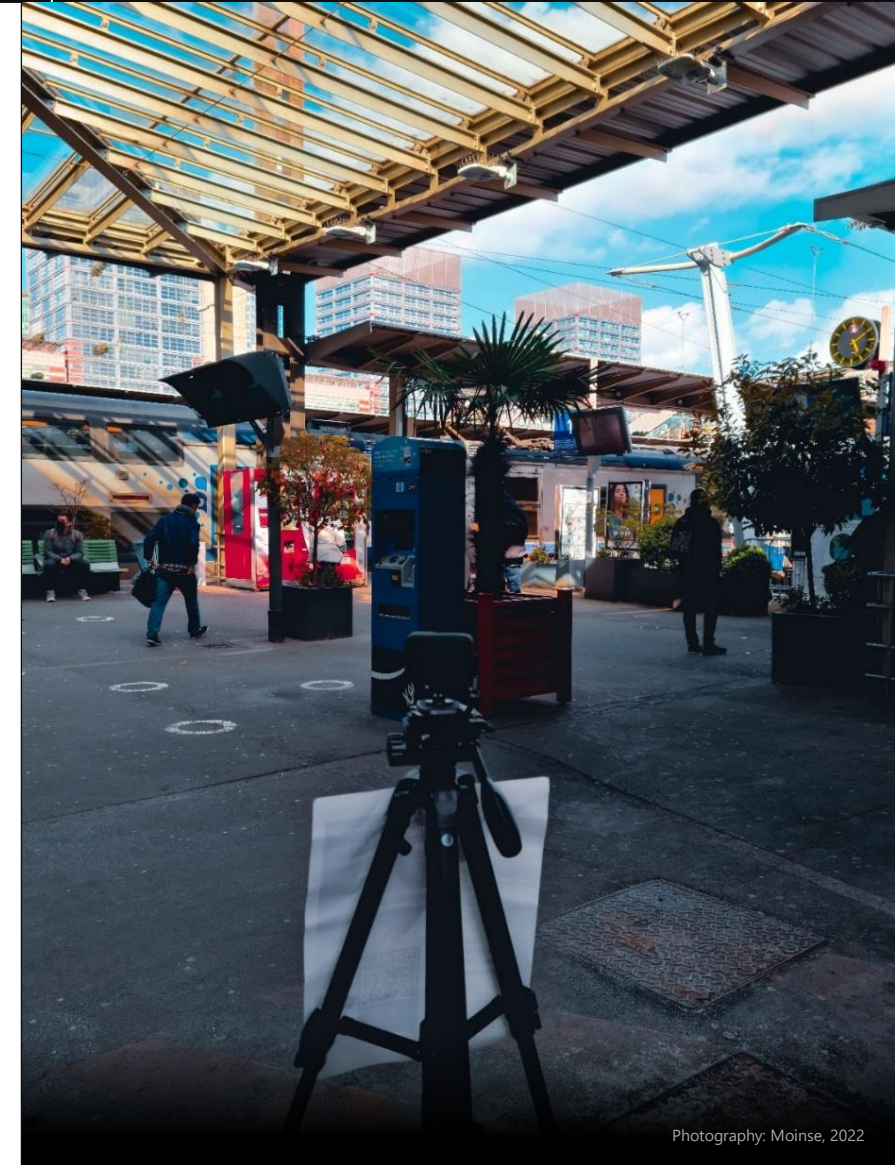
**Secondary analysis of public surveys:**

- Characterizing French cities in terms of **cycling modal share**, **gender distribution** and the **bike-friendliness ratings**;
- 2019 Population Census, derived from the *Professional Mobilities* (MOBPro) by the *National Institute of Statistics and Economic Studies* (Insee) [17];
- 2021 Bicycle-Friendly Cities Barometer (third edition), by the *Bicycle Users Federation* (FUB) [18].

Application of “**quantitative observations**”:

- Capturing the **demographic profiles** of intermodal passengers by micromobility in the Hauts-de-France region;
- Systematic collection of field data, based on a categorization and enhanced by videographic recordings [19];
- Carried out at **nine train stations**, including “major regional hubs”, “stations oriented towards Paris” and “feeder stations” [20];
- During peak hours on Tuesdays and Thursdays, between March and June 2022.

Fig.1: Quantitative Observation Session on One of the Platforms at Lille Flandres Station



Photography: Moïnse, 2022

[17] Insee. (2023, juin 27). *Documentation fichier détail: Mobilités professionnelles*. Insee.fr. <https://www.insee.fr/fr/information/2383243>

[18] FUB. (2021). *Baromètre des Villes Cyclables. Résultats 2021*. Parlons Vélo ! Fédération française des usagers de la bicyclette. <https://palmares.parlons-velo.fr/>

[19] Filion, N. (2011). Compter le réel. *Terrains travaux*, 19(2), 37-55.

[20] CETE Nord Picardie & DREAL Picardie. (2011). *Les profils des gares de Picardie* (72; Les bulletins de la DREAL Picardie, p. 6). <https://www.hauts-de-france.developpement-durable.gouv.fr/?no-72-Dec-2011-Les-profil-des-gares-de-Picardie>

# Sampling

## Secondary analysis of public surveys

### **MOBPro Census** (Insee, 2019)

N = 7,932,895 responses

**Inclusion criteria 1:**  
'TRANS=3' = 409,326 cyclists

**Inclusion criteria 2:**  
≥200 cyclists per municipality  
= **128,492 cyclists** in **144 cities**:  

- 51,719 female cyclists;
- 76,773 male cyclists.

$n_{\text{FUB}} = 65,850$   
 $n_{\text{Insee}} = 94,788$

### **Baromètre des Villes Cyclables** (FUB, 2021)

N = 277,384 responses

**Inclusion criteria 3:**  
Attribute join between 144 cities (Insee) and the municipalities with at least 100 cyclists' responses = 64 cities

**Inclusion criteria 4:**  
Central cities of agglomerations = **53 municipalities**

## Empirical approach

### **Quantitative observation** (2022)

N = 15,435 passengers

**Nine railway stations:**

- 'National and regional interest stations' (4);
- 'Parisian regional influence hub' (1);
- 'Feeder stations' (4).

**Inclusion criteria:**  
Intermodal passengers by micromobility modes

$n_{\text{QO}} = 1,035$

### **Ride-along interviews** (2022)

**Two participants:**

- **RI\_ES\_1** (F):  
From Lille to Maubeuge by regional train and private e-scooter.
- **RI\_ES\_2** (H):  
From Lille to Villeneuve d'Ascq by metro and private e-scooter.

$n_{\text{RI}} = 2$

# Gender Imbalance

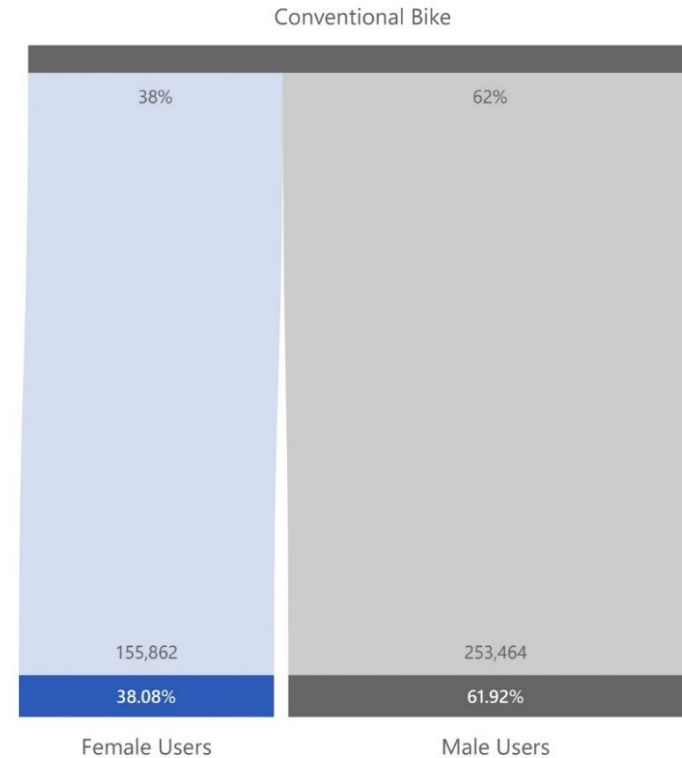
Female users account for only **38.08%** of cycling commuters in the country, whereas they constitute 51.60% of the population;

Contrast that intensifies in the context of intermodal mobility, with a decline to **28.21%**, although they represent 52% of the transit passengers [21].

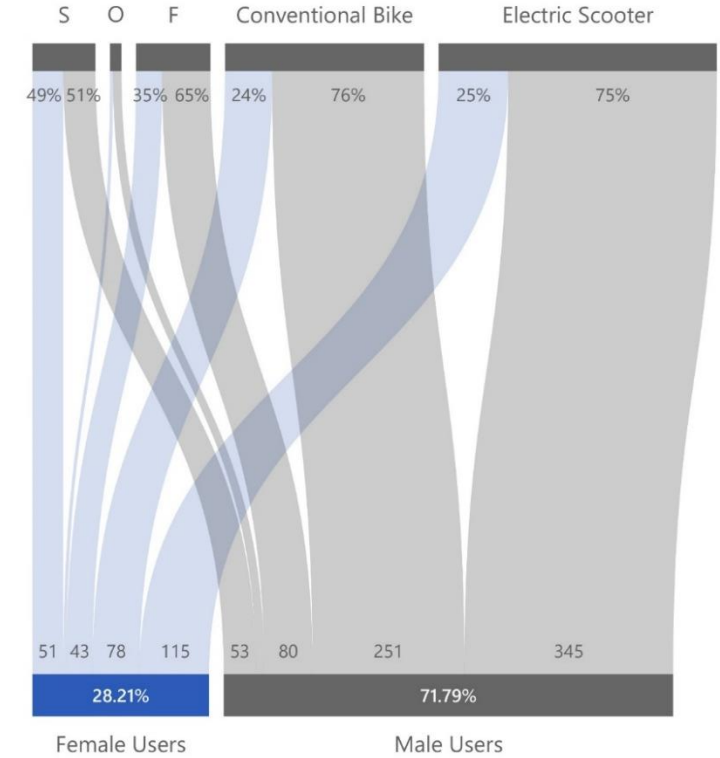
Substantial **variations** when considering micromobility modes:

- **Personal bicycles** and **e-scooters** showing the most distinct gender inequalities;
- More balanced gender distribution in the case of **folding bicycles** and **kick standing scooters**.

N=409,326  
2019 *MOBPro* Database on Commuting Unimodal Bicycle Use



N=1,035  
Quantitative Observation of Intermodal Passengers Using Micromobility



## Legend

F Folding Bike    O Other Micromobility Devices    S Human-Powered (Kick) Scooter

Fig.2: Distribution of Cyclists by Gender and Type of Micromobility in France

Realization: Moinse, 2023

# “Safety in Numbers”

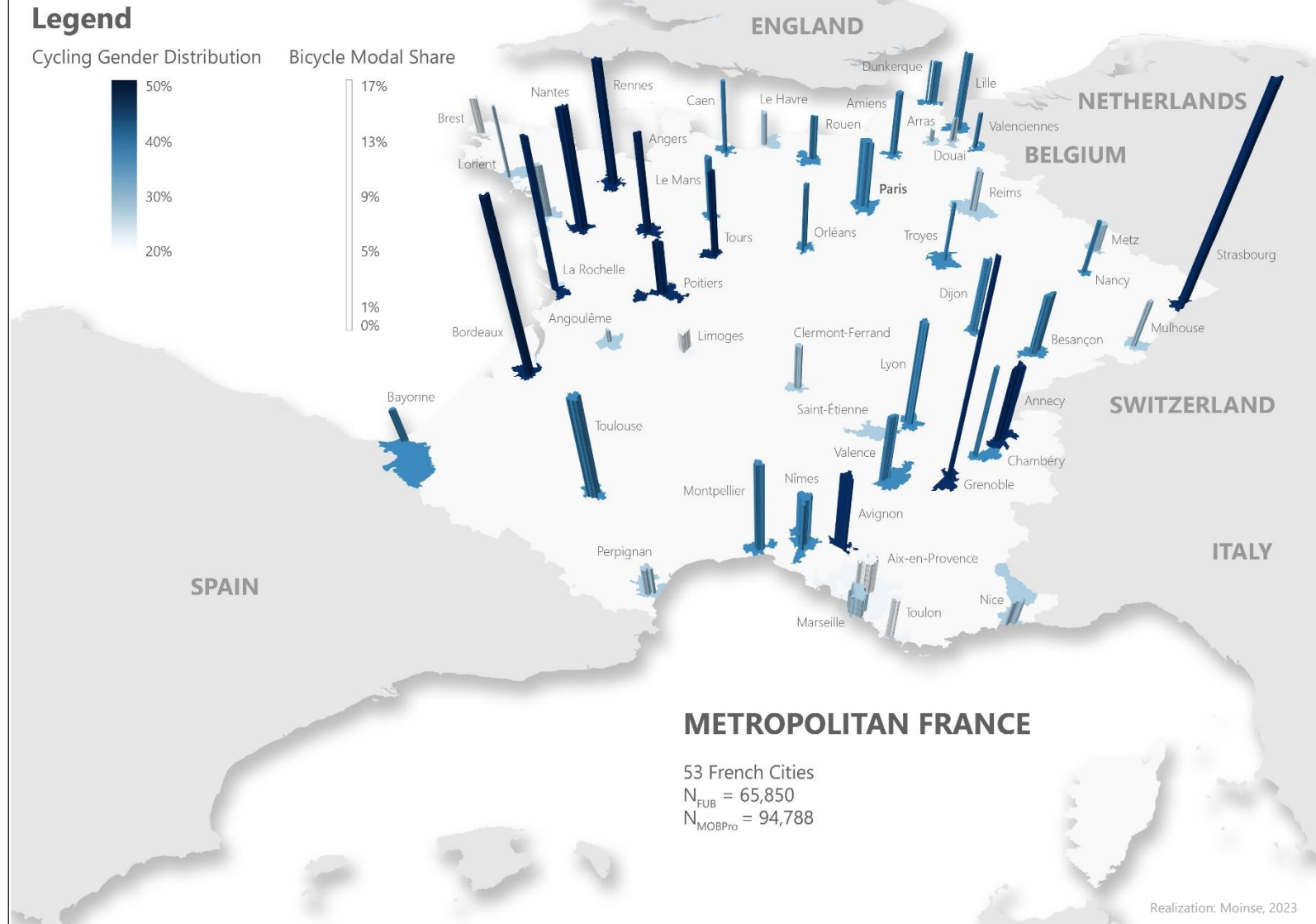
Linear regression model underscores the relative **strong and positive correlation** between female participation and the **cycling modal share** across 53 French cities:

- $\rho_{\text{Pearson}} = 0.73$
- As the number of cyclists increases in public spaces, motorists are more likely to view them as a **legitimate group of road users** [22, 23].

In line with research articles based on an **international comparison** [24]:

- Within countries where cycling rates fall below 7%, women exhibit an average 56% lower likelihood of cycling compared to men [25].

Fig.3: Cross-Mapping of Modal and Gendered Share of Cycling in France



[22] Oosteren, S. V., & Schneider, O. (2021). *Pourquoi pas le vélo?: Envie d'une France cyclable* (Illustrated édition). Editions Ecosociété.

[23] Jacobsen, P. L. (2003). Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling. *Injury Prevention*, 9(3), 205-209.

[24] Garrard, J., Crawford, S., & Hakman, N. (2006). *Revolutions for Women: Increasing Women's Participation in Cycling for Recreation and Transport*. Final Report (p. 78). Deakin University.

[25] Goel, R., Goodman, A., Aldred, R., Nakamura, R., Tatah, L., Garcia, L. M. T., Zapata-Diomed, B., de Sa, T. H., Tiwari, G., de Nazelle, A., Tainio, M., Buehler, R., Götschi, T., & Woodcock, J. (2022). Cycling Behaviour in 17 Countries Across 6 Continents: Levels of Cycling, who Cycles, for What Purpose, and How Far? *Transport Reviews*, 42(1), 58-81.

# Bikeability Score

**No causal relationships** between these two variables: Is it the critical mass that fosters greater gender diversity among cyclists, the higher involvement of women in cycling that arises the modal share, or a combination of both factors?

Identification of a positive association between the **perceived bikeability score** among cyclists and the gender-specific cycling rate:

- Both within Metropolises, Urban Communities and Agglomeration Communities;
- Parity could be attainable when a city's **bikeability score surpasses 4.3/6**;
- Quantitative observation for the **e-scooter** align to a lesser extent with the regression model.

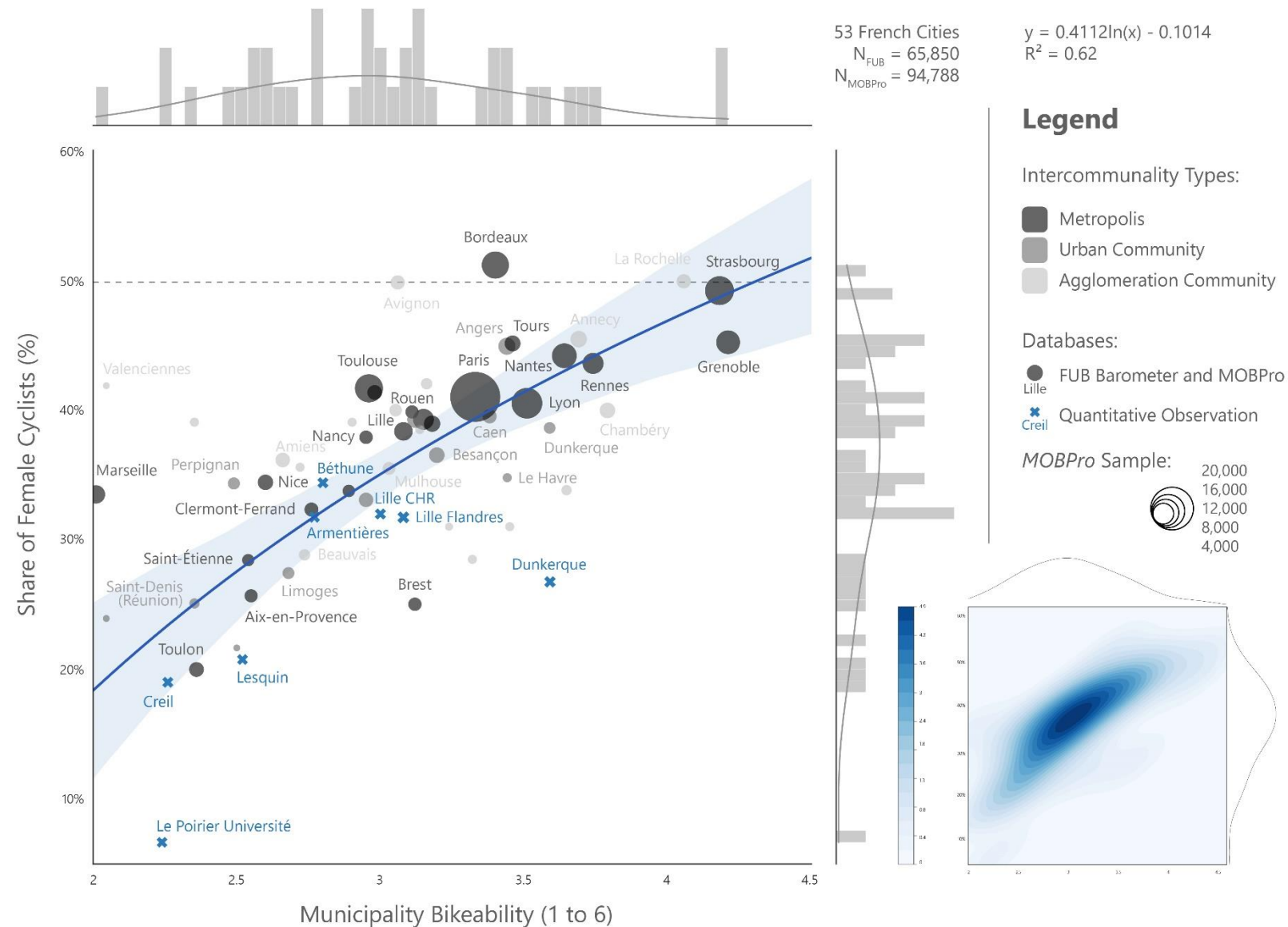


Fig.4: Linear Regression Model between the Proportion of Female Cyclists and the Perceived Bikeability in French Municipalities



# Bikeability Indicators

Main subfactors exerting substantial influence pertain to:

- Widespread **adoption** of bicycles (Q19);
- **Sense of safety** experienced during cycling (Q20);
- Safety on **residential** streets (Q22);
- **Promotion** of cycling (Q32);
- Playful and **enjoyable** aspect (Q14);
- Capacity to navigate **swiftly and directly** (Q15);
- Safety on **intersections** (Q24);
- Engaging cyclists in mobility and urban planning **projects** (Q33);
- Municipal **efforts** (Q31);
- **Quality** of the network (Q26);
- Safety on **main roads** (Q21).

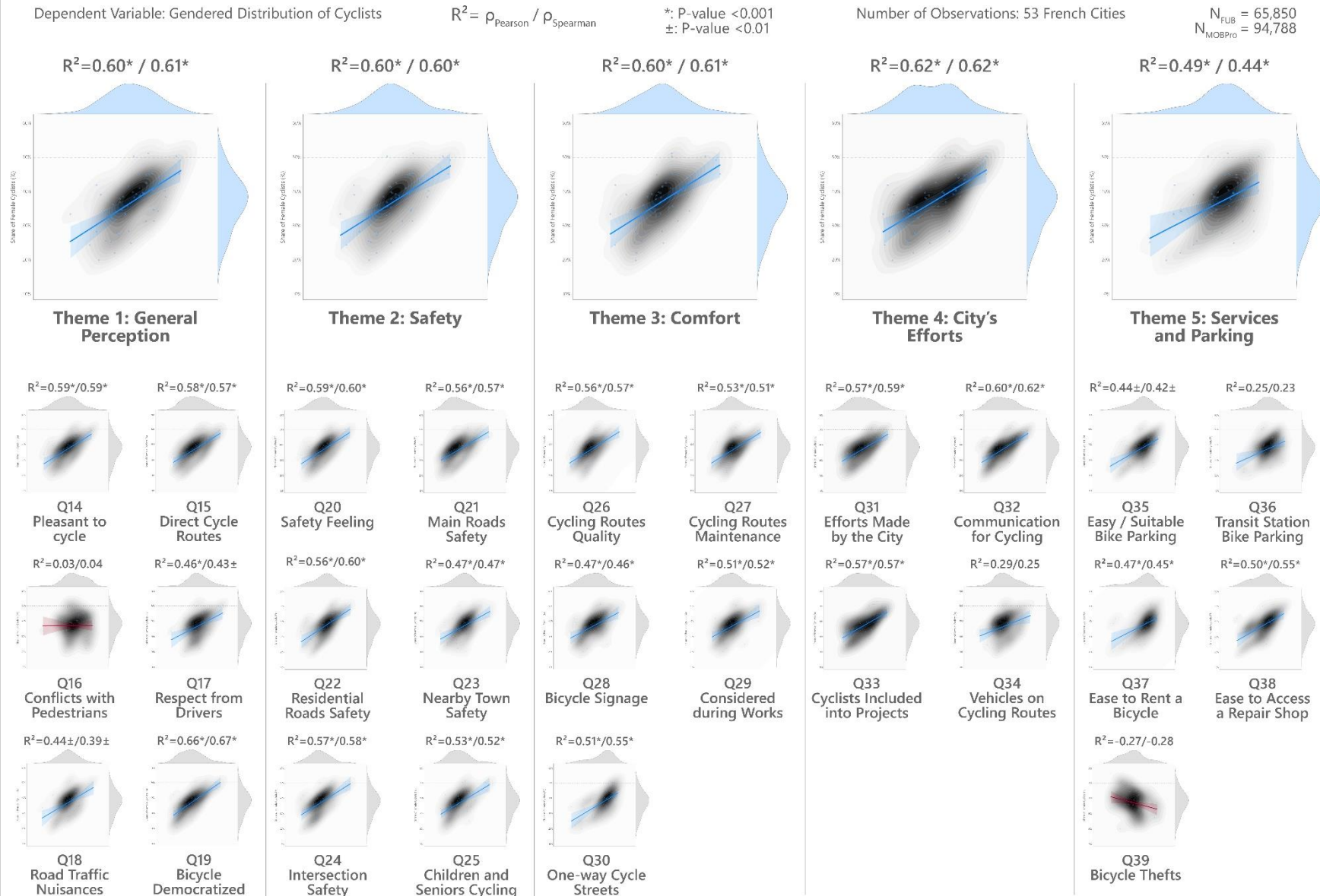


Fig.5: Linear Regression Model between the Gendered Distribution of Cycling and the Questions used to Aggregate the Perceived Bikeability Score by Municipality

# Objective and Perceived Bikeability

Independent Variables	$P_{\text{Pearson}}$	$P_{\text{Pearson}}$	$P_{\text{Spearman}}$	$P_{\text{Spearman}}$	SD
Bicycle Modal Share	0.729	<0.001	0.807	<0.001	0.037
Proportion of Cycling Infrastructure	0.647	<0.001	0.670	<0.001	0.071
Bikeability Score	0.619	<0.001	0.618	<0.001	0.499
City's Efforts (Theme 4)	0.618	<0.001	0.619	<0.001	0.645
General Perception (Theme 1)	0.603	<0.001	0.613	<0.001	0.523
Comfort (Theme 3)	0.598	<0.001	0.609	<0.001	0.545
Safety (Theme 2)	0.596	<0.001	0.604	<0.001	0.539
Services and Parking (Theme 5)	0.490	<0.001	0.438	<0.001	0.379
Proportion of Cycling and 30km/h Areas	0.347	<0.05	0.398	<0.001	0.218
Population Density	0.281	<0.05	0.396	<0.01	3,020.555

Table 1: Descriptive Statistics of the Linear Regression Model

Realization: Moinse, 2023

Aggregate outcomes of independent variables associated with the characteristics of the urban setting, evaluated by **objective geographical data** and **individual perception**.

# Classification

**Classification** of the 53 French cities based on their bikeability scores and the degree of feminization in cycling:

- **Bivariate** geostatistical analysis;

**Four categories:**

- 1. Gender-balanced and bicycle-supportive;
- 2. Gender-balanced yet unfavorable to cycling;
- 3. Gender-disparate yet bicycle supportive;
- 4. Gender disparate and unfavorable to cycling.

$I_{gcb}$  encompassing gendered use of bicycle ( $I_g$ ), its modal share ( $I_c$ ) and bikeability ( $I_b$ ):

- Average score of **0.098** and a median of **0.067**;
- Top ranking: **Strasbourg** (0.47), **Grenoble** (0.44), **La Rochelle** (0.34), and **Bordeaux** (0.32).

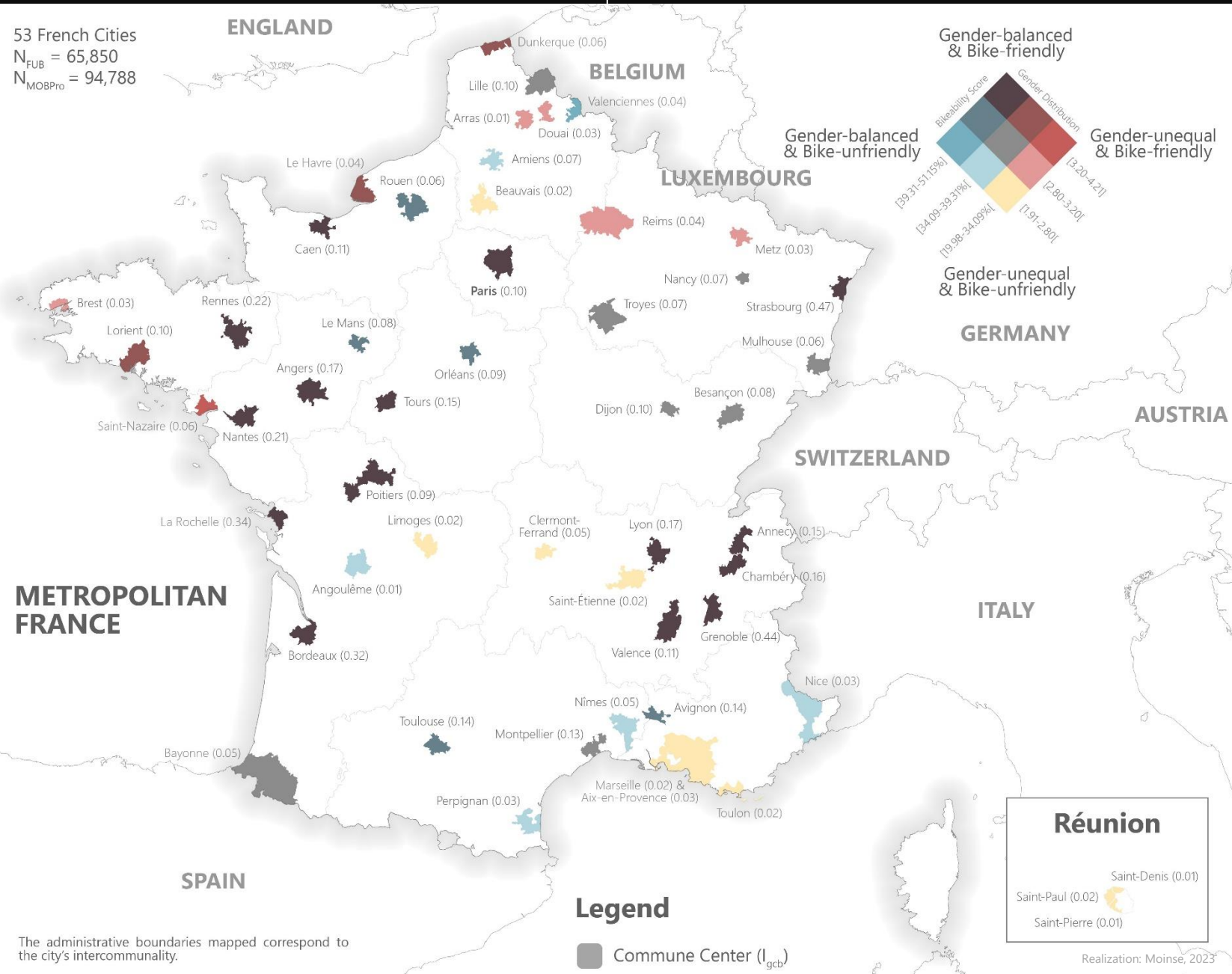


Fig.6: Bivariate Map of the 53 French Cities according to Gender Distribution, Cycling Use and Perceived Bikeability

The administrative boundaries mapped correspond to the city's intercommunality.

# Highlights

Statistically **significant association** among the modal share of cycling, perceived bikeability, and the proportion of female cyclists within the 53 French cities under examination:

- Consistent for both conventional **bicycle** and emerging **micromobility** alternatives;
- As well as both **unimodal** and **intermodal** journeys when integrated with train.

Achieving gender parity in cycling goes beyond mere considerations of “safety in numbers” or the presence of cycling infrastructure from an urban planning perspective:

- Key driver lies in the **perceived bike-friendliness** experienced by cyclists;
- Factors encompassing the normalization of cycling, the establishment of a secure environment facilitated by continuous, high-quality, and direct cycling infrastructure and the reduction of automobile traffic in residential streets and boulevards, the promotion of comfort and enjoyment in cycling, and proactive engagement by public authorities;
- Involves enhancing the “**bicycle system**” [26].

Female participation in cycling emerges as a noteworthy **indicator of a bicycle-friendly culture and environment**, with these elements mutually reinforcing each other [27]:

- These dimensions integrating social inclusivity resonate with the concept of the **15-Minute City** that advocates for an urban planning approach that fully embraces proximity, with feminist urbanism [28, 29].

[26] Héran, F. (2015). *Le retour de la bicyclette. Une histoire des déplacements urbains en Europe, de 1817 à 2050* (La Découverte (20 août 2015)).

[27] Garrard, J., Crawford, S., & Hakman, N. (2006). *Revolutions for Women: Increasing Women's Participation in Cycling for Recreation and Transport*. Final Report (p. 78). Deakin University.

[28] Bruntlett, M. (2022). *The 15-Minute City: A Feminist Utopia?* Transformative Urban Mobility Initiative (TUMI). <https://womenmobilize.org/pubs/the-15-minute-city-a-feminist-utopia/>

[29] Lanza, G., & Carboni, L. (2023, avril 12). *Un Indice Per Progettare la Città dei 15 Minuti: Inclusive Accessibility by Proximity Index - IAPI*. DiTe - Dinamiche territoriali. <https://www.dite-aisre.it/un-indice-per-progettare-la-citta-dei-15-minuti-inclusive-accessibility-by-proximity-index-iapi/>

# Contact

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### Preprint:

**HAL:** Dylan Moinse. *Exploring the Relationship Between Perceived Bikeability and Gender-Inclusive Micromobility Usage: A Study Across 53 French Cities.* 2023.

- <https://shs.hal.science/halshs-04266904>

**ResearchGate:** Dylan Moinse. *Exploring the Relationship Between Perceived Bikeability and Gender-Inclusive Micromobility Usage: A Study Across 53 French Cities.* 2023.

- [https://www.researchgate.net/publication/375462771\\_Exploring\\_the\\_Relationship\\_Between\\_Perceived\\_Bikeability\\_and\\_Gender\\_Inclusive\\_Micromobility\\_Usage\\_A\\_Study\\_Across\\_53\\_French\\_Cities](https://www.researchgate.net/publication/375462771_Exploring_the_Relationship_Between_Perceived_Bikeability_and_Gender_Inclusive_Micromobility_Usage_A_Study_Across_53_French_Cities)
- **DOI:** 10.13140/RG.2.2.22099.96801



# FUB's Baromètre des Villes Cyclables

ID	Questions	$\rho_{\text{Pearson}}$ / $\rho_{\text{Spearman}}$
<b>General Perception (Theme 1)</b>		
Q14	Pleasantness of cycling	0.59 / 0.59
Q15	Seamlessness of the cycling network	0.58 / 0.57
Q16	Potential conflicts between cyclists and pedestrians	0.03 / 0.04
Q17	Interactions with motorized vehicles	0.46 / 0.43
Q18	Density and speed of traffic	0.44 / 0.39
Q19	Democratization of cycling usage	0.66 / 0.67
<b>Safety (Theme 2)</b>		
Q20	Safety by cycling	0.59 / 0.60
Q21	Safety on major roads	0.56 / 0.57
Q22	Safety on residential streets	0.56 / 0.60
Q23	Safety by joining the neighboring cities	0.47 / 0.47
Q24	Safety by crossing intersections	0.57 / 0.58
Q25	Inclusivity for children and the elderly	0.53 / 0.52

ID	Questions	$\rho_{\text{Pearson}}$ / $\rho_{\text{Spearman}}$
<b>Comfort (Theme 3)</b>		
Q26	Quality levels associated with cycling routes	0.56 / 0.57
Q27	Maintenance of cycling routes	0.53 / 0.51
Q28	Presence of road signage	0.47 / 0.46
Q29	Provision of temporary roads during construction	0.51 / 0.52
Q30	Availability of dedicated one-way cycling lanes	0.51 / 0.55
<b>Municipal Efforts (Theme 4)</b>		
Q31	Initiatives undertaken by the city to promote cycling	0.57 / 0.59
Q32	City's communication efforts	0.60 / 0.62
Q33	Integration of cyclists into discussions on projects	0.57 / 0.57
Q34	Obstructive car parking	0.29 / 0.25
<b>Services and Parking (Theme 5)</b>		
Q35	Bicycle parking facilities in general	0.44 / 0.42
Q36	Bicycle parking at public transport stations	0.25 / 0.23
Q37	Accessibility of bicycle short/long-term rental services	0.47 / 0.45
Q38	Availability of bicycle stores and repair shops	0.50 / 0.55
Q39	Prevalence of bicycle theft incidents	-0.27 / -0.28

## Detailed Results

ID	City	I <sub>gcb</sub>	PMV	Density	AC	AC30
1	Strasbourg	0.47	17%	3,713	26%	37%
2	Grenoble	0.44	17%	8,728	36%	85%
3	La Rochelle	0.34	12%	2,716	18%	26%
4	Bordeaux	0.32	14%	5,264	23%	41%
5	Rennes	0.22	10%	4,415	33%	60%
6	Nantes	0.21	10%	4,920	27%	86%
7	Angers	0.17	8%	3,650	20%	53%
8	Lyon	0.17	9%	10,909	26%	47%
9	Chambéry	0.16	8%	2,819	19%	35%
10	Annecy	0.15	7%	1,919	15%	34%
11	Tours	0.15	7%	3,976	22%	71%
12	Toulouse	0.14	9%	4,210	21%	44%
13	Avignon	0.14	7%	1,396	22%	26%
14	Montpellier	0.13	8%	5,285	19%	84%
15	Valence	0.11	6%	1,736	18%	34%
16	Caen	0.11	6%	4,173	21%	29%
17	Dijon	0.10	6%	3,937	14%	21%
18	Lorient	0.10	6%	3,284	18%	79%

ID	City	I <sub>gcb</sub>	PMV	Density	AC	AC30
19	Lille	0.10	6%	6,783	23%	73%
20	Paris	0.10	5%	20,360	28%	91%
21	Orléans	0.09	5%	4,259	22%	38%
22	Poitiers	0.09	5%	2,138	14%	18%
23	Le Mans	0.08	5%	2,749	13%	22%
24	Besançon	0.08	5%	1,818	21%	41%
25	Troyes	0.07	5%	4,742	16%	25%
26	Nancy	0.07	4%	6,956	19%	46%
27	Amiens	0.07	5%	2,696	14%	21%
28	Dunkerque	0.06	3%	1,972	17%	34%
29	Saint-Nazaire	0.06	4%	1,536	11%	13%
30	Rouen	0.06	4%	5,341	22%	53%
31	Mulhouse	0.06	4%	4,871	15%	42%
32	Nîmes	0.05	4%	911	5%	8%
33	Bayonne	0.05	3%	2,399	19%	47%
34	Clermont-Ferrand	0.05	4%	3,452	9%	29%
35	Reims	0.04	3%	3,845	12%	27%
36	Le Havre	0.04	3%	3,532	13%	21%

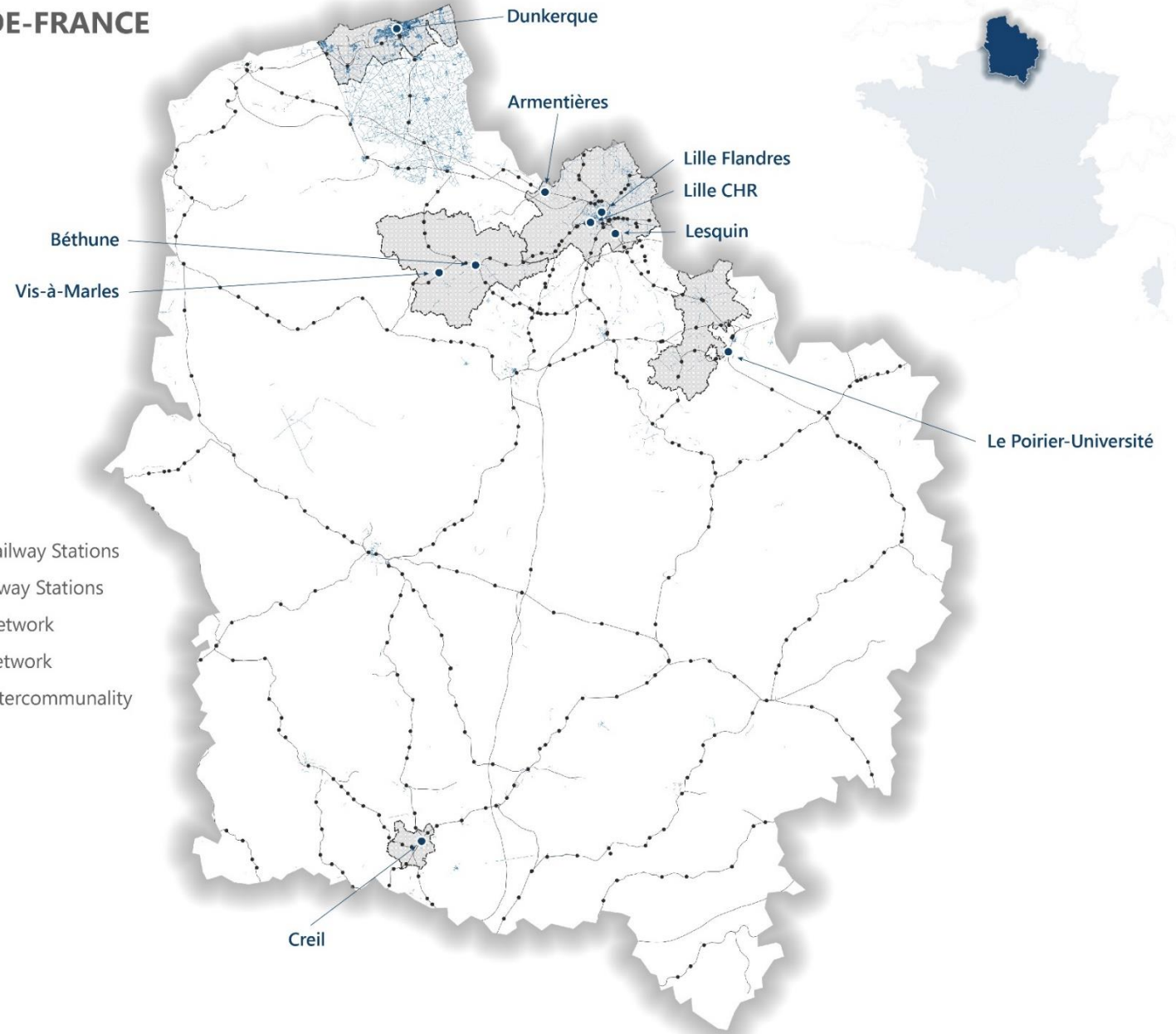
## Detailed Results

ID	City	$I_{gcb}$	PMV	Density	AC	AC30
37	Valenciennes	0.04	3%	3,093	13%	32%
38	Brest	0.03	3%	2,817	10%	39%
39	Metz	0.03	2%	2,866	16%	30%
40	Perpignan	0.03	3%	1,734	9%	37%
41	Douai	0.03	2%	2,360	22%	40%
42	Aix-en-Provence	0.03	3%	791	8%	16%
43	Nice	0.03	2%	4,776	5%	16%
44	Toulon	0.02	4%	4,194	6%	10%
45	Saint-Paul (La Réunion)	0.02	3%	432	ND	ND
46	Beauvais	0.02	2%	1,708	12%	22%
47	Limoges	0.02	2%	1,674	6%	10%
48	Marseille	0.02	2%	3,617	6%	13%
49	Saint-Etienne	0.02	2%	2,177	8%	12%
50	Saint-Denis (La Réunion)	0.01	2%	1,072	ND	ND
51	Angoulême	0.01	1%	1,895	8%	12%
52	Arras	0.01	1%	3,640	14%	59%
53	Saint-Pierre (La Réunion)	0.01	2%	874	ND	ND



# Quantitative Observation

## HAUTS-DE-FRANCE REGION



# Gender-based Bicycle Equity Index

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$$I_g = \frac{\text{Min}(G_{fc}, 50\%)}{50\%}$$

$$I_c = \frac{\text{Min}(C_{ms}, 25\%)}{25\%}$$

$$I_b = \frac{B_s}{6}$$

$$I_{gcb} = I_g * I_c * I_b$$

where:

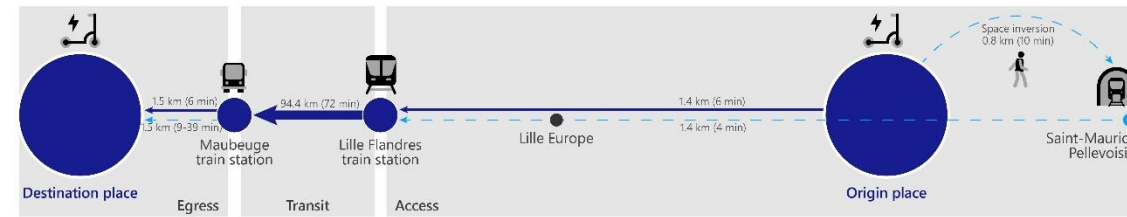
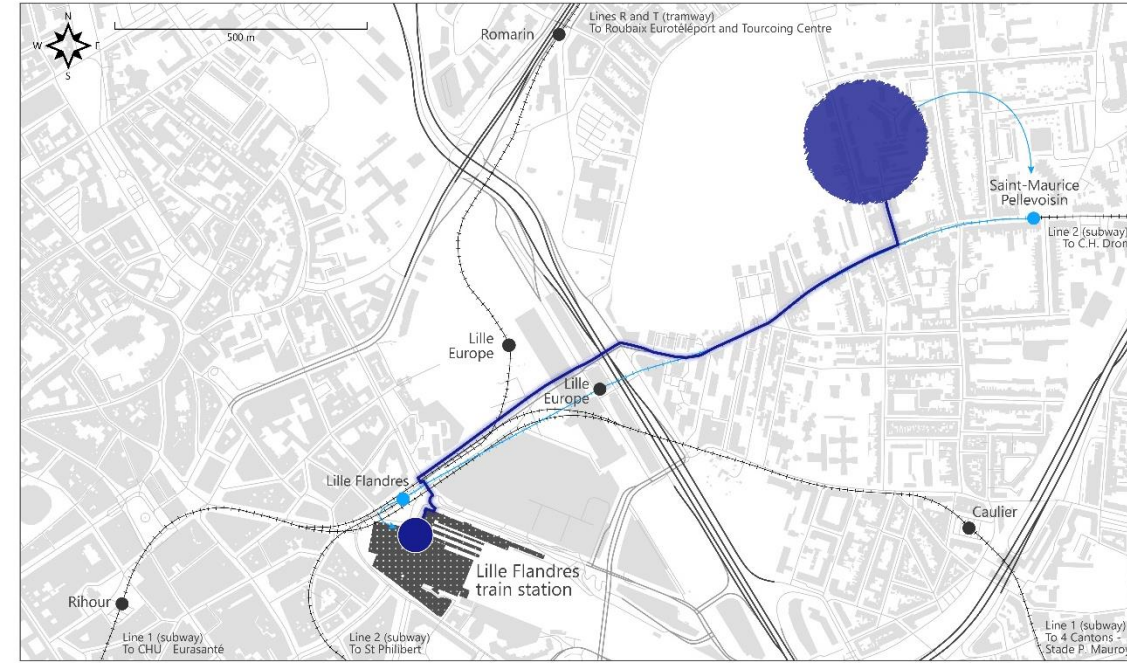
$I_g$  is the gendered share of cycling;

$I_c$  is the cycling modal share;

$I_b$  is the bikeability score of the municipality;

$I_{gcb}$  is gender equity in connection with cycling and bikeability.

# Ride-along Interviews



Segment	Access E-scooter	Walk-and-ride	Transit Regional train	Egress E-scooter	BUS (waiting time) + ride + walk
Modal choice					
Distance (km)	1.4	2.2	94.4	1.5	1.1 + 0.4
Time (min)	6	10 + 4	72	6	(0 to 30) + 5 + 4

## Legend

Ride-along interview (access trip)

- Origin place
- Departure train station
- Access trip by e-scooter

Alternative access trip

- Subway station
- Access trip by subway
- Walking access trip

Intermodal trip	Distance (km)	Time (min)
Micromobility + Train	97.3	84
Walk + Subway + Train + Bus	98.1	95 to 125

# Ride-along Interviews



# Ride-along Interviews



# Ride-along Interviews



# Ride-along Interviews



PCTE1<sub>E</sub> [00:48]

# Ride-along Interviews



PCTE1<sub>E</sub> [03:04]



# Ride-along Interviews

