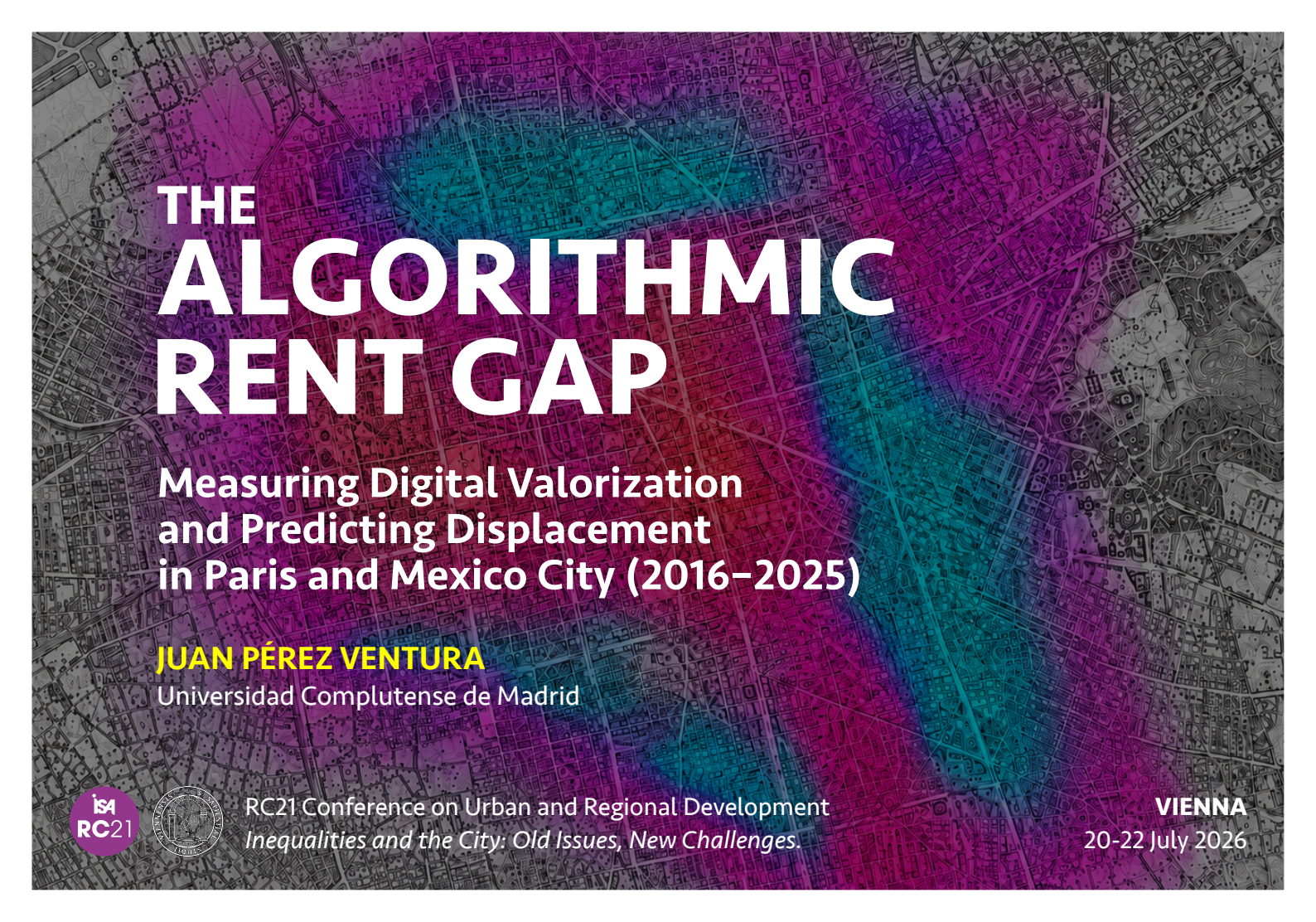




THE ALGORITHMIC RENT GAP

Measuring Digital Valorization
and Predicting Displacement
in Paris and Mexico City (2016–2025)

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isa
RC21



RC21 Conference on Urban and Regional Development
Inequalities and the City: Old Issues, New Challenges.

VIENNA

20-22 July 2026

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Neil Smith's **rent gap theory** (1979) explains gentrification as a movement of capital back into urban land. The key mechanism is the gap between:

**Current capitalized
ground rent**

what a property generates
under its present use

**Potential
ground rent**

what it could generate
after reinvestment
or a more profitable use



Neil Smith
1954-2012

Gentrification begins when
this gap becomes large enough
to attract capital

...but in the "platform city", this gap is no longer detected only by developers. It is increasingly detected, calculated and activated by algorithms...



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The Developer's City

20th-century dynamics



- **Agent:** The real estate developer and traditional capital.
- **Detection:** Human observation and physical inspection of deterioration.
- **Time cycle:** Slow. Based on material abandonment followed by demolition.
- **Evidence:** Morphological change and scaffolding in the urban landscape.

The Algorithmic City

21st-century dynamics



- **Agent:** Algorithms, digital platforms such as Airbnb, and global capital.
- **Detection:** Large-scale data processing: clicks, reviews, and availability.
- **Time cycle:** Dynamic and instantaneous. Profitability adjusted in real time.
- **Evidence:** Signals within the interface and changes in use without demolition.

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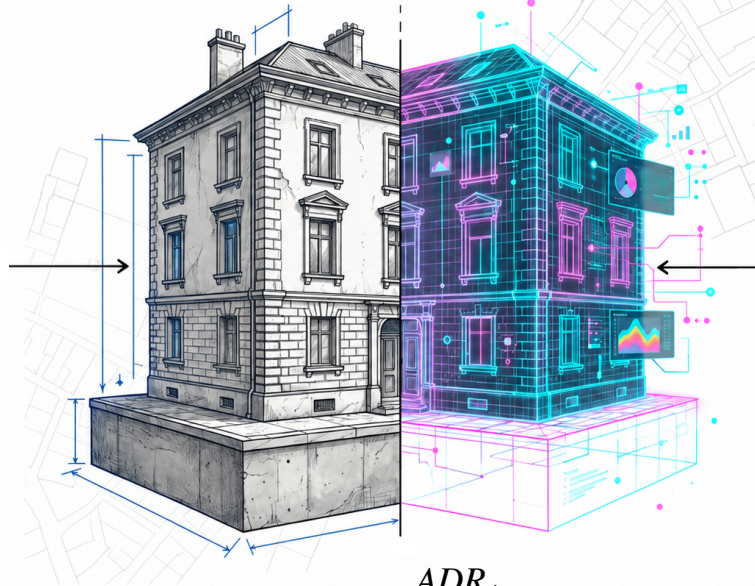
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The Algorithmic Rent Gap is the difference between institutional value—the value currently realized—and algorithmic value—the value that could potentially be captured through digital platforms.

the denominator: Institutional Value

Represented by the cadastral value of the property or the average formal sale price. It is a static, material value, regulated by the state and anchored to the territory.



the numerator: Algorithmic Value

Represented by the average daily rate on Airbnb (ADR). It is a fluid, computational value, driven by desire, global demand and digital visibility.

$$ARG = \frac{ADR_i}{P_{cat,i}}$$

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The formula is deliberately simple.

- the numerator captures the platform-mediated earning signal, approximated through Airbnb's Average Daily Rate.
- the denominator represents a more stabilized institutional or formal valuation.

The resulting quotient is normalized against each city's median.

$$ARG_i^{\text{raw}} = \frac{\text{Algorithmic Value}_i}{\text{Institutional Value}_i} \quad \rightarrow \quad ARG_i^{\text{relative}} = \frac{ARG_i^{\text{raw}}}{\text{Median} \left(ARG_{\text{city}}^{\text{raw}} \right)}$$

NORMALIZATION

The ARG does not measure financial returns, it's not a measure of profit. It compares how institutions and digital platforms value the same urban area.

ARG < 1 weaker-than-median divergence

ARG = 1 city median

ARG > 1 stronger-than-median divergence

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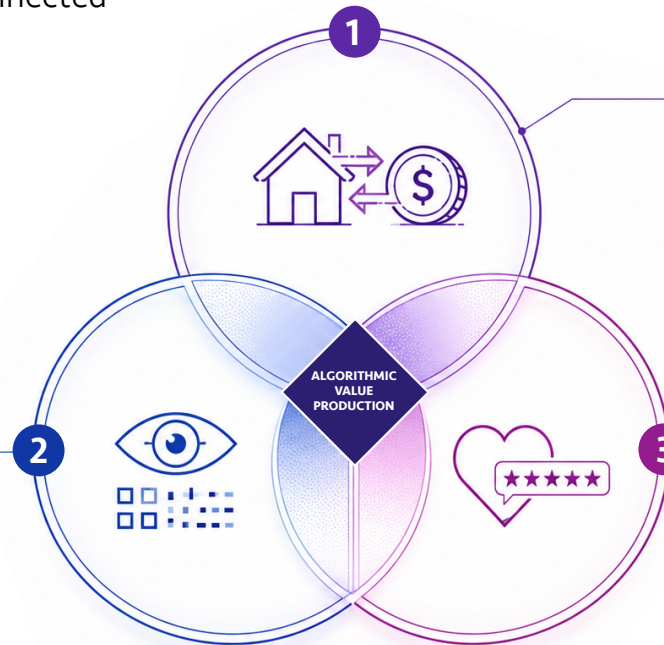
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Algorithmic value is produced through three interconnected dimensions.

● Legibility (Informational)

Algorithms make previously opaque territories visible, comparable, and actionable for global capital through dashboards, rankings and heatmaps.



Capture (Economic) ●

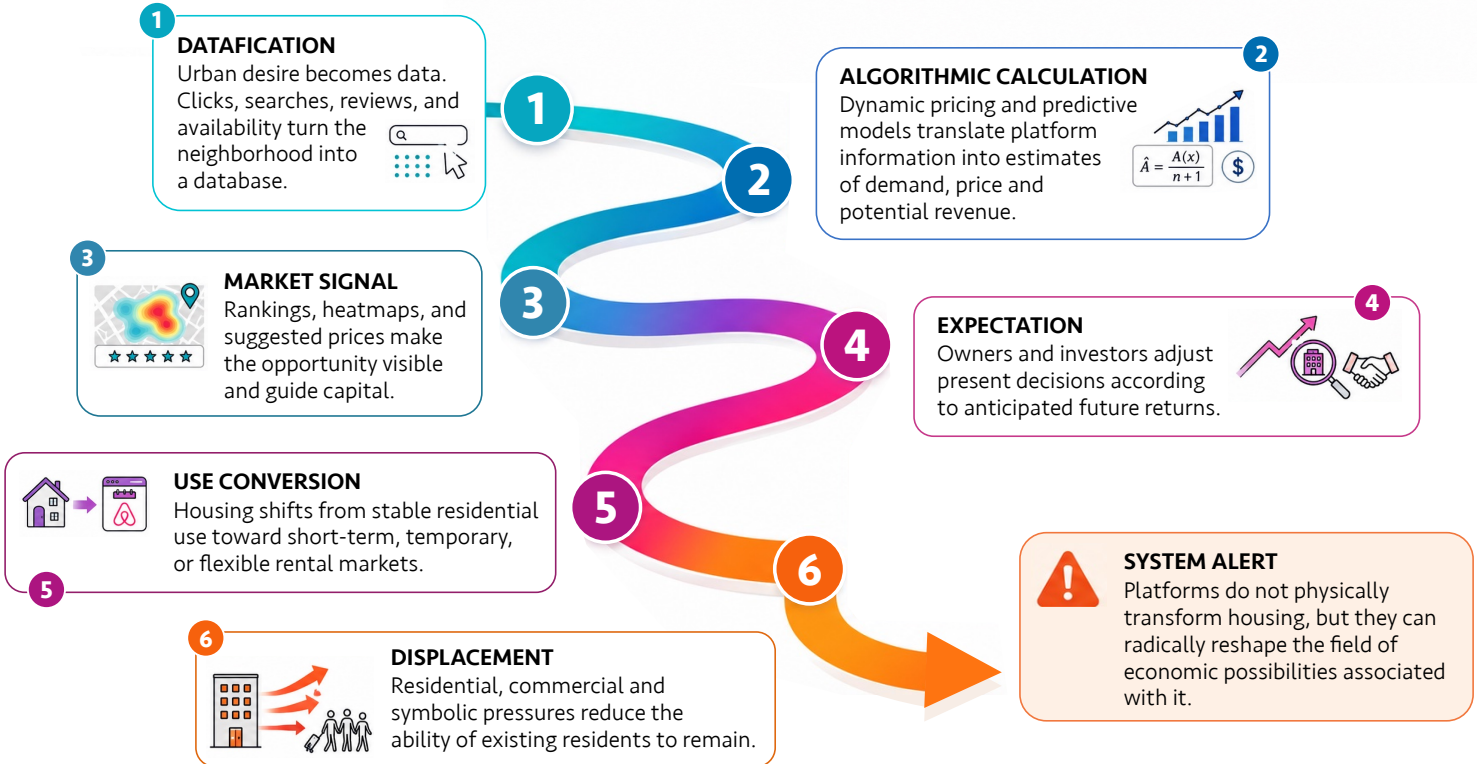
Platforms convert housing into a flexible and highly monetizable asset that can switch between residential and tourist uses.

Desire (Semiotic) ●

Potential value is amplified through the digital production of urban desire: platform-friendly aesthetics, "authenticity" narratives, and reputational capital.

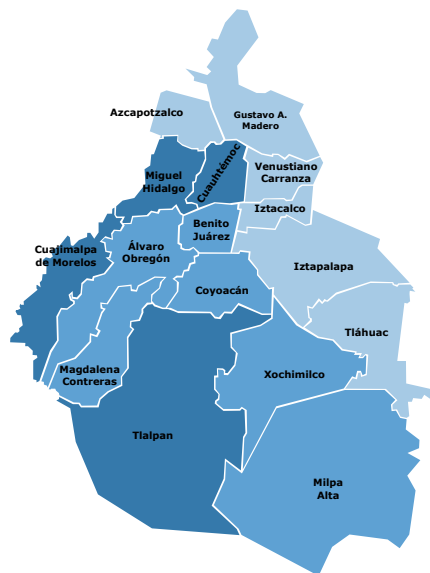
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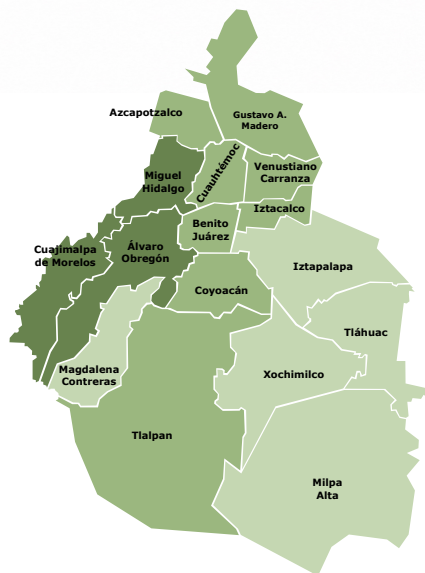
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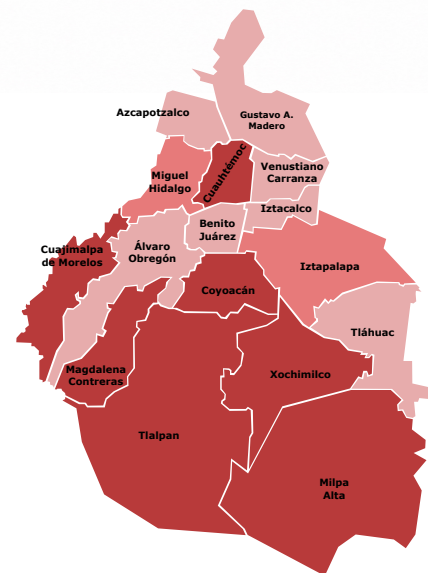
Average nightly price of listings

InsideAirbnb, 2025



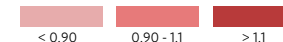
Official average value of residential land

Catastro, 2022



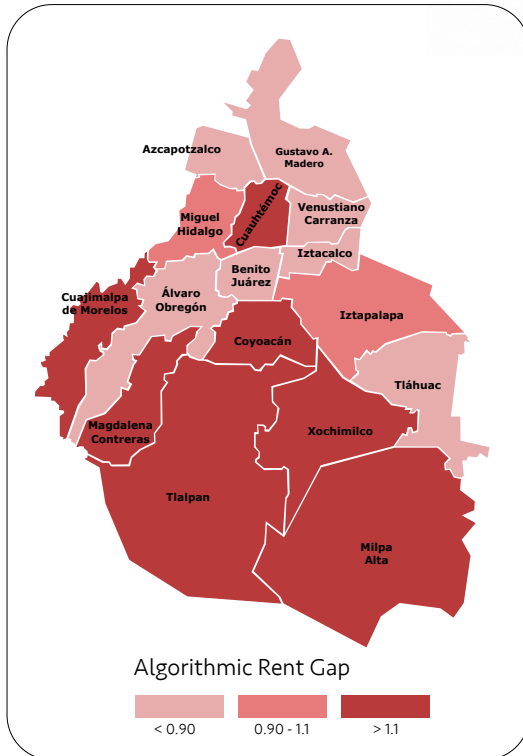
ARG

Algorithmic Rent Gap



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- The algorithmic layer projects its highest profitability towards the south and the semi-rural peripheries, targeting green edges, heritage, and authenticity in areas where land remains inexpensive.

👉 Rosales, G. (2024, January 25). Alcaldías que tendrán mayor valorización de casas y departamentos. Real Estate Market & Lifestyle.
<https://realestatemarket.com.mx/noticias/mercado-inmobiliario/44227-alcaldias-que-tendran-mayor-valorizacion-de-casas-y-departamentos>

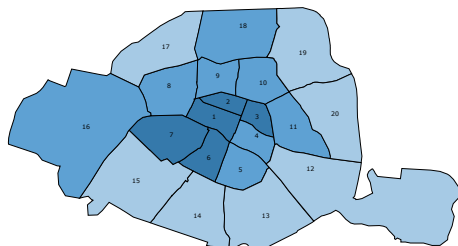
👉 Alcaldía de Tlalpan. (2025, June 18). Con “Vibra Tlalpan”, la alcaldía apuesta por el turismo cultural y ecológico en el marco del Mundial 2026.
<https://tlalpan.cdmx.gob.mx/con-vibra-tlalpan-la-alcaldia-apuesta-por-el-turismo-cultural-y-ecologico-en-el-marco-del-mundial-2026/>

👉 Secretaría de Turismo de la Ciudad de México. (2023, October 27). Xochimilco es una potencia turística y económica gracias a su cultura e historia: Martí Batres, durante nombramiento como “Barrio Mágico”.

CONFIRMED <https://www.turismo.cdmx.gob.mx/comunicacion/nota/xochimilco-es-una-potencia-turistica-y-economica-gracias-su-cultura-e-historia-marti-batres-durante-nombramiento-como-barrio-magico>

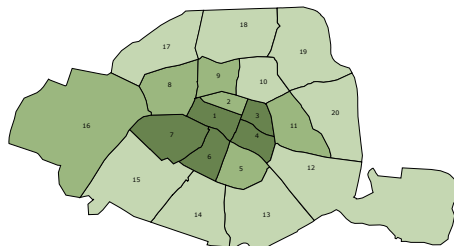
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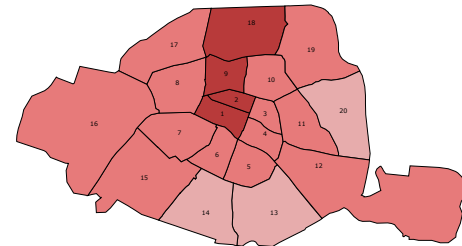
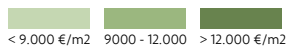
Average nightly price

various sources, 2024–2025



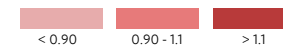
Average apartment transaction price

Chambre des Notaires, 2024



ARG

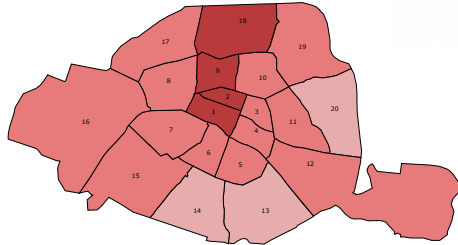
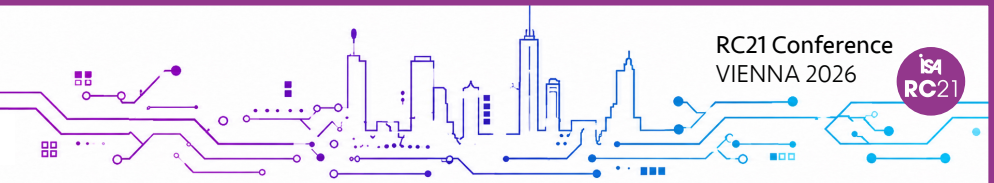
Algorithmic Rent Gap



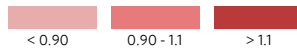
Because price fields were unavailable in the Inside Airbnb datasets for Paris, arrondissement-level ADR estimates were reconstructed using external market sources (AirDNA, Airtbics and GuestFavorites) and, where necessary, interpolated estimates.

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Algorithmic Rent Gap



- Formal transaction prices identify western Paris and the historic centre as the peaks of traditional real-estate value.
- However, the algorithm reorganizes this hierarchy. It extracts the highest relative returns from the vibrant northern and eastern edges, where cultural capital converges with comparatively more affordable property prices.

👉 Thomas, V. (2026). Locations meublées touristiques à Paris en 2025: Une offre en baisse dans un nouveau contexte réglementaire (Note n.º 281). Atelier parisien d'urbanisme.

https://www.apur.org/sites/default/files/2026-01/16p281_locations_meublees_touristiques_Paris.pdf

👉 Gourdon, J. (2025, July 22). « On devient des personnages d'un parc d'attractions » : la « disneylandisation » du quartier de Montmartre racontée par ses habitants. Le Monde.

https://www.lemonde.fr/economie/article/2025/07/22/a-paris-montmartre-face-a-une-pression-touristique-galopante-en-tant-qu-habitants-on-se-sent-comme-les-personnages-d-un-parc-d-attractions_6622885_3234.html

👉 Strickland, A. B., & Gravari-Barbas, M. (2025). Transforming Pigalle: The gentrified evolution of the Paris red-light district. In M. Gravari-Barbas & S. Guinand (Eds.), Handbook on tourism gentrification: Concepts, spaces, features (pp. 401-424). Edward Elgar Publishing.

<https://argaronline.com/doi/10.4337/9781035327355.00034>

CONFIRMED

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One platform logic, two situated geographies: in Mexico City, platform valuation discovers and expands value. In Paris, it reorders and intensifies existing value hierarchies.

	MEXICO CITY	PARIS
 Institutional context	Uneven cadastral valuation, territorial inequality and heterogeneous urbanization.	A mature, highly formalized and already intensively capitalized housing market.
 Spatial geography	Mature extraction in Cuauhtémoc and expansive green, cultural and semi-rural frontiers in Milpa Alta, Tlalpan, Xochimilco and La Magdalena Contreras.	Mature extraction in the hypercentre and symbolic inner frontiers in the 1st, 2nd, 9th, 10th and 18th arrondissements.
 Valued attributes	Landscape, heritage, environmental amenities and experiential authenticity.	Culture, nightlife, tourist visibility, neighbourhood reputation and urban authenticity.
 ARG structure	Wide, elastic and discontinuous.	Compressed and finely differentiated.
 ARG range	0.51–5.84 	0.84–1.31 
 Interpretation	Platforms can make value visible beyond the established geography of centrality.	Platforms refine the hierarchy of profitability within the consolidated city.

Why the difference?

The same platform logic is filtered through:

- Property markets
- Valuation systems
- Urban morphology
- Regulation
- Historical uneven development

These conditions determine where algorithmic value becomes visible, credible and actionable.

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Classical gentrification required scaffolding. Algorithmic gentrification begins in the mind of the property owner who sees the market signal on a screen.

↓ How algorithmic value signals **produce displacement** before physical redevelopment

DEFERRED

An investment fund buys and holds the property; the owner waits for the current lease to expire and then refuses to renew it. The expectation of future value alone produces displacement in the present.



DIRECT

The dwelling is explicitly and immediately converted into an Airbnb or coliving property, producing immediate physical displacement.



INDIRECT

A dramatic rise in the cost of living. Traditional neighbourhood businesses close and are replaced by specialty cafés and other businesses aimed at visitors.



SYMBOLIC

The original residents may continue to live in the neighbourhood, but algorithmic systems erase them from its visual, cultural and commercial narrative.



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The Algorithmic Rent Gap (ARG) is a diagnostic signal, not a proof of displacement.

WHAT IT CAN DO



Detect mismatches

Between platform-mediated value and institutional value.



Orient attention

Toward territories exposed to possible revalorization.



Generate hypotheses

For longitudinal and qualitative research.

WHAT IT CANNOT DO YET



Prove causality

A high ARG does not automatically mean displacement.



Replace fieldwork

Platform data cannot capture everyday life, conflict or belonging.



Avoid bias by itself

Platform data overrepresents some places and obscures others.

**The ARG shows where to look.
It does not replace looking.**



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The Algorithmic Rent Gap should move from private intelligence for investors to a public warning system for communities.

HOW WE WILL TEST THE ARG

- Track changes over time
- Move from districts to neighbourhoods
- Compare Airbnb with other platforms
- Interview residents, owners and public officials
- Verify the results through fieldwork

The ultimate value of the ARG lies not only in identifying urban pressure, but in enabling intervention before that pressure becomes displacement.

GOVERNANCE IMPLICATIONS



ALGORITHMIC TRANSPARENCY

Platforms should share pricing, ranking and visibility data.



PUBLIC AUDITING

Cities need observatories to monitor platform impacts on housing vulnerability.



PLACE-BASED REGULATION

ARG maps can help target quotas, caps, taxation and stricter controls in high-risk areas.

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Contemporary urban inequality is no longer produced only at the material level, but also at the informational level. Access to and control over data have become a new frontier of spatial justice.



THANK YOU FOR YOUR ATTENTION