FUTURE TRENDS

Report

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TRENDS RESEARCH & ADVISORY

Future Trends Report

Future Trends Report, published in English and Arabic by TRENDS Virtual Office in Montreal, stands out as a distinctive publication dedicated to highlighting:
1. the most important forward-looking studies that aim to identify future trends, analyze various variables that may influence these trends, and determine the best future scenarios.
2. the most important applied studies that explore the application of knowledge, scientific theories, and information to solve current problems and overcome future challenges.
3. the most important illustrative and graphic forms that visually summarize significant studies, helping readers understand the trends and challenges of the future world.

Contents

1 Prospective research

When and Why Do Users Trust AI in the Kitchen?

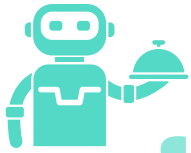
Garcia, S., Rossi, M., & Bianchi, L. (2025). When and why do users trust AI in the kitchen? A hybrid modeling approach to the adoption of AI-assisted cooking. International Journal of Human–Computer Interaction.

The authors explore in this paper the subtle dynamics of user trust in AI-assisted cooking tools within an era where AI permeates domestic spheres. Through the use of technology acceptance models and trust theory, the authors address this critical gap: AI-based recipe generators and smart kitchen devices are increasingly common; however, empirical insights into their diffusion are considerably lacking, especially relating to emotional and cognitive trust barriers in high-stakes daily activities such as meal preparation.

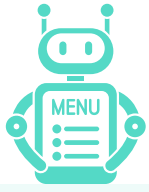
The study adopts a six-month prospective longitudinal design, enlisting 450 participants representing home cooks, amateur enthusiasts, and professional chefs through stratified online panels in Europe and North America. Participants used simulated AI systems involving generative models (e.g., ChatGPT-integrated applications) that allowed for recipe customization, ingredient substitution, and step-by-step instructions. Data collection combined pre- and post-intervention surveys using validated scales for perceived usefulness, ease of use, AI anxiety, and benevolence, interaction logs from app prototypes, and semi-structured interviews at three junctures. This resulted in a rich dataset with over 2,500 responses analyzed using a hybrid modeling framework: structural equation modeling for latent variable relationships and random forest machine learning to understand feature importance.

Key findings reveal multifaceted trust drivers. Perceived AI accuracy emerged as the strongest predictor, increasing adoption intentions by 42% in routine situations such as weeknight dinners. In contrast, AI anxiety, fueled by a lack of transparency in decision-making processes—the so-called "black box" effect—diminished trust by 31%, especially for older participants (above 55 years) and those with lower levels of technology literacy. Non-cognitive drivers included relational trust fostered by emotional factors such as anthropomorphic cues, which increased repeated use by 25%. Cultural differences emerged: for Europeans, data privacy had a higher priority, whereas for North Americans, personalization was more important. A hybrid model predicted 87% of sustained adoption, outperforming SEM alone through the identification of non-linear interactions, such as how high ease of use reduces anxiety with complex recipes. Discussion contextualizes these results against broader HCI trends, warning of dependency risks and ethical pitfalls such as biased algorithms favoring Western cuisines. The authors promote transparent and explainable AI interfaces—for example, a visual decision tree for substitutions—to foster benevolence perceptions.

This study ultimately underlines how AI can democratize culinary creativity, while human-centered design needs to foster genuine trust. Blending predictive analytics with user-centric insights, it provides actionable blueprints to developers, projecting trust-optimized tools to elevate daily kitchen interactions and foster healthier, more inclusive food practices by 2030. AI can democratize culinary creativity, while human-centered design needs to foster genuine trust.



AI-based recipe generators and smart kitchen devices are increasingly common.

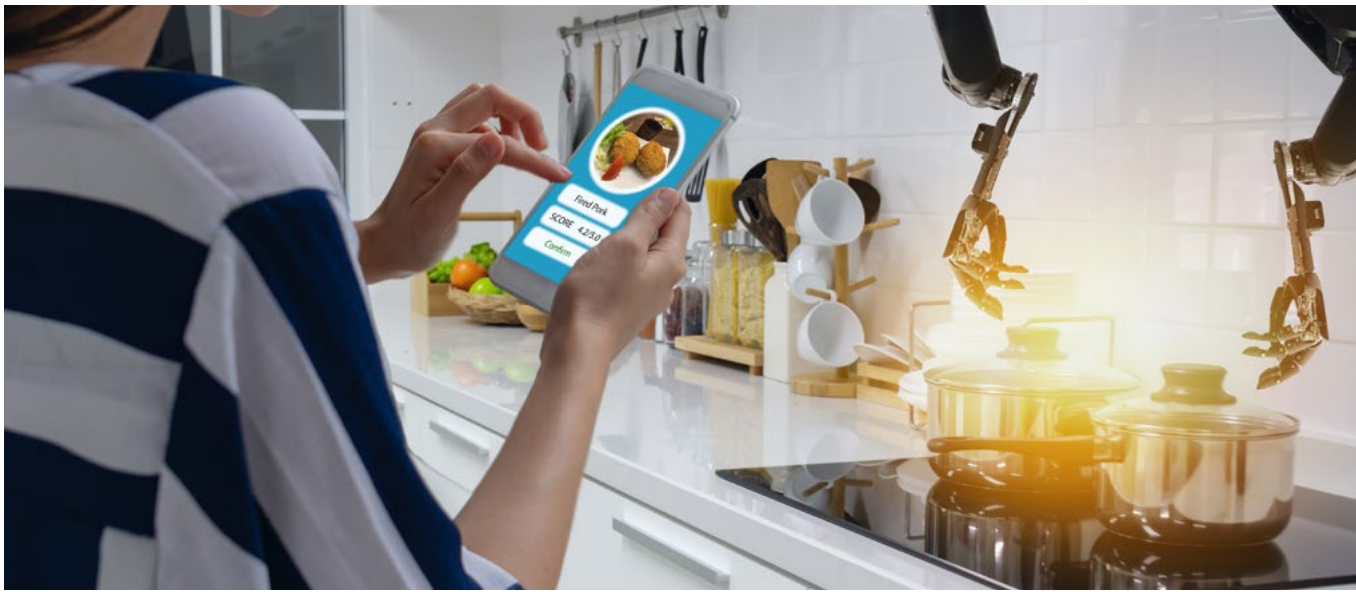


AI can democratize culinary creativity, while human-centered design needs to foster genuine trust.

Would You Trust an AI Chef?

Califano, G., Zhang, T., & Spence, C. (2024). Would you trust an AI chef? Examining what people think when AI becomes creative with food. International Journal of Gastronomy and Food Science, 37, Article 100970.

The 2024 article by Califano, Zhang, and Spence explores consumer attitudes toward AI-generated creative recipes, focusing on trust, novelty, and safety perceptions. Given the prior related work in food innovation and human-AI interaction, this study addresses a timely gap: as generative AI tools multiply, how do users respond when AI goes beyond mere replication into inventive territory?



The authors assume that while AI excels in efficiency, its "creativity" evokes skepticism due to anthropomorphism, cultural norms, and sensory expectations. The research design was prospective and experimental. A three-month field trial was conducted, enrolling 320 participants through online platforms in the UK (n=160) and Italy (n=160), balanced for age (18–65), gender, and cooking expertise. Participants used a custom AI app powered by fine-tuned large language models combined with flavor-pairing databases to generate 5–7 personalized creative recipes per session. For this study, creativity was operationalized as novel adaptations to constraints such as limited ingredients or dietary needs. Sensory data were supplemented by photo uploads as a basis for AI-assisted image analysis.

Results point to a trust paradox: although 68% of users trusted AI for routine tasks, such as substitutions in familiar dishes, satisfaction was high (average 7.2/9), and 75% intended to use it again. For creative outputs, however, trust dropped to 35%, revealing significant declines driven by perceived reliability for "off-putting novelty"—that is, unexpected combinations such as pairing chocolate with fish. UK participants pointed to possible safety fears, such as allergen risks from untested innovations, while Italians highlighted the loss of cultural authenticity. On the positive side, 42% said they enjoyed time-saving and inspiration, and mediation analysis confirmed that novelty perceptions enhanced experimentation by 22% among digitally savvy youth.

The discussion sets these findings within multisensory gastronomy and HCI literature, arguing for "trust-by-design" AI: transparent explanations—e.g., pop-ups with rationales—and hybrid modes that blend AI suggestions with human vetoes. Implications extend to industry—food tech firms could leverage this for targeted marketing, emphasizing verifiable creativity—and policy, advocating for AI literacy in culinary education to counter biases.

In summary, this research underlines AI's disruptive yet cautious role in creative cooking and projects that building calibrated trust could unlock a $50 billion market by 2030, yet warns against unchecked anthropic illusions eroding culinary agency. This prospective lens not only legitimizes user-centric innovation but equips stakeholders to navigate AI's flavorful frontier ethically.

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As generative AI tools multiply, how do users respond when AI goes beyond mere replication into inventive territory?

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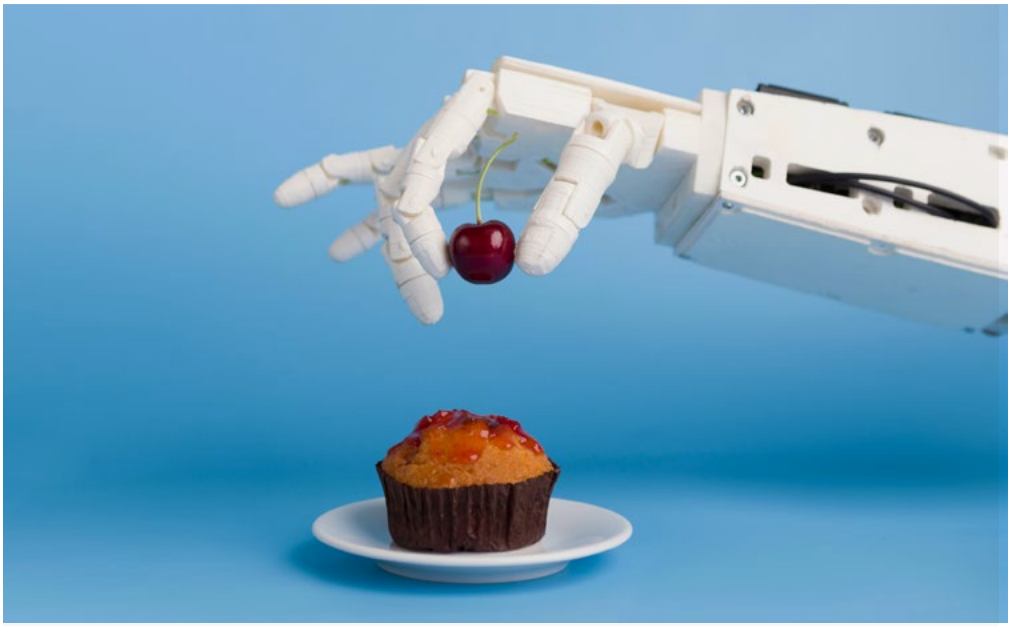
Prospective research

AI as the New Master Confectioner: Transformation in the Candy Industry

Wu, S., Zhang, M., Mujumdar, A. S., & Chu, C. (2025). Sweets and Smarts: A Comprehensive Review of AI Applications in Future Candy Research and Development. Food Reviews International, 1-23.

This review analyzes the transformative role and potential of AI across every stage of the confectionery value chain, from the processing of raw materials to consumer engagement. With increasing ingredient costs, strict health regulations, sustainability pressure, and fast-changing consumer preferences toward low-sugar and functional candies, the industry is increasingly looking to AI as a strategic tool for innovation and efficiency.



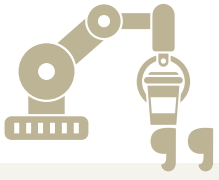
On a larger scale, flavor innovation, automated recipe design, real-time production optimization, rigorous quality control, predictive supply-chain management, and personalized marketing are driven by AI. Machine learning reduces the time to create novel flavor combinations and low-sugar formulations while shrinking trial-and-error cycles. Computer vision and smart sensors enable near-perfect defect detection and process monitoring, reducing waste by as much as 25% and downtime by 55%, according to reports from firms that adopt these technologies. Major manufacturers such as Mondelēz, Ferrero, Mars Wrigley, and Valio already tap into predictive analytics, computer vision quality systems, and AI-driven consumer insight platforms to optimize inventory and enhance the effectiveness of advertising—such as Mars's ACE tool, which can predict with 85% accuracy—and launch successful reduced-sugar products.

On a micro level, the review identifies emerging synergies between AI and glycoinformatics. The integration of sparse and complex glycan-structural databases with deep-learning models may predict glycosylation sites, metabolic consequences, and health effects of sugars for next-generation functional candies balancing indulgence with physiological benefits, such as stable glycemic response. Technologies reviewed include fuzzy logic and ANFIS for process control and consumer acceptance modeling, near-infrared spectroscopy coupled with machine learning for rapid non-destructive quality assessment, computer vision for 3D-printed confectionery precision, achieving 97-100% extrusion accuracy, and electronic-nose sensor arrays for objective aroma profiling.

Case studies by global giants and regional players highlight practical gains: AI-guided logistics on AGVs, predictive maintenance, zero-waste formulation platforms, and emotionally aware marketing analytics. Yet, amidst these advances, the authors identify consistent gaps in cross-disciplinary collaboration, which is still fragmented, lacks end-to-end AI frameworks, raises consumer trust issues regarding data privacy—especially for personalized health-focused candies—is based on incomplete standardized glycan databases, and has very limited industrial-scale validation regarding sustainability claims.

Looking ahead, the review sees AI driving sustainable sourcing, adaptive "future factories," and truly personalized functional confectionery if challenges in data ethics, regulatory alignment, and technological convergence are met through industry-academia-government collaboration. In this regard, AI is positioned not merely as a tool but as a driver for the necessary balance among creativity, public health demands, operational efficiency, and environmental responsibilities in the future global candy sector.

Increasing costs, tougher regulations, sustainability demands, and changing tastes are driving greater use of AI in confectionery.



AI–glycoinformatics integration is driving functional candies that optimize taste and metabolic health.

Prospective research

Navigating Canada's Food and Agricultural Import Landscape: A 2025 Regulatory Overview

Foreign Agricultural Service. (2025, March 12). Food and Agricultural Import Regulations and Standards Country Report: Canada (FAIRS Annual Report No. CA2025-0023).

The U.S. Department of Agriculture's Foreign Agricultural Service (FAS) Food and Agricultural Import Regulations and Standards (FAIRS) Annual Country Report for Canada, CA2025-0023, dated March 12, 2025, provides a thorough guide to the changing regulatory environment for U.S.

exporters. Specifically, the Safe Food for Canadians Act and Regulations, enforced since 2019, consolidate oversight with the CFIA, shifting resources toward preventive controls, traceability, and licensing for importers, including non-resident U.S. entities from equivalent systems. Health Canada regulates additives, contaminants, and nutrition under the Food and Drugs Act. This framework simplifies safety while addressing health, sustainability, and linguistic considerations.

Nutritional and other key updates since the 2024 report include the following: Quebec Bill 96 requires that trademarks and packaging must be in French by June 2025 (potentially requiring bilingual redesigns); the Federal Plastics Registry requires annual reporting on plastic use from Canadian companies, while single-use bans have been delayed because of litigation—an expected decision summer 2025; HC's Healthy Eating Strategy includes FOPNL enforcement for high-sugar/sodium/fat foods as of January 2026, and restrictions on child-directed advertising for those under 13 (drafts by late 2025); sodium targets: 15-20% reductions in processed items by 2025; and biotech easings: CFIA's May 2024 guidance allows gene-edited livestock feeds to be treated like conventional feeds in cases where the traits match, which extends previous policy for crops.

Product-specific requirements emphasize ways in which compliance is rigorous. Meat/poultry requires CFIA-approved USDA FSIS facilities; bison requires BSE-verified exports, and natural casings must have certificates from May 2025. Dairy/eggs require Salmonella controls for U.S. shell eggs and FSIS registration of processed products. Grains/processed foods are under SFCR traceability; novel traits need HC pre-market assessments, while test-market exemptions provide an exemption to allow non-compliant launches. Fruits/vegetables require CFIA grades and lot codes; California/Arizona leafy greens require marketing agreements, with bans on romaine for E. coli. Sanitary/phytosanitary measures allow zero tolerance for unregistered pesticides (>0.1 ppm), while packaging conforms to SFCR standards, prohibiting items such as straws and promoting recyclables. There is no requirement for any special equipment; however, licensing is simplified with digital tools such as My CFIA.

Challenges include fragmented provincial rules and ethical data privacy in health claims, but there are many opportunities through ministerial exemptions for shortages and U.S. equivalency. Contacts: CFIA for imports, HC for contaminants, PMRA for pesticides. The following report prepares exporters for navigating these barriers to achieve over $30 billion annually in U.S.-Canada agri-trade.

AI–glycoinformatics integration is driving functional candies that optimize taste and metabolic health.

Sanitary/phytosanitary measures allow zero tolerance for unregistered pesticides.

Prospective research

U.S.-Canada Energy Trade: A $151 Billion Nexus in 2024 Amid Tariff Turbulence

U.S. Energy Information Administration. (2025, March 20). Last year's U.S.-Canada energy trade was valued at around $150 billion. Today in Energy.

According to the report "Today in Energy" by the U.S. Energy Information Administration, the United States-Canada bilateral energy trade remained strong at approximately $151 billion in 2024, relatively unchanged from $154 billion in 2023.

This stability conceals dynamics wherein increased trade volumes of key commodities are offset by decreases in their prices, emphasizing interdependence between the North American energy markets. Meanwhile, U.S. imports from Canada, at $124 billion, accounted for 82% of the total, with exports at $27 billion to Canada, underlining Canada's leading position as a supplier of crude oil and natural gas that fuels U.S. demand.

Crude oil accounted for more than 70% of the value of imports. Canada shipped an average of 4.1 million barrels per day to the U.S. in 2024, up 5% from 2023, due to the commissioning of the TMX pipeline, which raised exports from Alberta's oil sands to British Columbia for West Coast refineries. U.S. refineries continue to favor Canada's heavy, sour crudes for their yield in high-value products like diesel. Meanwhile, U.S. crude exports to Canada averaged 360,000 b/d, mostly light, low-sulfur grades, to eastern refineries.

Natural gas trade, worth a fraction but volumetrically significant compared to crude, imported from Canada averaged 8.5 billion cubic feet per day, up 7%, as pipeline imports into western and central border states increased. U.S. exports to Canada declined 3% to 2.7 Bcf/d, mostly from the Northeast into Ontario. Values plunged: imports fell 43%, and exports declined 37%, due to a 40% drop in spot prices. Electricity trade, though minor (less than 5% of total value), was import-heavy at 72% and was used as a flexible buffer during peak periods, with net flows from Ontario and Quebec into states such as New York and Michigan.

Policy and infrastructure shaped these flows. The TMX's 590,000 b/d capacity cemented U.S. market access, and integrated pipelines create resilience. Some crude may be exempt from the tariffs under the terms of the USMCA, but volumes still decreased: U.S. imports declined by 5%, and exports by 28% in March-April 2025 compared with 2024. Looking ahead, this report projects steady trade barring escalation, given U.S. refineries' reliance on Canadian heavy oil, as well as pipeline interconnections that help buffer shocks. With $150 billion riding on this North American energy security corridor, policymakers must carefully navigate tariffs to preserve efficiency and possibly prevent the greater economic ripple effects of refining, manufacturing, and reducing emissions.

Policymakers must carefully navigate tariffs to preserve economic efficiency and avoid wider ripple effects across refining, manufacturing, and emissions-reduction efforts.

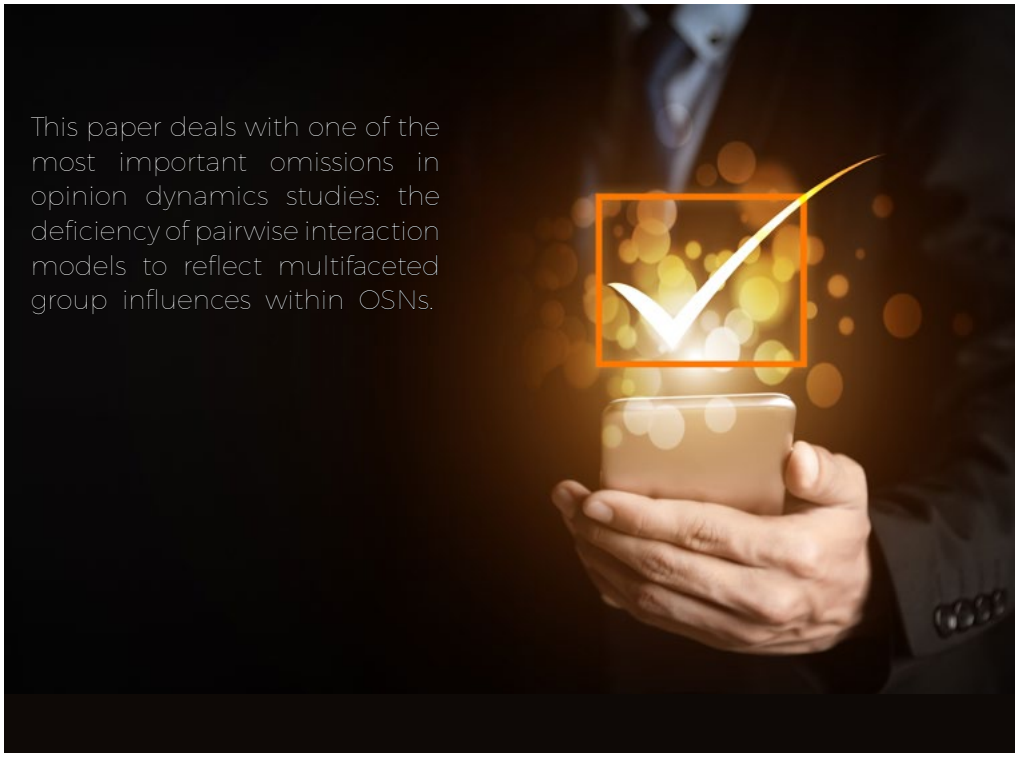
U.S. imports from Canada reached $124 billion—representing 82% of the total—while U.S. exports to Canada amounted to $27 billion.

Policymakers must carefully navigate tariffs to preserve economic efficiency and avoid wider ripple effects across refining, manufacturing, and emissions-reduction efforts.

2 Applied research

Hypergraphs and Social Judgment: Modeling Group-Driven Opinion Dynamics in Online Networks

Liu, Y., Zhang, X., & Wang, L. (2025). An opinion evolution model for online social networks considering higher-order interactions. PLOS ONE, 20(4), Article e0321718.https://doi.org/10.1371/journal.pone.0321718



Many traditional models, such as the DeGroot or Hegselmann-Krause frameworks, rely solely on one-to-one links and neglect more complex higher-order interactions, such as group chats, viral threads, or community debates, which catalyze information diffusion and opinion fluctuation. By incorporating insights from hypergraph theory and social judgment theory, the authors introduce a new hybrid model that integrates information diffusion, represented by the SEIR compartments, with bounded-confidence opinion updates. The base of this model is a hypergraph, in which vertices represent users and hyperedges connect multiple nodes to model group interactions, such as the average size of a hyperedge being 5.25 in real Enron email data. Networks are created using a Barabási-Albert (BA) scale-free algorithm: nodes and hyperedges are added iteratively with preferential attachment, resulting in power-law degree distributions. Opinion evolution happens in two steps: first, information diffuses according to the SEIR framework, wherein susceptible (S) users become exposed (E) based on an exposure probability, then infected at an infection rate, and finally removed (R) at recovery.

In E/I states, opinions update via group interactions, moderated by social judgment theory's three zones relative to the hyperedge mean: acceptance, assimilation, non-commitment, neutrality, rejection, and contrast. Zone latitudes scale with user involvement, with parameter and ratio tuning for assimilation versus contrast.

Simulations on synthetic networks reveal transformative effects. A convergence of opinions occurs to a moderate mean with low variance, rapidly diminishing extremes and promoting "soft consensus" in homogeneous clusters. For completeness, increasing the diffusion rates precipitates peaks and develops coverage sooner, while the optimum that minimizes balances zones. Finally, larger hyperedge sizes decrease for high—promoting assimilation—but increase divergence otherwise, with little sensitivity exhibited to the average hyperdegree. The network generation parameters confirm that scale-free structures enhance group cohesion.

Discussion places findings in context: higher-order motifs speed up information cascades and consensus, which are in turn aligned with empirical OSN polarization, such as echo chambers. Limitations include static hyperedges and the absence of machine learning for dynamic adaptation; future extensions may consider temporal evolution or adversarial influences. This model will provide researchers and policymakers with an apparatus for predicting opinion trajectories with the goal of strategizing misinformation mitigation and democratic discourse in hypersocial media landscapes.

A hyper-graph-based hybrid model captures group influences and SEIR informa-tion flows that traditional pair-wise opinion models over-look.

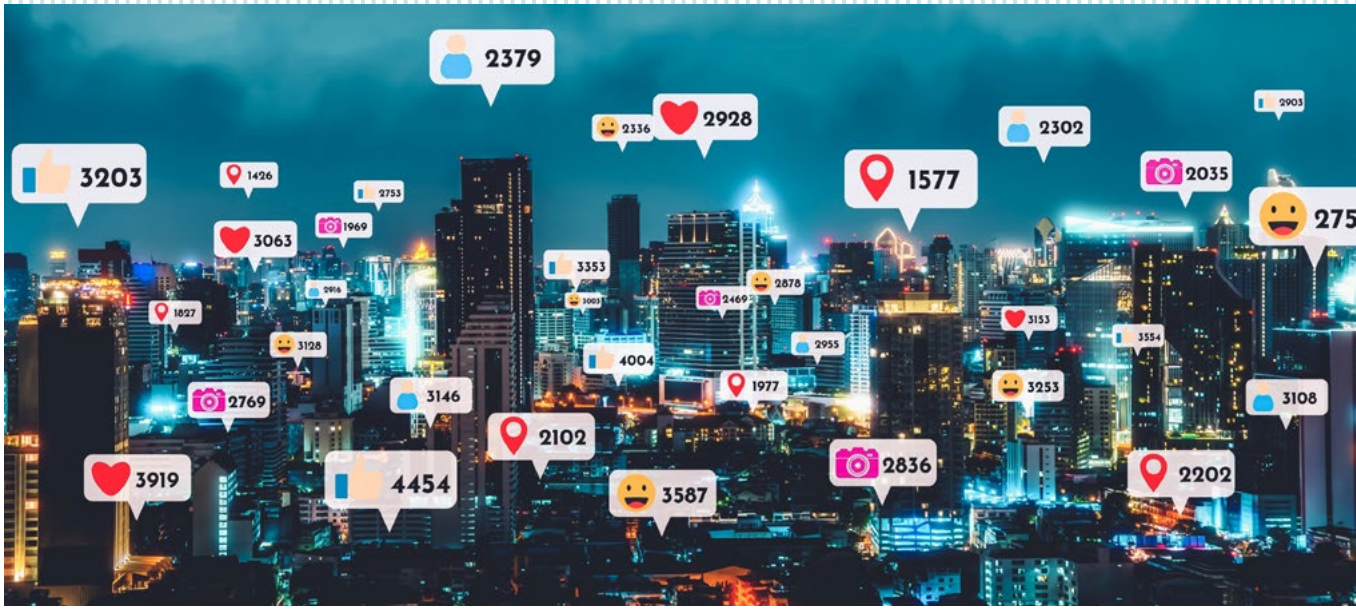
Simulations demonstrate that diffusion and hypergraph structure determine consensus or divergence, with scale-free networks promoting strong cohesion.

Applied research

Digital Disconnect: How Internet Use Erodes Social Trust in China via Fairness Perceptions

Miao, Q., Kuang, Y., Yang, X., Chen, Y., & Tian, X. (2025). Internet use and social trust: Empirical analysis based on CGSS2021. Frontiers in Sociology, 9, Article 1422731.

This article investigates the nuanced relationship between digital engagement and interpersonal trust in contemporary China. With the rapid digitalization of China, which boasts 1.067 billion internet users and 75.6% penetration by 2022, the study further probes whether faceless and information-saturated virtual interactions have broken down the social bond.



Drawing on cultivation theory, social exchange theory, and negativity bias, this study hypothesizes that internet use not only crowds out face-to-face interaction but also shapes people's views about the just distribution of social resources, which eventually decreases generalized trust in strangers. The research fills a lacuna in existing literature by unpacking the mediating role played by perceived social fairness and the moderating role of social support, hence providing empirical lessons for policymakers navigating the "digital divide" in trust dynamics.

The methodologically sound analysis is based on a nationally representative sample of 6,220 respondents, starting with 8,148 initial cases, with missing data excluded. The dependent variable—social trust—is captured through a single 5-point Likert item: "Almost everyone is trustworthy." Internet use, the key independent variable, measures self-reported frequency on a 5-point scale, reflecting mobile and desktop access. The mediator in this model is perceived social fairness, based on subjective equity judgments about "Today's society is fair or unfair." Social support is treated as a moderator; this has been aggregated into a 3-point scale based on the frequency of recreational interactions with friends/neighbors. Controls are included for demographic information such as age, gender, and marital status, as well as socioeconomic factors, including education, hukou status, health, and political affiliation.

Internet use has a significant negative direct effect on social trust, confirming H1 and aligning with prior evidence that virtual anonymity fosters unpredictability and time substitution diminishes social capital. This negative influence is fully mediated by declined fairness perceptions. Experiences of injustice online amplify relative deprivation and impair equity senses, consequently affecting trust reciprocity according to social exchange theory.

Mechanisms are illuminated wherein negativity bias, emanating from conflicting online content, amplifies distrust, while the support-stress-buffering function begets resilience. The main policy implications are, respectively, content moderation aimed at suppressing misinformation, equity-oriented reforms such as income redistribution, and initiatives encouraging hybrid offline-online interactions to potentiate support's protective effects.

In all, this study sheds light on the "trust tax" of internet use in China—that is, fairness erosion mediated yet relational buffer mitigated—and calls for a balanced digital ecosystem to safeguard social cohesion in the face of technological ubiquity.

Rising internet use in China diminishes interpersonal trust through reduced offline interaction and shifting perceptions of social fairness.

Internet use has a significant negative direct effect on social trust.

Applied research

Empowering the AI Frontier: Insights from the UK Workplace Pilot on Generative AI Adoption and Skills Transformation

Public First. (2025). AI works: A people-first skills pilot, exploring AI adoption in the workplace. Google Public Policy Research Report.

This Google Public Policy Research Report demystifies the transformative potential of generative AI for UK economic growth—£400 billion, £200 billion of which is dependent on workforce take-up—and simultaneously exposes stark adoption disparities alongside the catalytic function of targeted training.

In the wake of 34% of UK workers using GenAI, 75% do so every week, and 50% every day. The report shows a "worker-led" revolution wherein 71% initiated its use without employer prompting, but 66% reported no engagement in the past year. Use falls to high earners (£100,000+: 80%), with a predominance of younger males under 35 years of age. Women over 55 are four times less likely to use it; this figure declines with both age and income brackets. Main uses include communications/writing at 59% and document summarization at 59%, but pre-training frequency is only 44% daily; therefore, there is considerable slack in the harnessing of productive efficiency. The pilot ran from August 2024 to March 2025, spanning three cohorts: education, comprising 475 staff; unions, comprising 404 members, totaling over 1,800 participants. A mixed-method approach combined quantitative surveys at baseline (n=1,245 in total), qualitative focus groups, and bespoke interventions: 2.5 to 5-hour modular workshops on prompting, ethics, and sector-specific demos—for example, lesson planning in education—complemented by webinars, 1:1 support, and 3-month follow-ups (n=321 impact assessments). Embedding principles of habit formation—spaced learning, peer cues, and immediate wins—promoted scalability, resulting in a 10:1 ROI compared with a 1:2 return from traditional skills programs.

Results show the multiplier effect of training: in cohorts, the usage of AI more than doubled or tripled; education daily rates surged from 19% to 47% and weekly from 46% to 78%; unions from 9% to 29% and from 17% to 61%; and SMBs from 29% to 60% and to 86% on a weekly basis. Sentiments flipped from fear—38% barrier: perceived irrelevance—to enthusiasm: over 80% enjoyed AI after training, innovating novel applications; 80% independently experimented, with quotes from education such as Cheryl Narayanan ("It's given me a lot of hope, a confidence boost").

Recommendations include explicit permissions, scaling modularly via Skills England, public-sector guarantees, AI leaders for each department, and annual audits. Future implications caution against inequality risks without intervention. High awareness but low habitual use could stifle growth—93% of SMBs are confident in their ability to use AI post-training—but affirm that training has spread organically, fostering a resilient and innovative workforce attuned to responsible AI ethics.

UK GenAI use is widespread—34% overall, 75% weekly, 50% daily—yet women over 55 are four times less likely to adopt it.

Key recommendations call for explicit permissions, modular scaling, departmental AI leads, and annual audits.

Applied research

Balancing Borders and Booms: Decoding Canada's 2025-2027 Immigration Pivot for Provincial Prosperity

McCarthy Tétrault. (2025). The impacts of the 2025–2027 Immigration Levels Plan on provincial labour markets: An applied analysis of policy reforms (Policy Brief). Spotlight on Asia Series.

The McCarthy Tétrault policy brief dissects the federal government's recasting of immigration amid surging pressures on housing, infrastructure, and services.

Authored by Montréal-based counsel, the analysis spotlights the initial restrictiveness of the 2025-2027 Immigration Levels Plan, which slashed permanent resident targets by 21% from 2024's 500,000 to 395,000 in 2025, 380,000 in 2026, and 365,000 in 2027, followed by a swift partial reversal on October 16, 2025, under new Minister Lena Metlege Diab. The core plan objectives—fostering sustainable growth, improving Francophone competence, and focusing on high-demand sectors in health, education, and skilled trades—meet provincial labour imperatives. The in-country work experience factors in Express Entry and the CEC now inflate CRS scores, axe job offer points, and extend processing times. PNPs, critical for regional tuning, suffered draconian cuts from the outset: Nova Scotia's quota was cut by half, from 3,570 to 1,785; Manitoba faced similar cuts; and Alberta took a hit despite dire shortages in construction and the trades. Provincial protest quickly jammed the project pipeline, driving down employer approval rates and hurting rural economic recoveries—Nova Scotia's immigration totals, for example, fell from 6,300 in 2024 to 3,150 in 2025.

The mid-October adjustment signals federal responsiveness: Nova Scotia regains 559 PNP spots, Manitoba secures 1,500 more nominations, and similar boosts extend to New Brunswick, Newfoundland and Labrador, and Saskatchewan. These restorations empower provinces to nominate skill-aligned candidates, mitigating disruptions in non-metropolitan areas where labour gaps in healthcare and trades exacerbate service delays and GDP drags. On the sectoral side, reforms have funneled talent into priority streams, though big challenges remain: tightened study and work permit criteria heighten competition; operational bottlenecks plague programs such as Ontario's Immigrant Nominee Program and the Atlantic Immigration Program; while Rural Community Immigration Pilot draws remain erratic.

In Houle's applied analysis, quantitative ripples—particularly the 21% contraction of permanent admissions—point to amplified shortages for a nation recovering from the pandemic, while qualitative insights bring to light employer uncertainties and applicant anxieties. Recommendations urge proactive monitoring, diversified recruitment through the PNPs, and securing legal counsel for flux navigation, while the next plan period, 2026-2028, is critical for predictability.

Concluding this pivot is the delicate balance: national fiscal prudence to provincial imperatives, promoting selective inflows to keep Canada's economic engine running. As the relationship between Asia and Canada intensifies, such responsive policies might further accelerate two-way talent flows but must be pursued consistently to prevent talent shortages in key sectors.

Canada's restrictive 2025–2027 immigration cuts and partial reversal trigger provincial backlash, strain key pathways, and sharply reduce regional intakes.

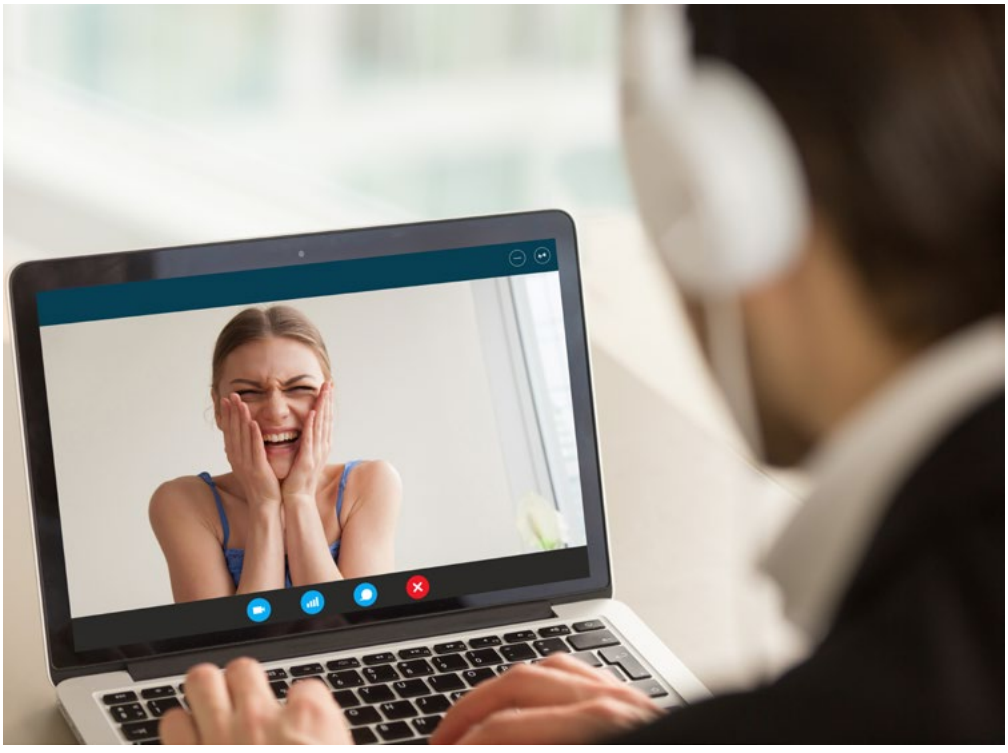
Canada's policy pivot balances fiscal restraint with labour needs, relying on selective immigration to prevent talent shortages.

Applied research

When AI Becomes a Friend: Emotional Bonds and Self-Disclosure in Human-AI Relationships

Pelau, C., Dabija, D.-C., & Stanescu, M. (2024). Can I trust my AI friend? The role of emotions, feelings of friendship, and trust in consumers' information-sharing behavior toward AI. Journal of Business Research, 183, Article 114824.

The following 2024 study is the first empirical investigation into why consumers would engage in the voluntary disclosure of personal information to AI agents.



Framing this phenomenon in terms of human-AI friendship rather than mere utility, the authors draw on CASA theory and the theory of interpersonal relationship development to advance the hypothesis that anthropomorphic AI evokes actual emotional responses—positive affect, feelings of friendship, and ultimately trust—which in turn drive self-disclosure even in the absence of reciprocity or long-term memory.

In total, 317 Romanian consumers aged between 18 and 65 years were exposed to an online experiment in which they interacted either with a standard chatbot or an anthropomorphized AI "friend"—explicitly engineered to display warmth, humor, empathy, and continuity cues such as "I'm happy to see you again." Using a simulated conversation of 10 minutes, neutral, personal, and sensitive topics were touched upon: health, finances, and emotions.

Results strongly support the emotional cascade: anthropomorphism had the largest total effect on information-sharing intention, fully mediated through the proposed chain. Positive emotions accounted for 62% of the variance in friendship feelings, which in turn accounted for 69% of the variance in trust. Trust was the direct antecedent of disclosure intention. Most importantly, perceived usefulness and ease of use became non-significant when emotional variables entered the model. Moderation analyses revealed boundary conditions: the friendship-trust-disclosure path was significantly stronger for women and younger users (<35 years), aligning with higher relational orientation in these cohorts. Privacy concern acted as a negative moderator; yet even high-concern participants disclosed substantially more to the "friendly" AI than to the neutral version.

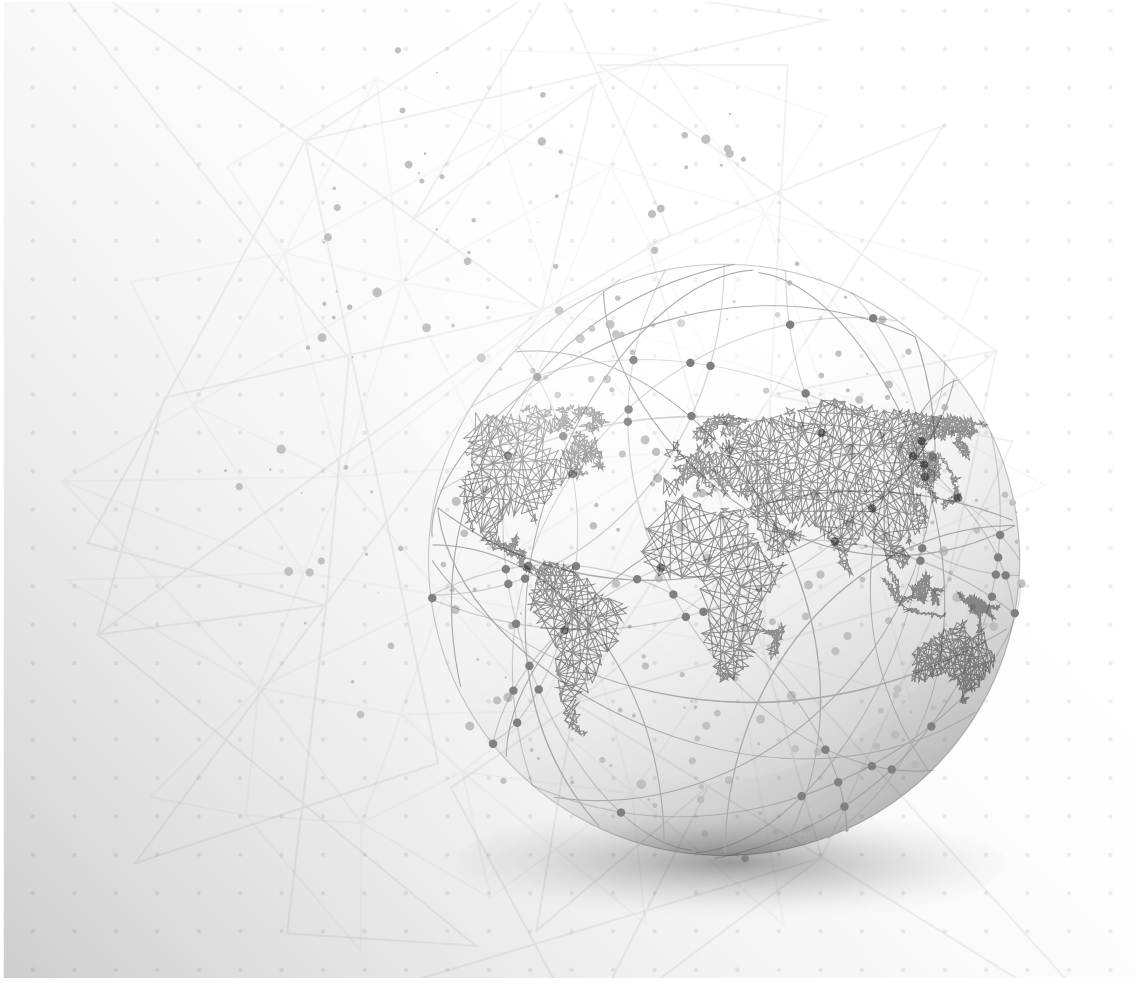
The authors conclude that consumers increasingly treat emotionally competent AI as quasi-social actors capable of eliciting authentic friendship bonds. This "parasocial shortcut" dramatically lowers psychological barriers to self-disclosure, often bypassing rational privacy calculus. Managerial implications are far-reaching: brands deploying conversational AI—especially for virtual assistants, shopping companions, and mental health bots—can accelerate trust and data acquisition simply by designing for perceived friendship rather than pure efficiency. However, the findings also raise ethical red flags: users may overshare sensitive data with entities that simulate but do not genuinely reciprocate care.

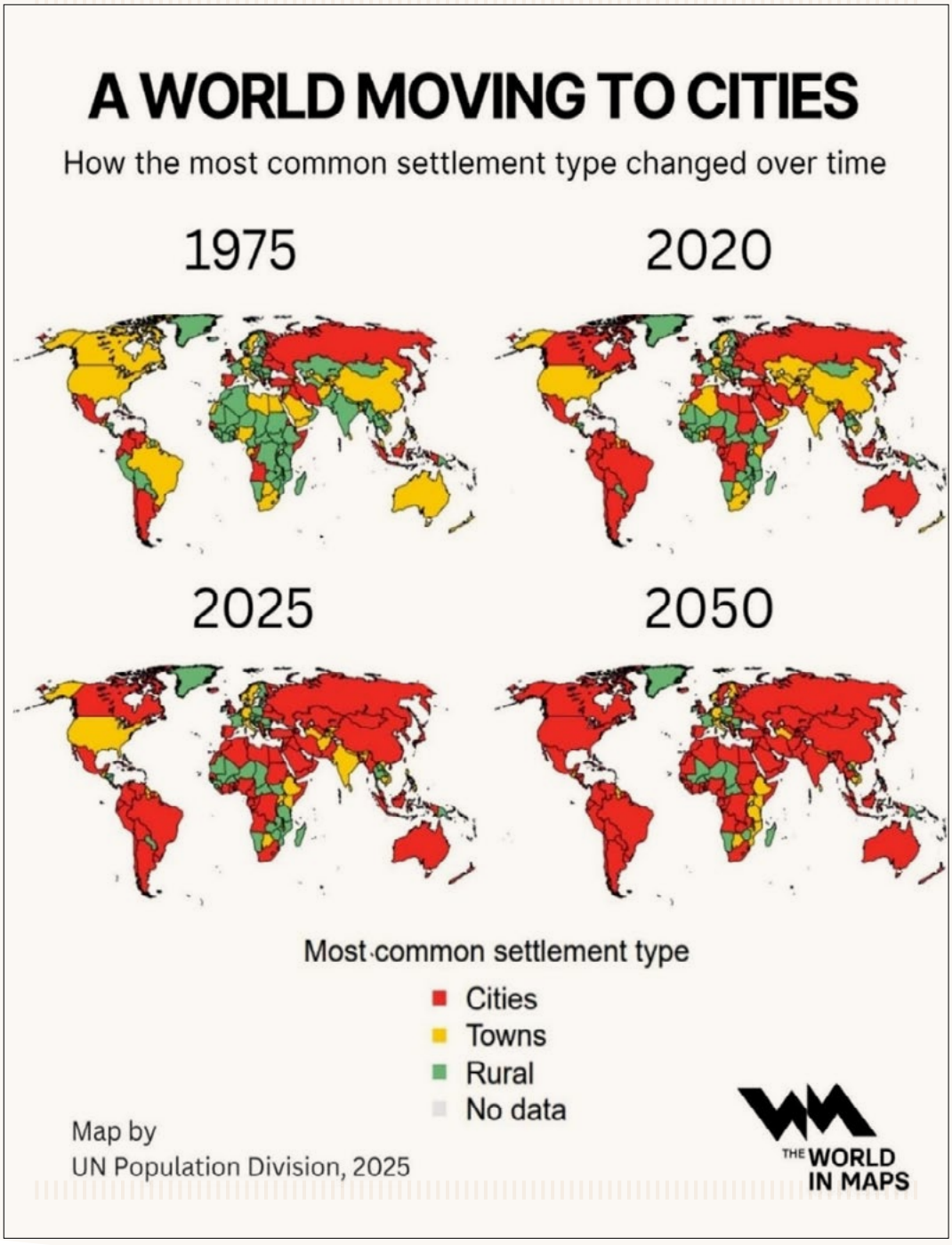
In a context in which AI companions have increasingly become everyday confidants, this study strongly indicates that consumers are not only using AI friends but also trusting them and opening up their feelings due to the same emotional architecture that works in human relationships.

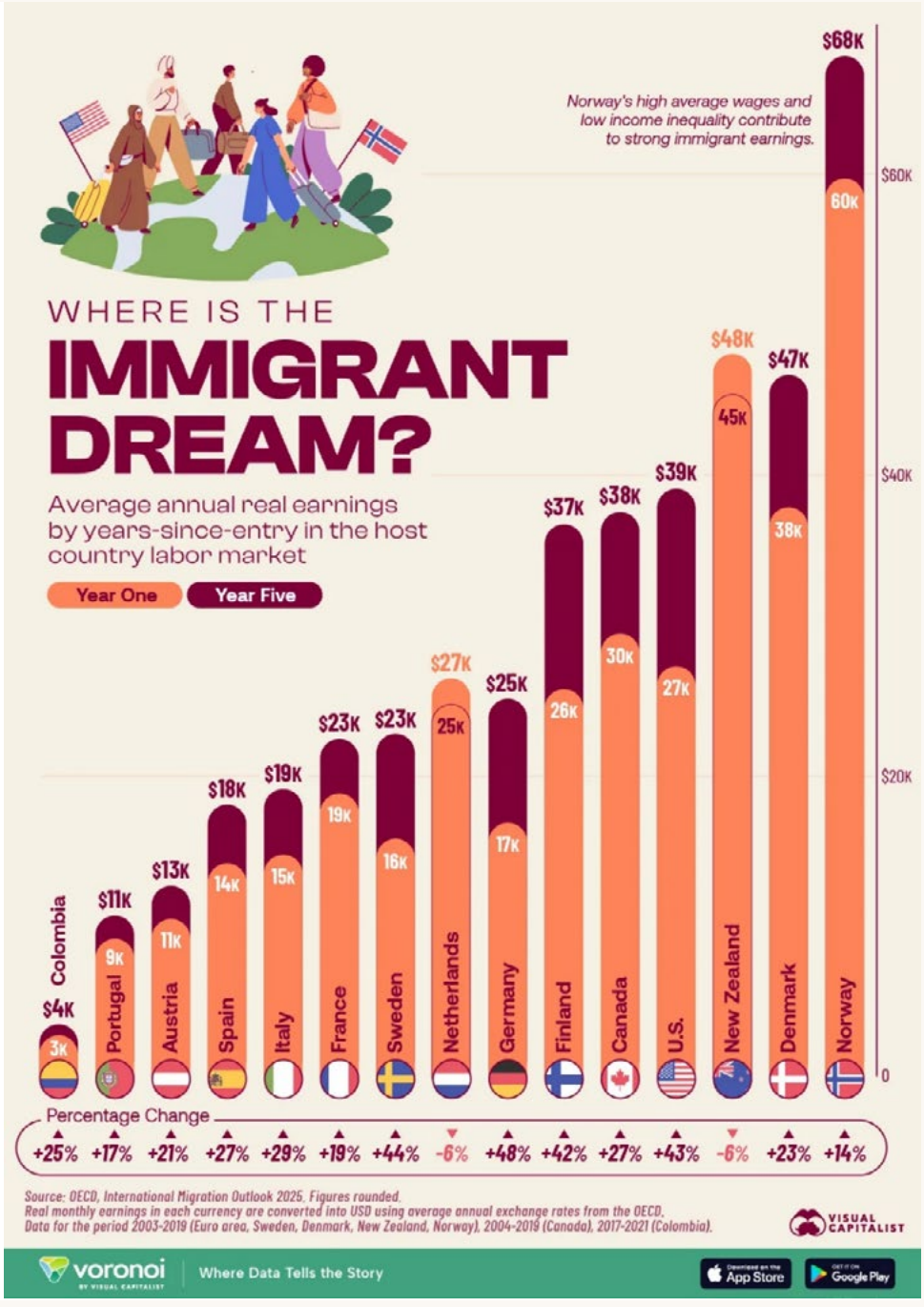
Consumers self-disclose to AI because anthropomorphic cues evoke friendship and trust, not merely utility.

Anthropomorphic AI boosts disclosure via an affect–friendship–trust chain, especially for women and younger users.

3 The future in numbers




A WORLD MOVING TO CITIES
How the most common settlement type changed over time
1975
2020
2025
2050
Most common settlement type
Cities
Towns
Rural
No data
Map by
UN Population Division, 2025
THE WORLD IN MAPS


WHERE IS THE
IMMIGRANT DREAM?
Norway's high average wages and low income inequality contribute to strong immigrant earnings.
Average annual real earnings by years-since-entry in the host country labor market
Year One
Year Five
$60K
$40K
$20K
0
Colombia $4K 3K
Portugal $11K 9K
Austria $13K 11K
Spain $18K 14K
Italy $19K 15K
France $23K 19K
Sweden $23K 16K
Netherlands $27K 25K
Germany $25K 17K
Finland $37K 26K
Canada $38K 30K
U.S. $39K 27K
New Zealand $48K 45K
Denmark $47K 38K
Norway $68K 60K
Percentage Change
+25% +17% +21% +27% +29% +19% +44% -6% +48% +42% +27% +43% -6% +23% +14%
Source: OECD, International Migration Outlook 2025. Figures rounded.
Real monthly earnings in each currency are converted into USD using average annual exchange rates from the OECD.
Data for the period 2003-2019 (Euro area, Sweden, Denmark, New Zealand, Norway), 2004-2019 (Canada), 2017-2021 (Colombia).
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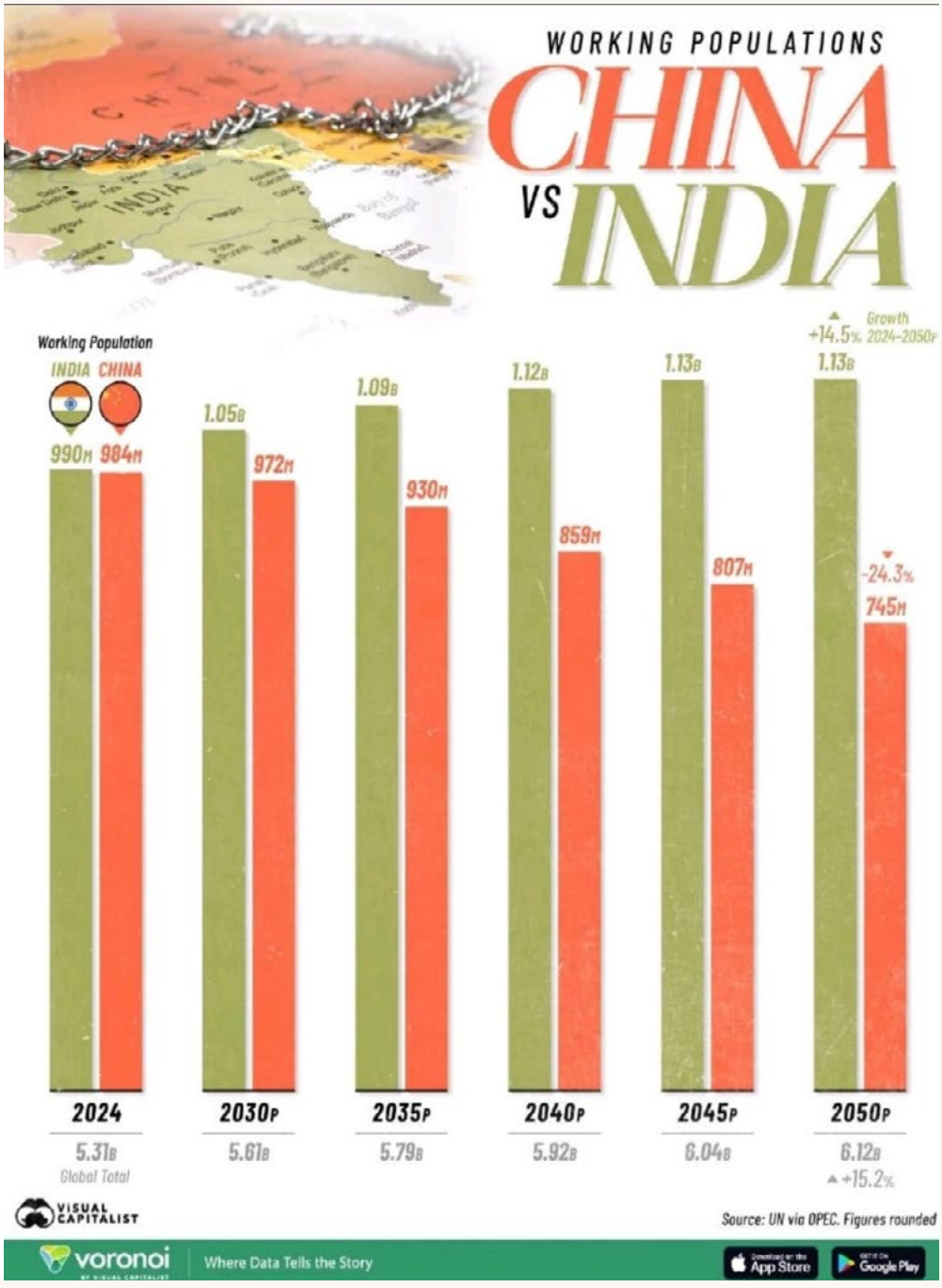
WORKING POPULATIONS
CHINA VS INDIA
Working Population
INDIA CHINA
990M 984M
1.05B 972M
1.09B 930M
1.12B 859M
1.13B 807M
1.13B -24.3% 745M
Growth +14.5% 2024-2050P
2024 5.31B Global Total
2030P 5.61B
2035P 5.79B
2040P 5.92B
2045P 6.04B
2050P 6.12B +15.2%
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Source: UN via OPEC. Figures rounded
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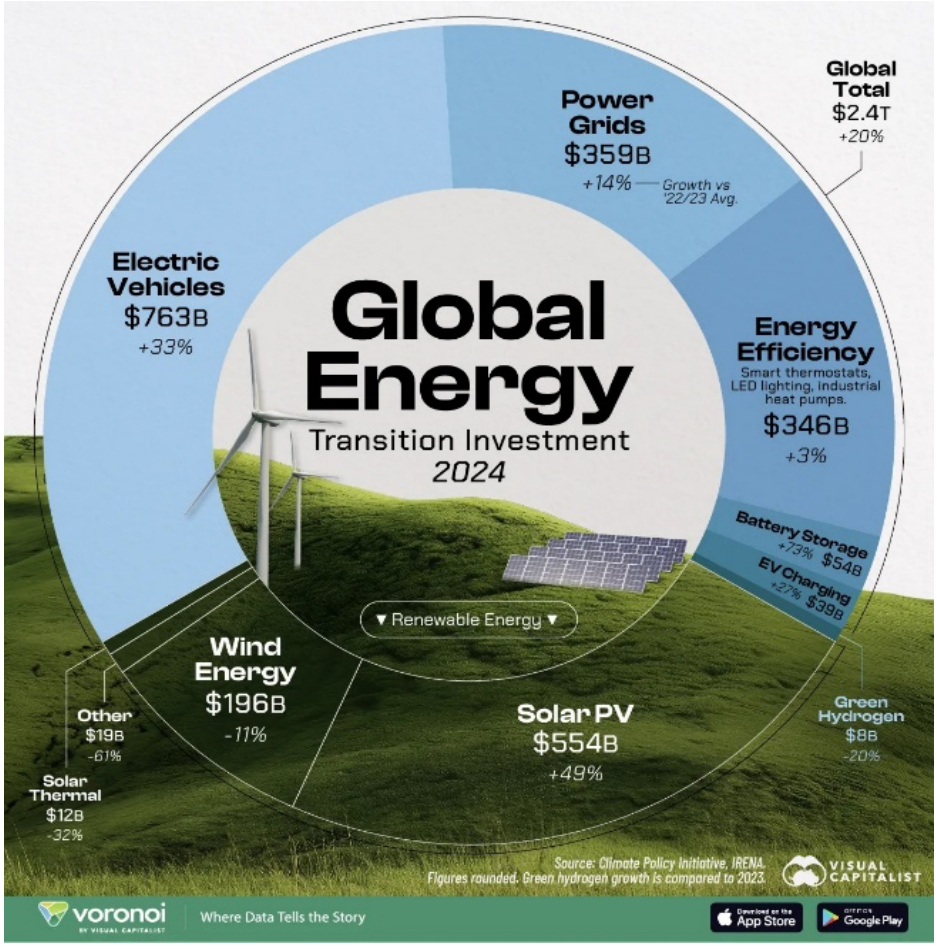
Global Energy
Transition Investment
2024
Global Total
$2.4T
+20%
Power Grids
$359B
+14%
Growth vs '22/23 Avg.
Electric Vehicles
$763B
+33%
Energy Efficiency
Smart thermostats, LED lighting, industrial heat pumps.
$346B
+3%
Battery Storage
+73%
$54B
EV Charging
+27%
$39B
▼ Renewable Energy ▼
Wind Energy
$196B
-11%
Other
$19B
-61%
Solar Thermal
$12B
-32%
Solar PV
$554B
+49%
Green Hydrogen
$8B
-20%
Source: Climate Policy Initiative, IRENA.
Figures rounded. Green hydrogen growth is compared to 2023.
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THE TOP 10
Global Risks
2020–2025
2020
2021
2022
2023
2024
2025
1 Pandemics & Infectious Diseases
Climate Change
Climate Change
Climate Change
Climate Change
Climate Change
2 Climate Change
Cybersecurity
Geopolitical Instability
Cybersecurity
Geopolitical Instability
Geopolitical Instability
3 Cybersecurity
Pandemics & Infectious Diseases
Cybersecurity
Geopolitical Instability
Cybersecurity
Cybersecurity
4 Geopolitical Instability
Geopolitical Instability
Energy Risks
AI & Big Data
AI & Big Data
AI & Big Data
5 Social Tensions
Social Tensions
Pandemics & Infectious Diseases
Energy Risks
Social Tensions
Social Tensions
6 New Threats & Terrorism
Natural Resources & Biodiversity
Social Tensions
Natural Resources & Biodiversity
Natural Resources & Biodiversity
Natural Resources & Biodiversity
7 Macroeconomics
New Threats & Terrorism
Natural Resources & Biodiversity
Financial Stability
Energy Risks
Macroeconomics
8 Natural Resources & Biodiversity
Financial Stability
Financial Stability
Social Tensions
New Threats & Terrorism
Energy Risks
9 Financial Stability
Macroeconomics
Macroeconomics
Pandemics & Infectious Diseases
Pandemics & Infectious Diseases
Financial Stability
10 Pollution
AI & Big Data
Monetary & Fiscal Policies
Macroeconomics
Financial Stability
Demographics
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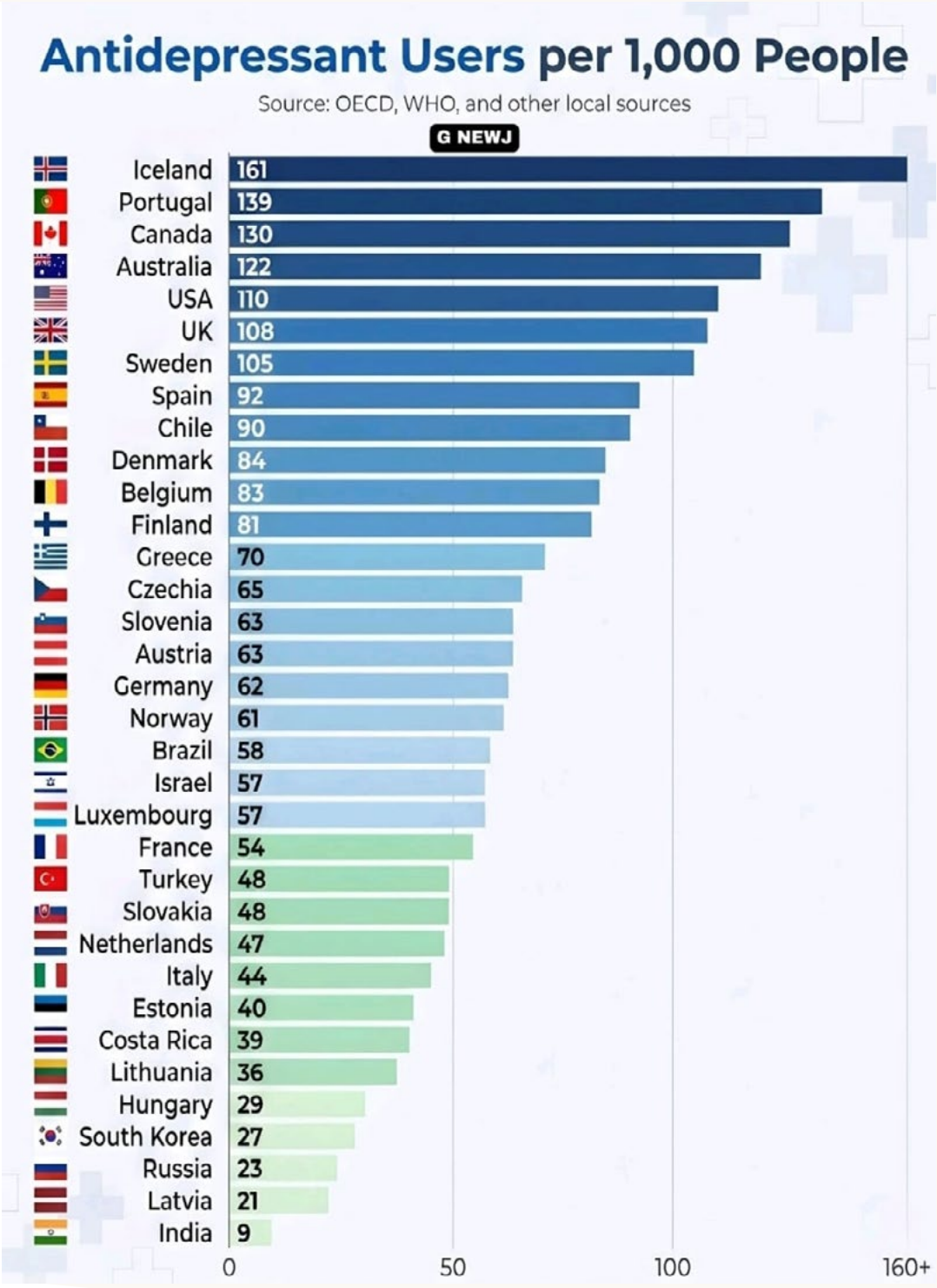
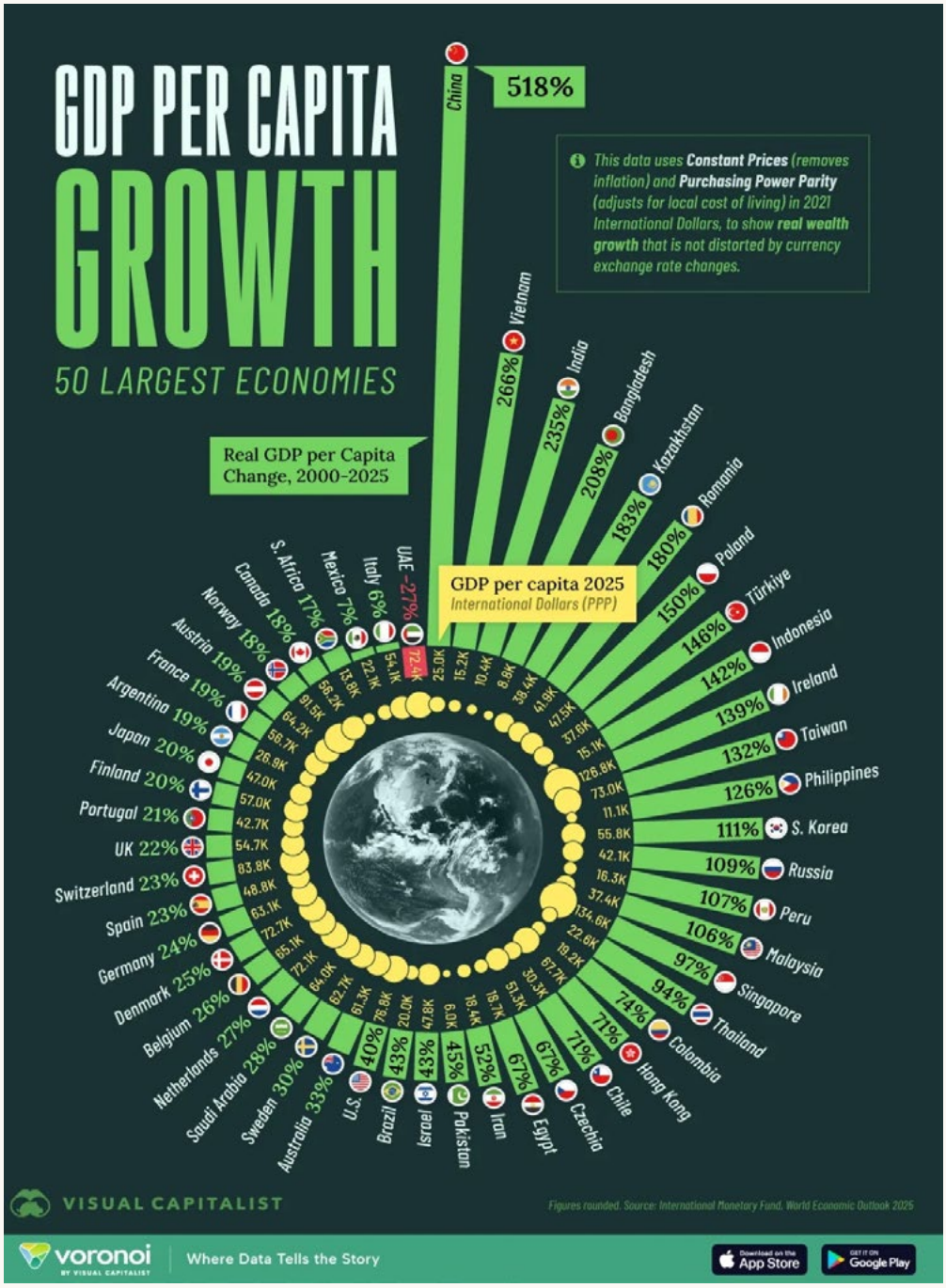
Based on a survey of 3,595 risk management experts in 57 countries. Source: AXA 2025 Global Risks Report


Antidepressant Users per 1,000 People
Source: OECD, WHO, and other local sources
G NEWJ
Iceland 161
Portugal 139
Canada 130
Australia 122
USA 110
UK 108
Sweden 105
Spain 92
Chile 90
Denmark 84
Belgium 83
Finland 81
Greece 70
Czechia 65
Slovenia 63
Austria 63
Germany 62
Norway 61
Brazil 58
Israel 57
Luxembourg 57
France 54
Turkey 48
Slovakia 48
Netherlands 47
Italy 44
Estonia 40
Costa Rica 39
Lithuania 36
Hungary 29
South Korea 27
Russia 23
Latvia 21
India 9
0
50
100
160+


GDP PER CAPITA
GROWTH
50 LARGEST ECONOMIES
Real GDP per Capita Change, 2000-2025
This data uses Constant Prices (removes inflation) and Purchasing Power Parity (adjusts for local cost of living) in 2021 International Dollars, to show real wealth growth that is not distorted by currency exchange rate changes.
GDP per capita 2025
International Dollars (PPP)
China 518% 25.0K
Vietnam 266% 15.2K
India 235% 10.4K
Bangladesh 208% 6.9K
Kazakhstan 183% 38.4K
Romania 180% 41.9K
Poland 150% 47.5K
Türkiye 146% 37.6K
Indonesia 142% 15.1K
Ireland 139% 126.8K
Taiwan 132% 73.0K
Philippines 126% 11.1K
S. Korea 111% 55.8K
Russia 109% 42.1K
Peru 107% 16.3K
Malaysia 106% 37.4K
Singapore 97% 134.6K
Thailand 94% 22.6K
Colombia 74% 19.2K
Hong Kong 71% 67.7K
Chile 71% 30.3K
Czechia 67% 51.3K
Egypt 67% 18.7K
Iran 52% 16.4K
Pakistan 45% 6.0K
Israel 43% 47.8K
Brazil 43% 20.0K
U.S. 40% 76.8K
Australia 33% 61.3K
Sweden 30% 82.7K
Saudi Arabia 28% 64.0K
Netherlands 27% 72.1K
Belgium 26% 85.1K
Denmark 25% 72.1K
Germany 24% 63.1K
Spain 23% 48.8K
Switzerland 23% 83.8K
UK 22% 54.7K
Portugal 21% 42.7K
Finland 20% 57.0K
Japan 20% 47.0K
Argentina 19% 26.9K
France 19% 56.7K
Austria 19% 64.2K
Norway 18% 91.5K
Canada 18% 56.2K
S. Africa 17% 13.8K
Mexico 7% 22.1K
Italy 6% 54.1K
UAE -27% 72.4K
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Figures rounded. Source: International Monetary Fund, World Economic Outlook 2025
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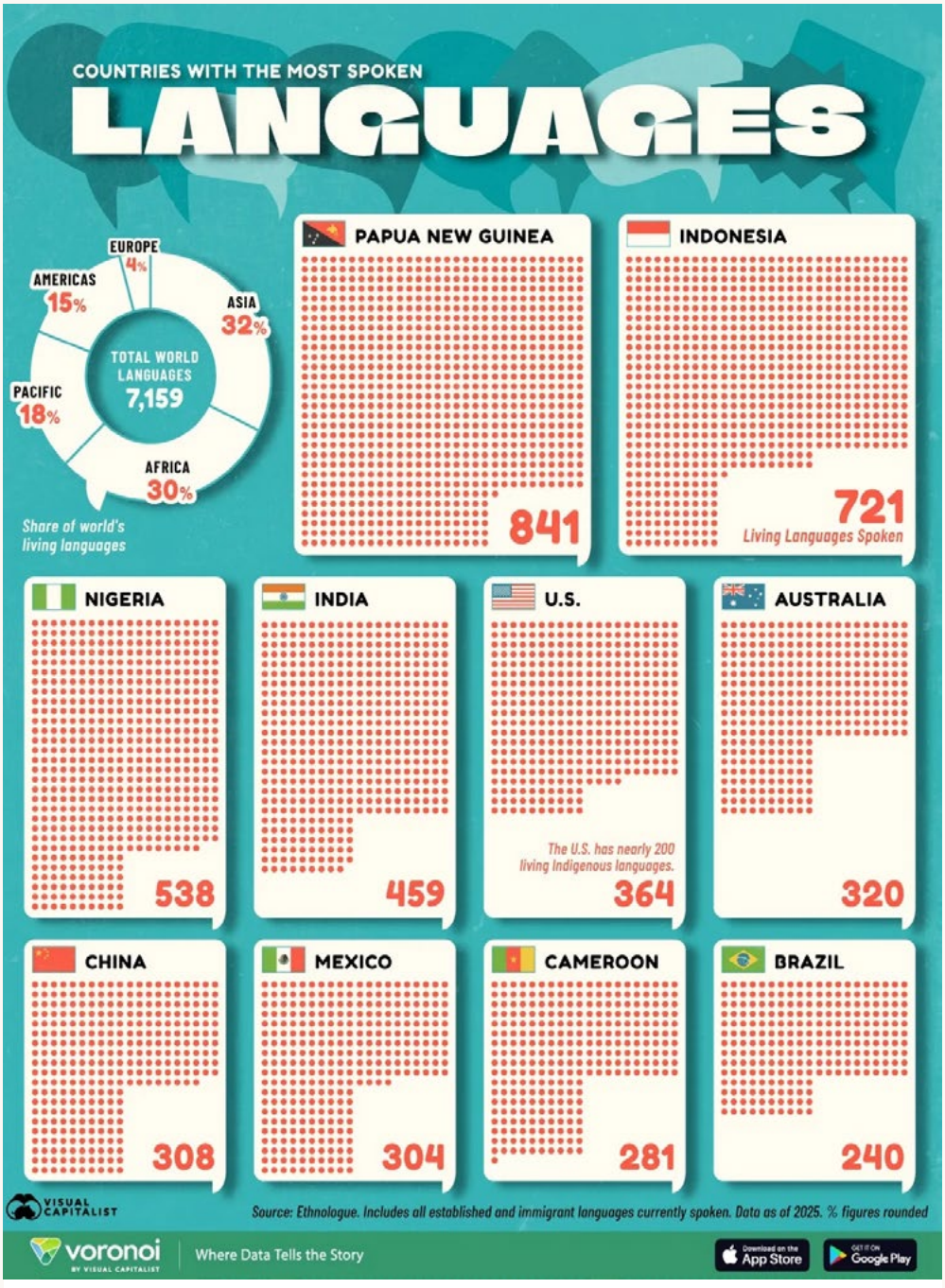
COUNTRIES WITH THE MOST SPOKEN
LANGUAGES
EUROPE 4%
AMERICAS 15%
ASIA 32%
PACIFIC 18%
AFRICA 30%
TOTAL WORLD LANGUAGES 7,159
Share of world's living languages
PAPUA NEW GUINEA
841
INDONESIA
721
Living Languages Spoken
NIGERIA
538
INDIA
459
U.S.
The U.S. has nearly 200 living Indigenous languages.
364
AUSTRALIA
320
CHINA
308
MEXICO
304
CAMEROON
281
BRAZIL
240
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Source: Ethnologue. Includes all established and immigrant languages currently spoken. Data as of 2025. % figures rounded
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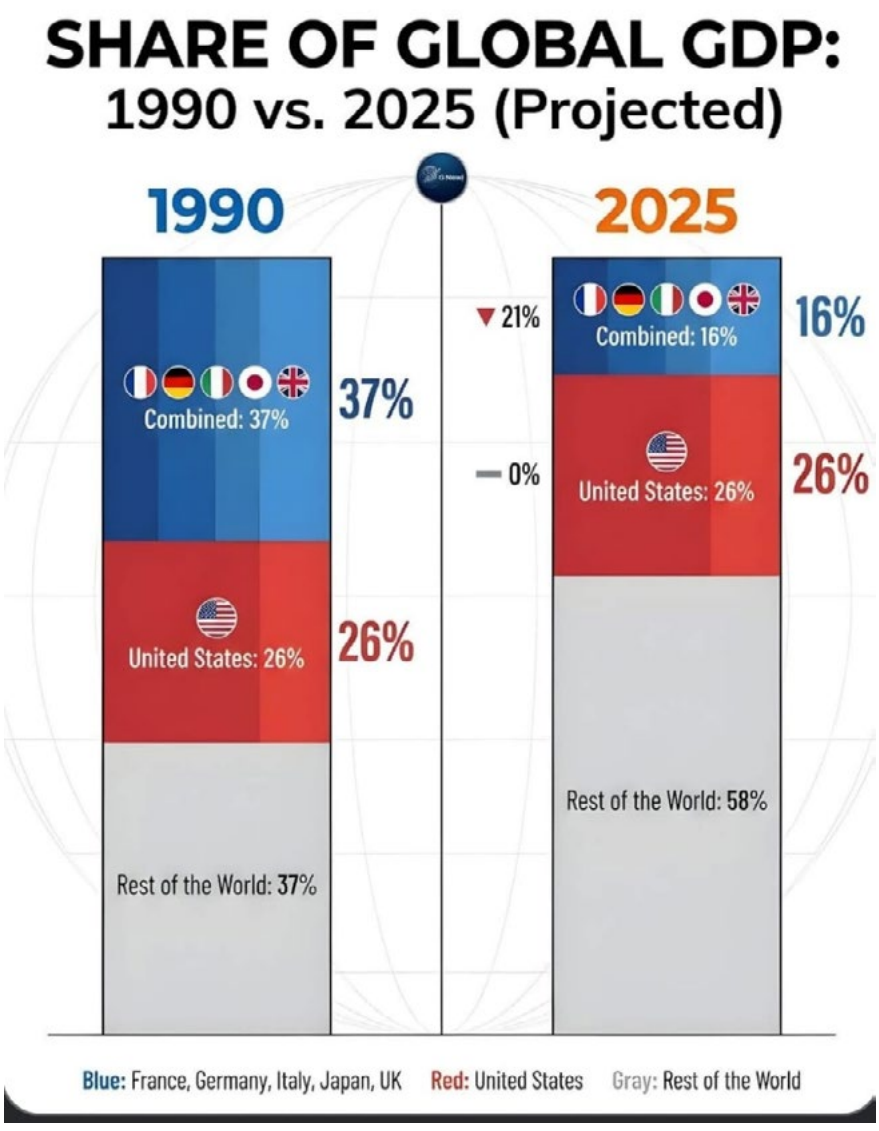
SHARE OF GLOBAL GDP:
1990 vs. 2025 (Projected)
1990
2025
Combined: 37%
37%
United States: 26%
26%
Rest of the World: 37%
▼21%
— 0%
Combined: 16%
16%
United States: 26%
26%
Rest of the World: 58%
Blue: France, Germany, Italy, Japan, UK
Red: United States
Gray: Rest of the World


E
CRITICAL MINERAL
REFINING BY 2030
100%
75%
50%
25%
0%
OTHER
19%
3%
71%
6%
41%
6%
8%
45%
16%
12%
12%
61%
17%
6%
6%
71%
16%
7%
6%
71%
9%
3%
3%
85%
6%
2%
5%
86%
NICKEL
COPPER
LITHIUM
COBALT
GRAPHITE
NATURAL
GRAPHITE
SYNTHETIC
RARE
EARTHS
EXCLUSIVE DATA PARTNER
BENCHMARK
benchmarkminerals.com
Source: Benchmark Mineral Intelligence; IEA
Individual percentages may not sum to 100% due to rounding. Refining refers to the processing of: mined material (such as concentrate or ore) into an intermediate product or finished metal. For rare earth elements (REE), this refers specifically to oxide production.
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