AI-POWERED
CITIES OF
THE FUTURE

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In collaboration with:

ThoughtLab

CONTENTS

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AI COMES INTO FOCUS

Artificial intelligence (AI) is revolutionizing how cities analyze data, create content, and perform tasks, allowing them to boost productivity, drive efficiencies, and better meet the needs of residents and citizens.

In the future, AI has the potential to transform urban services, from infrastructure and transportation to public safety, health, and the environment. AI is expected to become widely accessible to businesses and residents across cities. As AI advances, some believe it will become an urban utility on par with others like electricity and water.

To learn how AI can help reshape cities, ThoughtLab conducted a pioneering study on the AI plans, investments, and practices of 250 cities around the world. Carried out in collaboration with ServiceNow, Deloitte, and NVIDIA, the study examined how these cities harness all varieties of AI, from machine learning and robotic process automation to generative AI (GenAI) and now Agentic AI.

To provide actionable insights, ThoughtLab analyzed AI use cases and best practices across six urban domains:

1. Government management and operations;
2. Safety, security, and resilience;
3. Living, health, and trust;
4. Mobility and transportation;
5. Urban infrastructure; and
6. Environment and sustainability.

In addition to quantitative analysis, ThoughtLab conducted interviews with city leaders and AI specialists from business and academia. This report is the result of this research, and it is designed to serve as a roadmap to becoming an AI-powered city of the future.

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Section 1:

THE RISE OF THE
AI-POWERED CITY

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AI will allow cities to do what they already do better, faster, and more efficiently. But crucially, it will enable cities to do things they could never do before. For example, they could run large-scale city simulations and visualizations—beyond today's digital twins—that could show what would happen if there were a major weather event so that cities could plan accordingly.

— **Jumbi Edulbehram,** Global Business Development, Smart Cities and Spaces, NVIDIA

"

AI has the power to catapult cities into the future. By leveraging data-driven insights, AI can revolutionize urban planning and resource management, from predicting trends and managing traffic to making cities more resilient and sustainable. As we weave AI with cloud computing and IoT, we're not just creating connected cities, but equipping them to tackle complex issues like climate change. The result? A smarter, future-ready urban landscape that elevates the quality of life for all residents.

— **Michael Flynn,** Global Leader for Infrastructure, Transport, and Regional Government, Deloitte Ireland

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"

In an AI-powered city, autonomous vehicles glide through traffic-free streets optimized by intelligent systems, while smart grids seamlessly integrate renewable energy sources to power eco-friendly buildings. AI-driven public services enable personalized healthcare, efficient waste management, and responsive emergency services— all coordinated through a robust digital platform that fosters transparent governance and resident engagement. Green spaces flourish under the care of AI-managed irrigation and maintenance, and predictive analytics keep the city resilient against natural and artificial disruptions.

— Philippe Cases, CEO, Tomorrow Territories

"

AI could become the urban backbone, optimizing everything from traffic flow to energy consumption. In our vision, an AI-powered city will seamlessly integrate systems, enabling them to communicate and adapt in real time. Such a city will leverage AI to provide personalized public services, predictive maintenance for infrastructure, and enhanced public safety.

— Professors Pascual Berrone and Sampsa Samila, IESE Business School, Spain

ACROSS CITIES, THE AI RACE IS ON

Cities globally are sprinting to adopt AI, with many seeing it as a driver of efficiency and productivity and, ultimately, economic growth and competitiveness. More than half (56%) of cities surveyed now actively use AI, either selectively or widely, and 35% are piloting or planning to use it.
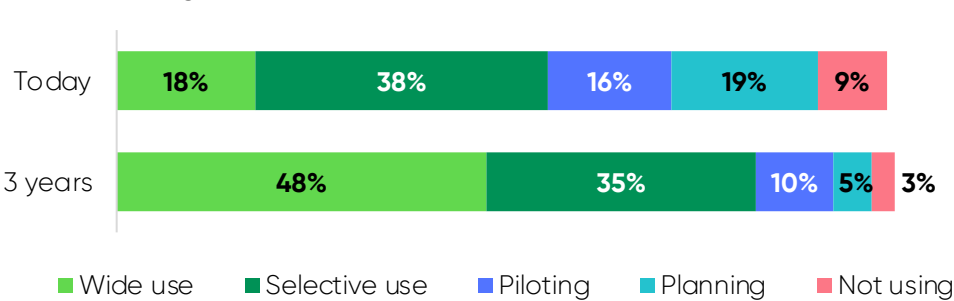
The race for AI dominance

Over the next three years, the use of AI is expected to expand exponentially. The share of cities surveyed that plan to widely use it will nearly triple—from 18% today to 48%. Cities surveyed in APAC will lead the way, with nearly six out of 10 expecting to be widely using AI in three years—four times the share widely using it today. Cities in Europe and North America will also make significant progress, with more than half of respondents expecting to widely use AI in three years. Cities in emerging regions, such as Africa and Latin America, will also gain ground as they look to revitalize their economies through AI.

Cities are leveraging their strengths to establish themselves as AI leaders. San Jose and San Francisco are capitalizing on their links to Silicon Valley; Tel Aviv is building on its digital startup ecosystem and cybersecurity expertise; Dubai is encouraging AI investment through regulations and incentives; and Paris and Boston are taking advantage of their academic and research roots.

The city size advantage

In part due to their greater resources and wider innovation ecosystems, larger cities are now a step ahead. Forty-three percent of large cities surveyed widely use AI, compared with just 12% of small cities. But as AI becomes more accessible and entrenched in everyday living, smaller cities plan to widen their use. In fact, some smaller cities, such as Quebec City, Boston, Bratislava, Denver, and Edinburgh, are already AI leaders, according to our research.
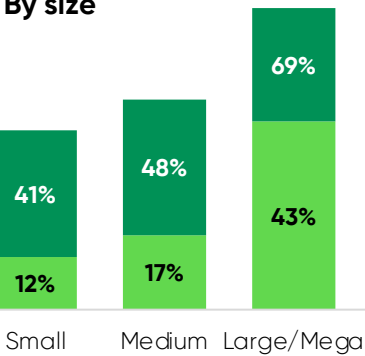
Extent of usage of traditional AI by cities

| Today | 18% | 38% | 16% | 19% | 9% |
| 3 years | 48% | 35% | 10% | 5% | 3% |

■ Wide use ■ Selective use ■ Piloting ■ Planning ■ Not using

48% of cities will be making wide use of traditional AI by 2027

Percentage of cities widely using traditional AI

■ 3 years ■ Today

By size

Small	Medium	Large/Mega
41%	48%	69%
12%	17%	43%

By region

Europe	North America	Middle East	Africa	APAC	Latin America
53%	51%	33%	32%	57%	42%
29%	19%	19%	16%	14%	3%

Source: AI-powered cities survey

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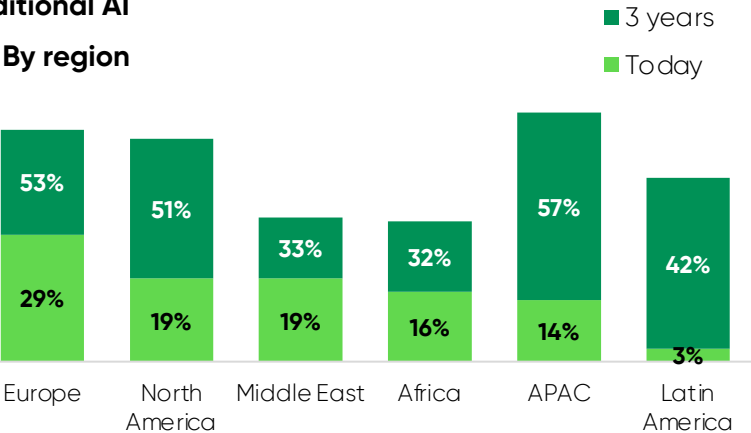
LARGER CITIES ADOPT GENERATIVE AI EARLIER THAN OTHERS

GenAI could be a game changer for cities. Unlike earlier forms of AI, GenAI can empower cities to draw on their vast sets of data in any format, retrieve information, and generate content and analysis instantaneously.

The rise of GenAI

Most cities are already on their GenAI journeys. Almost nine out of 10 survey respondents (87%) are planning, piloting, or actively using GenAI. While this new form of AI holds enormous promise, it also exposes cities to a variety of risks relating to misinformation, copyright violations, sovereignty, and data security and privacy.

To manage these risks, cities are testing GenAI solutions in-house and setting policies for its responsible use. As urban leaders finetune their plans, the share of cities selectively or widely using GenAI is expected to triple, from 18% today to 59% over the next three years, according to the research.

Larger cities are ahead

As with traditional AI, larger cities are significantly ahead of smaller ones, with 11% of those surveyed now widely employing GenAI, compared to 4% of small cities and 5% of medium-sized cities. While small and medium-sized cities plan to make substantial progress over the next three years, they will still trail larger cities, putting them at a competitive disadvantage in the AI era.

Cities across regions currently are taking a cautious approach to deploying GenAI. However, over the next three years cities in APAC, Europe, and North America intend to make significant headway in deploying GenAI. Cities in Latin America, Africa, and the Middle East are expected to continue to lag.
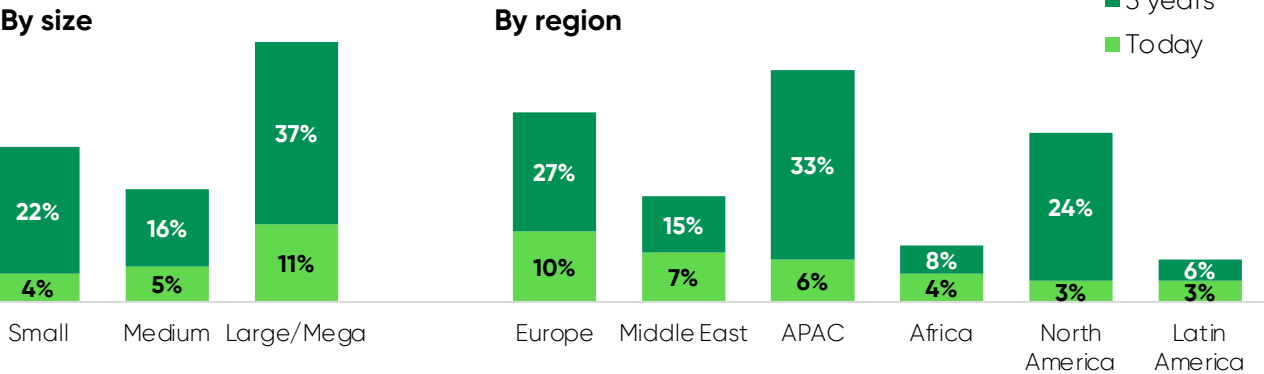
Extent of usage of GenAI by cities
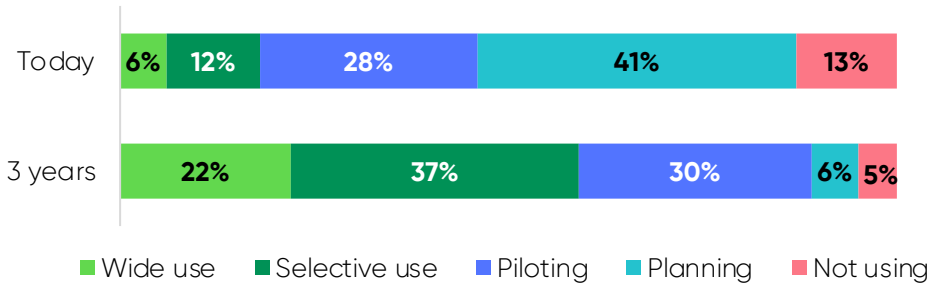
87% of cities are planning, piloting, or actively using GenAI

Percentage of cities widely using GenAI

Source: AI-powered cities survey

SPECIALIST VIEWS ON GENERATIVE AND AGENTIC AI

Jumbi Edulbehram
Global Business Development,
Smart Cities and Spaces, NVIDIA

Dr. Jumbi Edulbehram at NVIDIA believes that GenAI will revolutionize the ability of cities to get value from their enormous sets of data for analysis, planning, and problem-solving. For example, a transportation agency has been collecting data for 20 years but has done little with it because it's in many different silos and formats. This data can be put into a GenAI database to make it possible for users to ask it questions in natural language.

"Once GenAI understands what the user is looking for, it will figure out what it needs to get to satisfy that query, which could involve pulling from many different types of data. Then comes the generation, putting it into a format that makes sense to the user, not only natural language, but graphs or audio output," said Edulbehram.

He explained how GenAI capabilities, enabled by NVIDIA NIMs and NVIDIA Metropolis for Vision AI applications, can help officials understand their data and facilitate decision-making. "If you ask traditional AI how many cars went through an intersection in an hour, it gives you the answer. But GenAI allows you to generate content—for example, create a visualization of the cars going by the intersection and modifying that for a snowfall. It will understand what you say and generate scenarios."

While GenAI is grabbing headlines, cities are already thinking about the next iteration: Agentic AI. Edulbehram likened this technology to a workflow, stringing together different types of capabilities to achieve a result. "For example, a resident goes to transact something with a chatbot, such as paying a ticket. On the back end, Agentic AI is taking a series of steps to provide the information and to enable the transaction."

Costi Perricos
Global Generative AI Leader
Deloitte UK

Deloitte UK's Costi Perricos believes that GenAI will make a massive difference in the ability to analyze information and create insights automatically and very quickly across urban domains.

One example is how it can provide travelers with real-time information derived from video footage or sensor data, such as data related to traffic jams or public transport problems. Another is its ability to simplify the paperwork associated with planning permissions and construction. "This is an area where AI is now underutilized," he said. "GenAI could give people the ability to cut through the huge amount of red tape that is typically required for construction."

Perricos sees Agentic AI as a natural progression, requiring much less direction than GenAI. "When using GenAI tools, you sometimes need to give 20 prompts to get what you want, refining each time. With Agentic AI, you don't have to do that."

He explained that Agentic AI uses "inference time reasoning," a process that enables a trained AI model to apply learned patterns to new data to make decisions or predictions. He explained that after the initial instruction from a human, Agentic AI will take other inputs into account, act on them, and perhaps activate other AI agents.

"It's thinking on its own, based on an initial push by a human or by an external factor."

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CITIES ARE DEVELOPING AI USE CASES ACROSS MANY DOMAINS

Recognizing the value of AI, cities are implementing a myriad of use cases across their urban landscapes. Forty-four percent of respondents are actively using AI to automate and streamline government operations and make better decisions. For many cities, this is the natural starting point, because AI can help them achieve first-order benefits from boosting efficiencies, productivity, and cost savings.
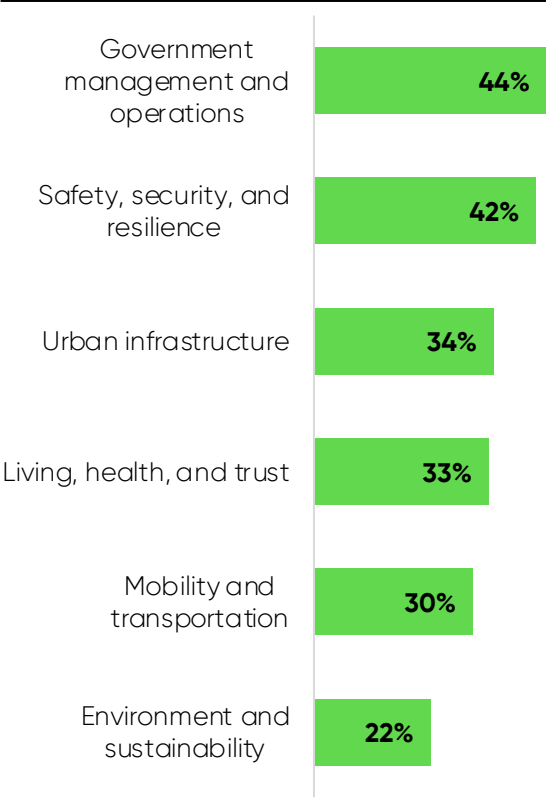
Forty-two percent of cities surveyed harness AI to improve safety, security, and resilience. These are benefits for any city leaders, according to Oleg Polovynko, advisor on digitalization to the mayor of Kyiv, Ukraine. "AI increases resilience by predicting natural disasters and optimizing resource use. In addition, it boosts public safety through integration with emergency response systems and monitors environmental conditions," he said.

Improving city living through AI

About one-third of cities surveyed use AI to run their urban infrastructure, drawing on its capabilities around predictive maintenance and infrastructure design and security. A similar percentage utilize AI to improve living, health, and trust, providing seamless experiences through self-service portals and chatbots. Slightly fewer employ AI for mobility and transportation, partly due to this domain's complexity and risks.

Less than a quarter of cities use AI to improve sustainability, despite its proven effectiveness in helping to solve climate-related challenges. For example, Boston reported using AI for waste and water management, energy optimization, climate and carbon emission monitoring and prediction, and conservation and biodiversity.

Cities actively using AI across domains

Domain	%
Government management and operations	44%
Safety, security, and resilience	42%
Urban infrastructure	34%
Living, health, and trust	33%
Mobility and transportation	30%
Environment and sustainability	22%

Source: AI-powered cities survey

Top use cases by domain

1. Analyze large volumes of data
2. Digitize/process documents
3. Document retrieval and analysis

1. Video monitoring and analysis
2. Camera optimization
3. Crime forecasting

1. Predictive maintenance
2. Smart infrastructure design
3. Digital infrastructure security

1. Chatbots for personalized assistance
2. Intelligent self-service portals
3. Risk factor identification

1. Traffic management and flow prediction
2. Smart parking management
3. Intelligent public transportation routing

1. Waste management and recycling
2. Energy optimization
3. Water management and monitoring

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THE TOP 10 MOST EFFECTIVE AI USE CASES RANKED BY CITIES SURVEYED

TRAFFIC MANAGEMENT

Ostrava, Czech Rep.
Enable faster emergency response times, fewer accidents, and less congestion

Milwaukee, US
AI-based traffic management, leading to fewer emissions

01

PUBLIC SAFETY

Monrovia, Liberia
Detect suspicious activities, monitor crowds, and respond to emergencies swiftly

Madrid, Spain
Identify high-crime areas and accident-prone locations

02

ENERGY MANAGEMENT

Tallin, Estonia
Energy efficiency and reliability through grid optimization

Edmonton, Canada
Improve energy efficiency, system accuracy, and sustainability

03

CUSTOMER SERVICE

Nairobi, Kenya
Increase accessibility of government services through 24/7 chatbot

Beijing, China
Get real-time insights and feedback on services

04

PREDICTIVE MAINTENANCE

Philadelphia, US
Reduce downtime and improve the flow of operations

Marseille, France
Identify possible equipment faults before they arise

05

WASTE MANAGEMENT

Johannesburg, S. Africa
Lower operational costs and improve cleanliness

Guayaquil, Ecuador
Increase efficiency, transparency, and public health

06

DECISION-MAKING

Toyama, Japan
Improve decision-making through GenAI

Perth, Australia
AI analysis of large datasets generating better decisions and visibility

07

URBAN PLANNING

Dar es Salaam, Tanzania
Upgrade urban development and sustainability

Rosario, Argentina
Optimize land use planning

08

CYBERSECURITY

Dammam, Saudi Arabia
Detect cyberattacks more effectively through AI

Pachuca, Mexico
Identify and respond to cyber threats to better protect critical systems and data

09

FRAUD DETECTION

Sao Paulo, Brazil
Identify false claims or misuse of public funds

Halifax, Canada
Analyze huge volumes of data to identify trends and deviations indicating fraud

10

Source: AI-powered cities survey

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Section 2:

LEARNING FROM AI LEADERS

WE CREATED A MODEL TO ASSESS THE AI MATURITY OF CITIES

As part of our research, ThoughtLab economists created a maturity model to identify the most advanced cities in the use of AI. The model measures a city's progress across four pillars: (1) use of traditional and generative AI, (2) use of AI across urban areas, (3) number of controls to ensure the responsible use of AI, and (4) the future-ready foundation to succeed in AI.

Based on its progress in each area, every city in the sample received an overall AI maturity score. ThoughtLab then classified each city into one of three categories: AI leaders, AI advancers, and AI adopters.

Twenty percent were classified as leaders, 60% as advancers, and 20% as adopters.

By comparing AI leaders with advancers and adopters, we were able to identify leading AI practices and create a roadmap to AI leadership. For more details on the survey and the classification framework, see the methodology appendix (page 57).

Pillar 1	Pillar 2	Pillar 3	Pillar 4
Use of AI	**AI across urban areas**	**Responsible AI**	**Future-ready city ranking**

Measures the extent that cities use:

- Traditional AI: machine learning, computer vision, natural language processing
- Generative AI: capable of generating content by learning underlying patterns in data

Compares cities based on AI progress across six urban areas:

- City management and operations
- Environment and sustainability
- Living, health, and trust
- Mobility and transportation
- Safety, security, and resilience
- Urban infrastructure

Ranks cities based on number of steps taken to ensure responsible use of AI, including:

- Creating an AI governance framework
- Forming privacy guidelines
- Installing AI auditing processes
- Getting feedback from residents
- Using cyber tools

Draws on our future-ready city rankings that assess:

- Progress in building required digital skills, processes, and IT infrastructure, and in making urban domains future-ready
- Performance against urban pollution, traffic, safety, and healthcare indicators

About the study

In the second quarter of 2024, ThoughtLab conducted a rigorous study of the AI plans, practices, and investments of 250 cities in 78 countries, across all regions. To provide a wide perspective, the study included cities of different population sizes in both developed and emerging markets.

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WHICH ARE THE AI LEADERS?

North America

Austin	New York
Boston	Orlando
Chicago	Quebec
Denver	San Antonio
Edmonton	San Francisco
Los Angeles	San Jose
Montreal	Seattle
New Orleans	Toronto

Europe

Amsterdam	Madrid
Barcelona	Marseille
Berlin	Montpellier
Bratislava	Paris
Dublin	Sofia
Edinburgh	Stockholm
Helsinki	Tallinn
Ljubljana	Vienna

Asia Pacific

Beijing
Guangzhou
Hong Kong
Lucknow
Melbourne
Seoul
Sydney
Taipei
Tokyo

Latin America

Curitiba	Niteroi
Mexico City	Sao Paulo

Middle East & Africa

Dammam	Istanbul
Harare	Kuwait City

Source: AI-powered cities survey

AI leaders by population size*

30% Small
40% Medium
30% Large/Mega
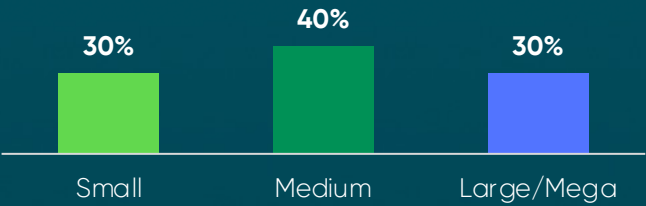
AI leaders by economic level*

27% Developing
73% Advanced
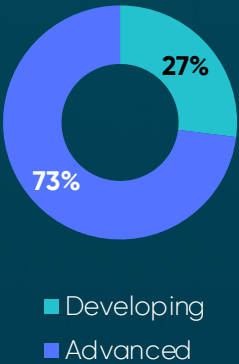
AI maturity stages, all cities (250 total)

20% Leader
60% Advancer
20% Adopter
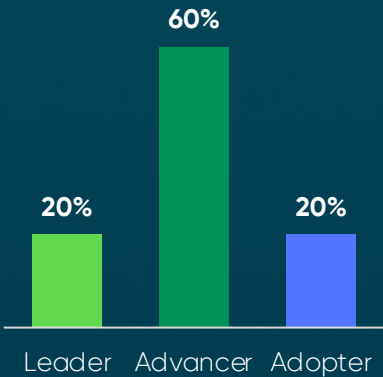
* Out of 49 AI leaders

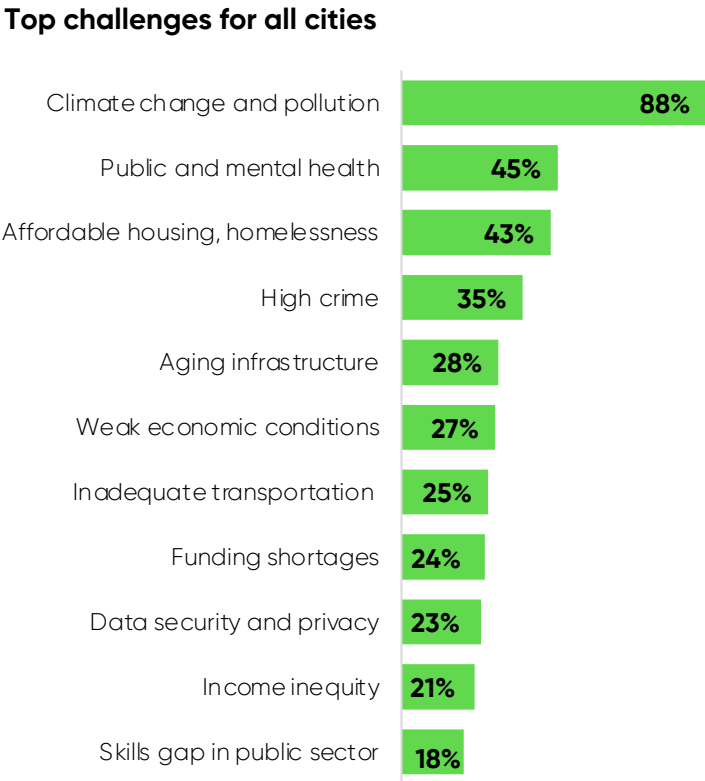servicenow. | Deloitte. | NVIDIA | ThoughtLab

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AI LEADERS APPEAR TO COPE WITH CHALLENGES MORE EFFECTIVELY

Cities around the world face a host of challenges, from climate change, public health, and affordable housing, to high crime, aging infrastructure, and inadequate transportation.

By leveraging AI technologies, cities can address these challenges more effectively and improve the overall quality of life for residents.

Seventy-eight percent of AI leaders surveyed said they are prepared to deal with challenges, compared to 63% of cities that are less mature in AI usage. Nearly three times as many AI leaders as others said they are very well prepared.

AI can also play a role in enhancing resilience, helping cities better withstand and recover from urban stressors. These stressors range from environmental and supply-chain risks to geopolitical and socioeconomic disruptions. In all cases analyzed, more AI leaders than their peers reported having high resilience.

Top challenges for all cities

Challenge	%
Climate change and pollution	88%
Public and mental health	45%
Affordable housing, homelessness	43%
High crime	35%
Aging infrastructure	28%
Weak economic conditions	27%
Inadequate transportation	25%
Funding shortages	24%
Data security and privacy	23%
Income inequity	21%
Skills gap in public sector	18%

Source: AI-powered cities survey

AI leaders are better prepared to overcome challenges

	Well prepared	Very well prepared
AI leader	43%	35%
Other	50%	13%
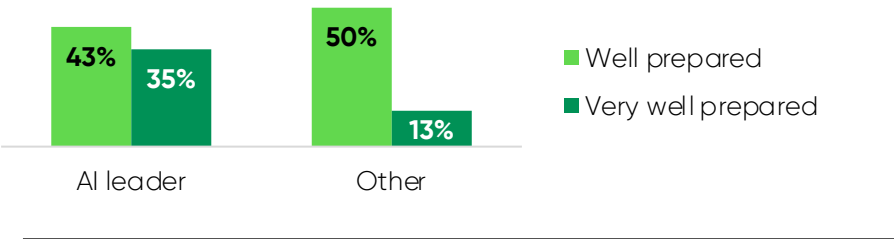
AI leaders are better able to weather urban risks
(% with high resilience)

	AI leader	Other
Environmental	71%	42%
Supply chain	69%	30%
Infrastructure	67%	37%
Health and safety	67%	45%
Technology	61%	41%
Geopolitical	49%	26%
Socioeconomic	47%	23%

AI-POWERED CITIES ARE BETTER PREPARED FOR THE FUTURE

To unlock value from AI, AI leaders actively use AI across many urban domains. One example is Singapore. Its AI strategy is to drive citywide AI usage by the public and private sectors, as well as by residents and students. The city accomplishes this by providing the AI training, resources, tools, and support needed to foster the responsible use of AI across its urban environment.

The greater use of AI helps AI leaders prepare their urban domains for the future. With a citizen-centric focus, it is not surprising that AI leaders have made greater progress in living, health, and trust, followed by safety, security, and resilience. Progress has been slower for mobility and transportation and urban infrastructure.
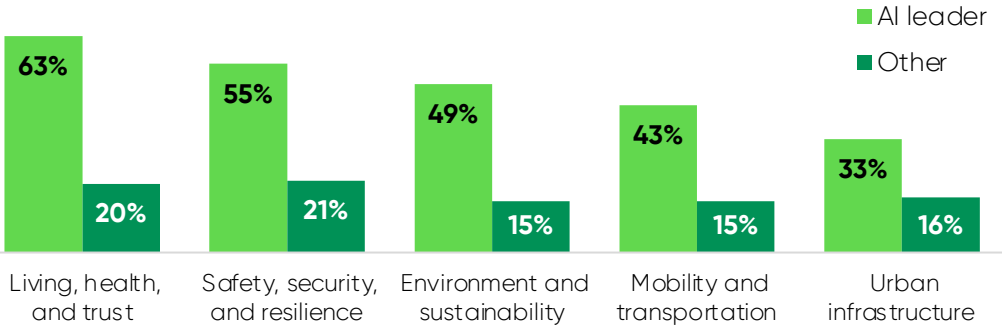
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AI leaders that have started to address the interoperability, data-sharing, and data governance issues, likely have an advantage in the quality of their services. Those cities are better able to manage public transportation, reduce bureaucracy in their internal systems, and predict problems that might emerge in the lives of their residents and proactively find solutions. I see AI impacts across all parts of a city, from social services to licensing and permitting to resident mobility.

— Michael Flynn, Global Leader for Infrastructure, Transport, and Regional Government, Deloitte Ireland

Cities actively using AI by domain

	AI leader	Other
Government management	71%	38%
Safety, security, and resilience	63%	37%
Living, health, and trust	61%	26%
Mobility and transportation	57%	24%
Urban infrastructure	55%	29%
Environment and sustainability	45%	16%

Progress made in preparing five urban domains for the future
(significant progress, excludes government management)

Legend: ■ AI leader ■ Other

Living, health, and trust	Safety, security, and resilience	Environment and sustainability	Mobility and transportation	Urban infrastructure
63% / 20%	55% / 21%	49% / 15%	43% / 15%	33% / 16%

Source: AI-powered cities survey

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SINGAPORE: BUILDING AN AI-DRIVEN ECONOMY

Since setting up a national AI strategy in 2019, Singapore has become an AI powerhouse, rivaling the US, China, and India. London-based Tortoise Media's Global AI Index, which assesses AI capabilities in 62 countries across more than 100 metrics, ranked Singapore third, behind the massive economies of the US and China.

Part of Singapore's AI strategy is to drive citywide AI usage by the public and private sectors, as well as by residents and students—an "AI for the public good" approach, according to Josephine Teo, minister for digital development and information. The city is achieving this by providing the AI training, resources, tools, and support needed to foster the responsible use of AI across its urban environment.

Turning AI into an economic driver

The goal for Singapore is to create an AI-driven economy, using the technology to enhance productivity and efficiency across key industries, including financial services, healthcare, manufacturing, logistics, IT, aerospace, engineering, biotech, tourism and hospitality, and research and development.

According to the Economic Impact Report 2024, commissioned by Google, AI-powered products and solutions could contribute US$198 billion to Singapore's economy by 2030, nearly 30% of the country's 2023 GDP.

Making transportation a better experience

Singapore's government is rapidly deploying both traditional and GenAI across urban domains. Mobility is one major area. Singapore's Changi Airport, for example, uses AI to screen and sort baggage, as well as to power behavior recognition technology for immigration clearance, thus enhancing border security and easing the experience for travelers.

Similarly, PSA Singapore, a flagship port terminal, uses an AI-based system to facilitate smarter trip planning and eliminate operational inefficiencies for the hauler community in Singapore. It also helps haulers improve asset utilization, reduce carbon emissions, and optimize operating costs.

The mass transit system makes extensive use of sensors to gather data for AI models that predict problems, disturbances, and anomalies, such as delays and overcrowding, in real time. This allows operations staff to quickly assess the situation and react by adding trains or special buses to handle backlogs or stranded passengers.

In another initiative, Singapore has implemented AI-driven smart traffic management systems to optimize traffic flow and reduce congestion. AI algorithms analyze real-time traffic data to adjust traffic signal timing, predict congestion points, and manage public transportation schedules. This not only improves commuting times, but it also contributes to a reduction in vehicular emissions.

(Continued on next page)

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SINGAPORE (CONT.)

Improving resident living

Singapore uses AI to monitor and manage environmental resources and sustainability. AI-enabled sensors collect data on air and water quality, waste management, and energy consumption. This information is used to implement proactive measures, such as optimizing waste collection routes and enhancing energy efficiency in buildings.

AI also has improved municipal services, education, and resident engagement. Singapore's OneService chatbot, Kaki, can identify the nature of a complaint or service request by a resident, extract details, and categorize it for a case report. The system predicts the right government agency and automatically routes the report there. The interface now correctly routes more than 90% of complaints.

In the education sector, Singapore's Ministry of Education uses two types of AI-enabled solutions to help improve student performance. One is an adaptive learning system to teach mathematics that is customized for each student using machine learning. The other is a learning feedback assistant for English-language writing that identifies problems with grammar, sentence structure, and language errors.

Pushing ahead with GenAI

Singapore is advanced in leveraging GenAI, which is now included in its Model Governance Framework for Generative AI. The city is among the highest per capita users of ChatGPT, and in October 2024, developer OpenAI announced it would open a branch there in partnership with AI Singapore, a state initiative that brings together local research groups.

A coalition of digital government agencies had already in 2023 launched an effort to develop 100 GenAI use cases for both the private and public sectors in 100 days through workshops and innovation "sandboxes," in partnership with Google Cloud, in an initiative called AI Trailblazers.

One example is an agent developed by Singapore's Trade and Industry Ministry that helps non-technical users easily retrieve information from the National Economic Research and Visualization Engine (NERVE), a data hub that provides economic data to public officers.

Similarly, since 2023, Open Government Products (OGP), an experimental tech team in the Singapore government, has been rolling out the Pair suite of large-language-model (LLM)-powered tools that enable safe and secure use of LLMs within the government's IT systems. Pair Chat is the first application to be developed within the suite and functions in a question-and-answer format, powered by the same LLMs underlying ChatGPT.

In addition, the Singapore National Research Foundation allocated $52 million in 2023 to develop an LLM tailored to Southeast Asian languages and cultures. The model, dubbed SEA-LION (Southeast Asian Languages in One Network), is an open-source engine designed to translate 11 major languages.

These and other initiatives will help Singapore become "the most AI-powered economy in the world," a goal cited by Jaqueline Po, managing director of the Singapore Economic Development Board, at the Fortune Brainstorm AI Singapore conference in July 2024. "We believe that AI has a huge transformative potential for the economy," she added.

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THE MANY BENEFITS OF AI USAGE IN CITIES

Increased efficiency and cost savings:

Oklahoma City, US: "Using AI for government administration and operations was quite useful, supporting our departments in enhancing efficiency."

Bucaramanga, Colombia: "Utilizing AI for city planning reduces costs and improves livability."

Detroit, US: "Leveraging AI for government management and operations creates numerous benefits, including cost savings, improved accuracy, heightened transparency, and more effective policy creation."

Optimized transportation:

Bangkok, Thailand: "AI-driven traffic management technology helps us to lower traffic congestion and pollution while enhancing overall traffic management systems."

Hanoi, Vietnam: "Intelligent public transportation routing helps to optimize public transportation routes, which reduces travel times and improves the overall efficiency of the public transportation system."

Seattle, US: "Smart parking management has been remarkably effective in alleviating congestion, cutting down on parking durations, and enhancing air quality. Early results show the potential to slash stops by 30% and CO_2 emissions by 10%."

Improved health and wellness:

Chicago, US: "Disease outbreak prediction is the most effective AI use case in Chicago right now. AI analyzes historical disease data, which significantly reduces the number of cases and fatalities in the city."

Belo Horizonte, Brazil: "AI is most beneficial in healthcare, where it assists in patient monitoring and medical image analysis."

Higher growth and competitiveness:

Doha, Qatar: "We are using AI to foster innovation, which in turn is driving economic growth and competitiveness."

Guangzhou, China: "AI adoption has benefited our city in various sectors, like finance, high-tech, retail, and transportation, and through this, AI has contributed a lot to our economy."

Bratislava, Slovakia: "We use AI for dynamic pricing of public services. This has improved efficiency and revenue development."

Better planning and forecasting:

Las Vegas, US: "The most effective use of AI in our city is urban planning, which involves AI simulations and modeling to assist in urban development."

Murcia, Spain: "Predictive maintenance and planning allows us to reduce the need for costly emergency repairs and extends the lifespan of urban infrastructure assets."

Enhanced sustainability:

Bakersfield, US: "AI's data-driven insights can inform decisions about urban development, allowing us to prioritize projects that balance growth with environmental sustainability."

Jaipur, India: "The most effective use case is water harvesting and environmental impact assessment reports in industrial areas to mitigate pollution."

Shijiazhuang, China: "Using AI in trash management improves recycling, lowers waste disposal costs, and enhances efficiency."

Source: AI-powered cities survey

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THE MANY BENEFITS OF AI USAGE IN CITIES

Improved public safety:

Madrid, Spain: "By incorporating AI into a video analytics system, we can identify accident-prone locations and other areas that demand attention."

Coventry, UK: "Smart traffic management systems reduce safety hazards and accidents on roads, providing a safer environment for vehicles and pedestrians."

Increased resident engagement and support:

Ankara, Turkey: "Customer service chatbots are the most effective AI use case. They provide 24/7 support and reduce customer wait times."

Tulsa, US: "The use of GenAI for resident experiences is leading to improved customer satisfaction and engagement."

Reduced risks and fraud:

Aracaju, Brazil: "We use AI to increase cybersecurity. It analyzes network activity to identify and mitigate cyberattacks on critical city infrastructure."

Sofia, Bulgaria: "By integrating AI into our existing operating system, we have been able to monitor cash flow, financial transactions, and procurement processes to detect fraud."

Better use of resources:

Edmonton, Canada: "We have seen remarkable improvements in energy efficiency, cost-effectiveness, system accuracy, and overall sustainability of our energy infrastructure."

Fukuoka, Japan: "The use of energy-efficient streetlights with AI-based sensors saves 20% to 25% on electricity."

What the specialists say

"There are multiple benefits, including improved resource management, enhanced public services, and increased operational efficiency. AI can help cities predict and mitigate risks, optimize energy usage, and streamline transportation systems. This will lead to more resilient, sustainable, and efficient urban environments that are digitally enabled and capable of adapting to changing needs and circumstances."

Professor Pascual Berrone and Professor Sampsa Samila, IESE Business School, Spain

"Cities must be prepared for different scenarios of climate change, local disasters, geopolitical crises, and other disruptions. AI could differentiate pessimistic, real, and optimistic scenarios and anticipate consequences not only in one month or one year, but also in decades. Based on this, a municipality could plan the budget and resources needed, customize territorial development master plans of the city, anticipate and influence residents' behavior, and provide new adapted services, such as new transport, utility, and entertainment infrastructure."

Bayan Konirbayev, Advisor to the Mayor of Almaty City, Kazakhstan

"AI increases resilience by predicting natural disasters, optimizes resource use, and enhances sustainability. It supports digital enablement through use with other technologies like digital twins for urban planning and IoT for smart buildings. In addition, AI boosts public safety through integration with emergency response systems and monitors environmental conditions via analytics."

Oleg Polovynko, Adviser on Digitalization to the Mayor of Kyiv, Ukraine

Source: AI-powered cities survey

servicenow | Deloitte. | NVIDIA | ThoughtLab

DUBAI: DRIVING VALUE FOR RESIDENTS WITH AI

The city-state of Dubai in the United Arab Emirates is like many other innovative cities in its quest for AI leadership. But it takes a different approach than many in its laser focus on value and convenience for its residents. In May 2024, Dubai announced the Universal Blueprint for AI, a yearly plan that aims to harness the technology's potential to improve quality of life in the city-state.

The plan includes several moves, including the appointment of 22 chief AI officers for a range of government departments and entities—spanning urban domains such as environment and energy, health, mobility, public safety, economy, and government operations. The plan also includes establishment of an AI and Web3 incubator to attract startups and support development of their ideas into successful real-world applications.

Similarly, city leaders announced the launch of the Dubai Commercial License for Artificial Intelligence, which will support the development of the sector by attracting specialized companies and individuals to Dubai. It also includes allocation of land for data centers that will contribute to the development of world-class AI infrastructure. In addition, Dubai will introduce AI education into the school systems to help develop skills for future market needs.

"In recent years, the evolution of artificial intelligence has accelerated, presenting numerous opportunities for nations and governments adept at utilizing it while posing challenges for those unable to keep pace," Crown Prince Hamdan bin Mohammed bin Rashid Al Maktoum told Gulf News. In June 2024, Al Maktoum directed the activation of the AI-powered Dubai Urban Design Platform, which uses generative AI to help design its urban plan.

Jessica Constantinidis, innovation officer for EMEA at ServiceNow and a resident of Dubai, said that she has seen the results of Dubai's use of AI for urban planning. For example, she explained, city planners have been using sensors and cameras—as well as apps—to allow AI systems to analyze traffic density. "There's one street here, Hessa, which is really, really busy. In six months, they flipped the street around; they added another four lanes and a bridge to improve traffic flow," she said.

Public safety

Constantinidis notes that Dubai is making good on its promises to use AI to enhance convenience for its residents. Public safety is one: Dubai recently introduced RoboCop Dubai, an AI-powered robotic officer that can interact with the public, respond to queries, and take reports of incidents.

Another public safety use is automated reporting for car accidents, if no one is injured, said Constantinidis. Both parties use smartphone apps to report the incident and take photographs. "Within 24 hours, you get either a red slip or a green slip, based upon the photos, the reporting, and the GPS positioning that shows the accident. If you get a green slip, it means it's not your fault—you just deal with your insurance and get your car fixed. If it is a red slip, you need to be at the police station the next day. It's very simple and convenient," she said.

(Continued on next page)

DUBAI (CONT.)

Mobility

Dubai is making strides in using AI to improve mobility. The city-state has had an AI-powered traffic management system since 2018 but is in the middle of a major expansion and upgrade, announced in July 2024, to cover the entire road network by 2026. Here again, the focus is on the resident: The system will also provide real-time information to the public about the condition of the road network and smart applications to better distribute traffic.

The city-state is also exploring the use of autonomous vehicles. In September 2023, Dubai began testing driverless taxis in the Jumeirah district. The initial testing was done without passengers but with a safety driver on board. Dubai plans to have 4,000 driverless taxis in operation by 2030.

Customer service

Another area where Dubai is currently using AI to improve daily life is customer service chatbots. Some of these were recently upgraded to use generative AI, including those for the Roads and Transport Authority, and the Dubai Health Authority. Constantinidis cited a recent interaction she had with the Dubai Land Department: "It has a full GenAI chatbot that was able to answer a complex question I had regarding contract documents without consulting a single person—it was all fully automated."

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Section 3:

THE PATH TO
AI LEADERSHIP

WHAT SETS AI LEADERS APART

Our research found seven leading practices and characteristics that set AI leaders apart.

01

Make a top-down commitment

AI leaders have a vision and plan for AI-driven development and societal change, backed by a budget. Often these plans start at the national level and cascade down to cities.

02

Build a modern data and IT foundation

AI leaders rely on a modern, cloud-based IT infrastructure to support AI. They unify data management systems across urban silos to provide a single source of truth and make data widely accessible to stakeholders through the cloud.

03

Develop AI skills, talent, and processes

AI leaders create the AI skills and talent required for the future, providing training to their leadership teams, staff, and residents. Many cities partner with universities to ensure a pipeline of AI talent and host AI bootcamps.

04

Cultivate an AI innovation ecosystem

AI leader cities bring together AI experts from academia, research firms, tech companies, and startups to help drive their AI initiatives. Some cities, such as Dubai, hold group meetings with vendors to ensure a cohesive and cost-effective digital foundation.

05

Transform urban domains through AI—and now GenAI

AI leaders use AI, and increasingly GenAI, to deliver new urban solutions, from predictive maintenance of infrastructure to self-service portals for citizens. They are exploring the use of Agentic AI to take actions and make decisions more independently, as well as AI-generated synthetic data to fill in data gaps.

06

Unlock value by combining AI with other technologies

AI leaders use cloud-based data platforms to scale AI initiatives, blockchain to make transactions more efficient and secure, IoT to enable real-time data collection, and digital twins for planning, optimization, and simulations.

07

Keep data security and privacy top of mind

As cities employ AI to harness huge sets of data, security and privacy risks can escalate if not properly managed. AI leaders install cybersecurity systems and processes to detect, protect against, and respond to cybersecurity risks. They also use AI to defend against cyberattacks in real time.

Source: AI-powered cities survey

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1. MAKE A TOP-DOWN COMMITMENT TO AI

Across cities and regions, the race is on to gain AI dominance. Many cities benefit from national and state/provincial commitments to advance their economies, communities, and residents through the responsible use of AI.

- **North America:** The Pan-Canadian AI Strategy, for example, was launched in 2017 to spur adoption of AI across the economy. In 2024, the government announced a $2.4 billion package of additional AI measures. Separately, the state of New York has launched Empire AI, a multi-party consortium to propel AI usage (see next page).

- **EMEA:** The EU's AI Act is a rigorous regulatory framework to ensure the safe and ethical use of AI. It includes provisions for transparency, accountability, and human oversight of AI. In addition, most countries in Europe, including Germany, France, the UK, the Netherlands, and Spain, have national strategies, as do countries in the Middle East and Africa, including the UAE, Saudi Arabia, Israel, South Africa, and Kenya.

- **Asia Pacific:** Countries across Asia see AI as a critical way to build their long-term competitiveness. China's National AI Development Plan aims to turn the country into a global AI leader by 2030. India's National AI Strategy, Australia's AI Action Plan, Singapore's National AI Strategy 2.0, and Japan's AI Strategy have similar aspirations.
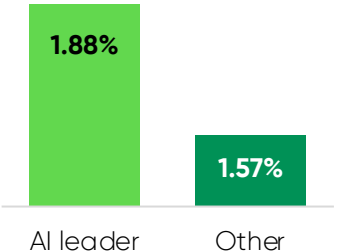
Investing in AI

Thanks partly to national investment programs, AI leaders enjoy bigger technology budgets to support their AI ambitions. AI leaders over the next three years plan to spend 33% more than their peers on technology: $160 vs. $120, on a per capita basis.

AI leaders also are expected to outspend others as a percentage of their budget. The wide gap in spending between AI leaders and others will cause the AI implementation gap to grow. It also helps to explain the higher percentage of AI leaders in wealthier industrialized vs. emerging markets.

Expected per capita spending on tech and data, next 3 years

$160.70	$120.25
AI leader	Other

Expected spending as % of budget, next 3 years

1.88%	1.57%
AI leader	Other

Source: AI-powered cities survey

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EMPIRE AI

Empire AI has launched the creation of a state-of-the-art AI computing center in upstate New York to be used by the state's leading institutions to promote responsible R&D, create jobs, and unlock AI opportunities focused on the public good.

"The Empire AI consortium will be transformative: bringing jobs and opportunity to New York and making us a global leader in this groundbreaking sector. Together with our partners in academia and the private sector, we'll harness the power of artificial intelligence and ensure this technology is being used for the public interest," said Governor Kathy Hochul.

Bringing together AI researchers, scientists, entrepreneurs, philanthropists, and others, the initiative will be funded by over $400 million in public and private investment. This includes up to $275 million from the state in grants and other funding, and more than $125 million from the founding institutions and other private partners.

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2. BUILD A MODERN DATA AND IT FOUNDATION

For many cities, the road to AI leadership starts with gathering and integrating data from across urban domains, from both internal departments and external sources, such as IoT sensors and academic partners. Our research shows that many AI leaders put the data on secure cloud-based platforms that act as a single source of truth. With automated and streamlined processes, these modernized IT platforms make it easy to scale AI solutions and provide access to stakeholders.

Nearly all AI leaders surveyed (92%) are midway or advanced in developing integrated data management systems. AI leaders are also ahead of their peers in modernizing their IT platforms, employing automation, and harnessing the latest technologies.
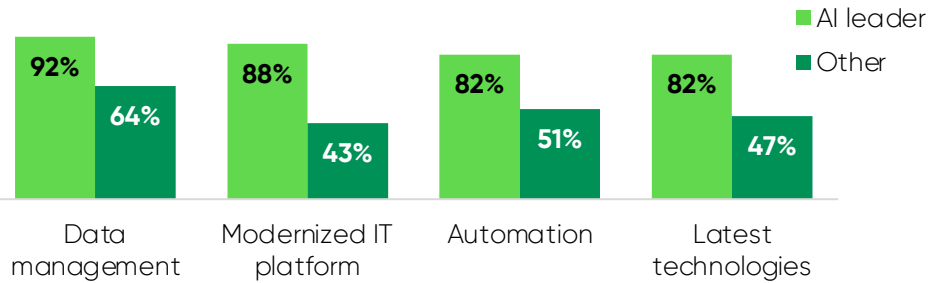
One such AI leader is Dubai. Its modernized IT platform, dubbed Smart Dubai, allows the city to draw on data and AI applications to share data, improve decisions, engage residents, and enhance service delivery in areas such as transportation, tourism, and energy management.

Making data AI ready

Ryan Hendrix, general manager of Arizona State University's Smart Cloud Innovation Center, sees AI leadership as part of a city's data journey: "Ten years ago, we were trying to help people move to the cloud, then IoT. And now we're doing the same with AI. It's all connected in their journey in terms of getting better data, doing more with that data, and making that data more accessible and secure."

The next stop on the data journey is testing and training AI models with synthetic data—artificially generated data that mimics real-world data. NVIDIA's Edulbehram explained: "Cities can create millions of scenarios automatically with AI and use them to train vehicles, drones, robots, or any other devices." The use of synthetic data will facilitate more accurate results, better decision-making and planning, and fewer data privacy problems. By 2030, Gartner estimates that synthetic data will overshadow real-world data in AI models.

Progress on technology for digital transformation
(mid- or advanced implementation)

Legend: ■ AI leader ■ Other

	AI leader	Other
Data management	92%	64%
Modernized IT platform	88%	43%
Automation	82%	51%
Latest technologies	82%	47%

Top steps by AI leaders to create a data foundation

Gather and integrate data from across departments/silos	**80%**
Create a cloud-based unified data exchange platform	**65%**
Collect a range of data from multiple sources	**61%**
Draw on AI to extract more insights and value from data	**57%**
Use cloud platforms to scale AI solutions	**51%**
Collaborate with business and academia to gather data	**51%**
Share data with businesses and residents	**41%**

Source: AI-powered cities survey

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3. DEVELOP AI SKILLS, TALENT, AND PROCESSES

AI leaders develop the skills, talent, and culture to drive their AI initiatives, supported by robust processes that can unlock the full value from AI. In fact, AI leaders surveyed are almost two times as likely as their peers to be midway or advanced in building AI skills and talent. They do this by setting up AI training programs and taking steps to recruit new employees with the required AI skills. Because of their greater internal digital resources, AI leaders are also three times as likely to build tech solutions in-house.
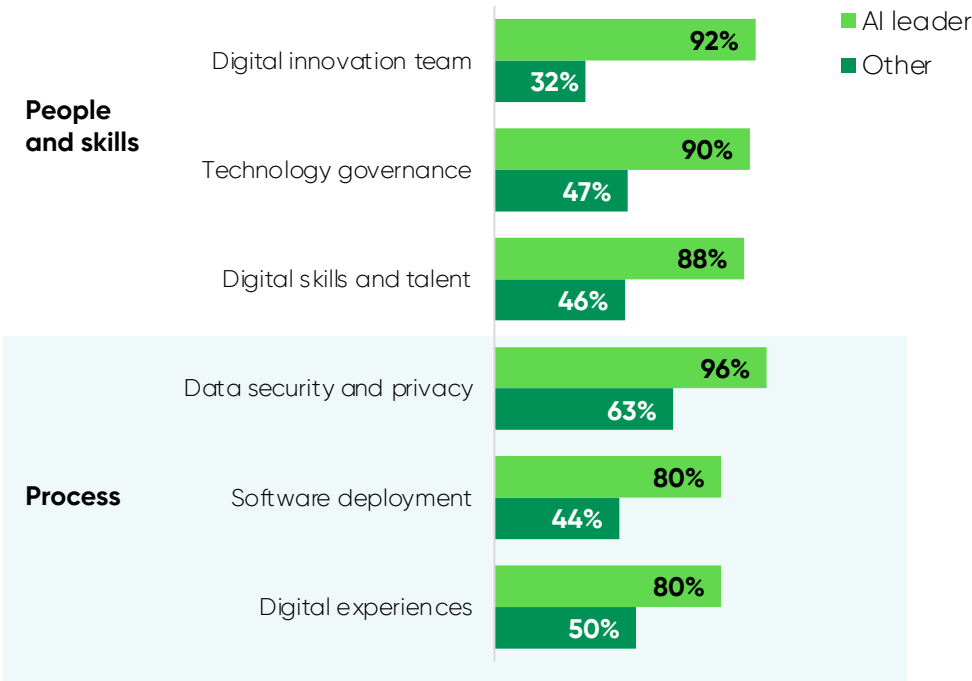
Talent gaps are a common speed bump on the road to AI success. For example, a city leader in Cleveland said, "The major difficulty we face is finding a qualified workforce with knowledge in emerging technologies, such as AI, data analytics, and cybersecurity. To solve this, we formed connections with local communities and introduced programs that provide on-the-job training and mentorship to young people."

The rise of the chief AI officer

Six out of 10 AI leaders surveyed have appointed a senior head of AI, supported by a team of AI specialists. In some cities, such as New York and Singapore, the individual has the title of chief AI officer (CAIO) or director for AI. In other cities, such as San Francisco, Barcelona, and Toronto, the chief data officer has responsibility for AI, while in cities such as Amsterdam, the chief technology officer is responsible. To accelerate their AI initiatives across urban environments, some cities have more than one CAIO. Dubai employs 22 CAIOs across urban areas as part of its AI development plan.

AI leaders provide their people with the processes and tools needed to excel in AI. Nearly all leaders surveyed (96%) are midway or advanced in protecting data security and privacy. Leaders also provide their employees with the software tools to create new applications and workflows.

Progress on people and process for digital transformation
(mid- or advanced implementation)

	AI leader	Other
People and skills		
Digital innovation team	92%	32%
Technology governance	90%	47%
Digital skills and talent	88%	46%
Process		
Data security and privacy	96%	63%
Software deployment	80%	44%
Digital experiences	80%	50%

Source: AI-powered cities survey

4. CULTIVATE AN AI INNOVATION ECOSYSTEM

"One thing cities striving to become AI leaders can consider is to work with the ecosystem of stakeholders" said Joe Mariani, Deloitte's emerging technologies research leader. Cities with broad ecosystems are about four times more likely to exceed their AI expectations. AI leaders are heeding that advice. Compared with other cities, they work with more partners across the private, public, and nonprofit sectors, sharing AI expertise and resources, building access to data and talent, and aligning strategies and policies with other government players.

Collaborating with the private sector

Nearly nine out of 10 AI leaders surveyed prioritize partnerships with startups and technology firms to access not just their expertise and AI solutions, but also the computing power needed to grow their AI programs. By attracting AI startups and other businesses and industry associations, cities such as Boston, New York, Dubai, Beijing, and San Francisco can build their long-term competitiveness and growth as major AI innovation hubs.

Tapping universities and nonprofits

AI leaders also collaborate with universities to leverage academic research, innovation, expertise, and talent pipelines. For example, the National University of Singapore collaborates with the government on AI initiatives that enhance urban living, including smart transportation and predictive analytics for public services. In Beijing, Tsinghua University and Peking University are closely involved with the city's AI initiatives, particularly in smart city applications and public health technologies.

Working together with other government partners

AI leaders understand the importance of sharing ideas and resources with other players in the public sector, from state/provincial governments and other cities to public utilities, federal/national governments, and regional or multilateral entities. For example, San Jose, California was instrumental in setting up the GovAI Coalition, which enables cities to share resources such as tools for vetting vendors, benchmark best practices, and collaborate on AI governance initiatives. Toronto collaborates with the OECD on AI initiatives focused on policy and implementation strategies.

Top partnerships prioritized by AI leaders

Commercial sector	Startups and technology firms	**86%**
	Financial institutions	**63%**
	Corporations/businesses	**63%**
	Industry associations/trade unions	**59%**
Not-for-profit	Academic/research institutions	**73%**
	Nongovernmental and civil society	**51%**
	Local nonprofits/foundations	**45%**
	Neighborhood associations	**45%**
Public sector	State/provincial government	**76%**
	Other cities or city networks	**69%**
	Public utilities	**57%**
	Federal/national government	**47%**
	Regional agencies/authorities	**41%**

Source: AI-powered cities survey

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5. TRANSFORM URBAN DOMAINS WITH AI—AND NOW GENERATIVE AI

More than three-quarters of AI leaders surveyed are making wide use of traditional AI; in the next three years, 90% say they will do so. Recognizing AI's potential, they have made significant progress deploying AI solutions across the urban landscape. More than seven in 10 respondents use it to streamline government operations and make better decisions; 63% to bolster safety, security, and resilience; and 61% to improve living, health, and trust.
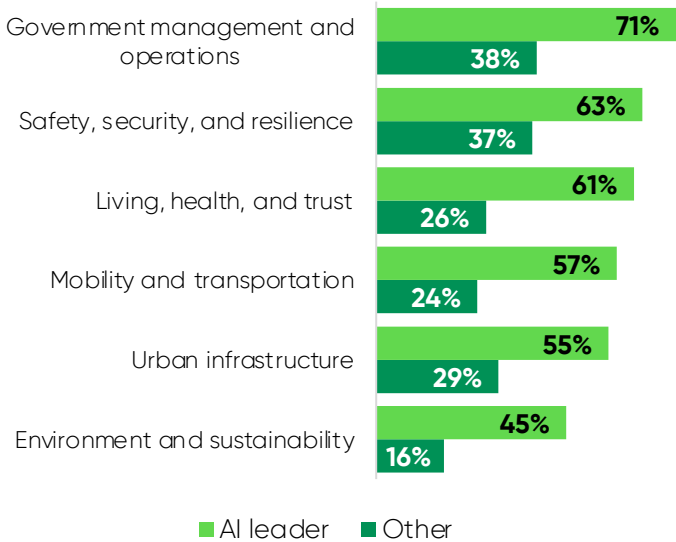
AI leaders are already harnessing GenAI. Almost two out of 10 surveyed are using it widely, and this will jump to 41% in three years. Fifty-five percent of AI leaders say they will be using it selectively.

Paris provided a glimpse into the future when it harnessed GenAI to support the 2024 Summer Olympics. It used GenAI to provide athletes with real-time answers to their questions and personalized training insights. It also used GenAI to make viewer experiences more immersive and create improved data visualizations.

Using machines to make decisions

AI leaders are exploring the use of Agentic AI, which enables machines to make decisions and take actions without direct human intervention. One of the fastest-growing use case for this technology is autonomous vehicles. For example, parts of Phoenix, San Francisco, and Austin offer self-driving taxis. Numerous cities in China are testing autonomous vehicles, the most aggressive push of any country in the world.

Cities are actively using AI across domains

Domain	AI leader	Other
Government management and operations	71%	38%
Safety, security, and resilience	63%	37%
Living, health, and trust	61%	26%
Mobility and transportation	57%	24%
Urban infrastructure	55%	29%
Environment and sustainability	45%	16%

■ AI leader ■ Other

AI leaders surveyed that are widely using GenAI

Bratislava	Marseille
Chicago	Niteroi
Istanbul	San Antonio
Kuwait City	Seoul
Ljubljana	

Source: AI-powered cities survey

AI leaders are advanced in traditional AI:

76%
of leaders use AI selectively or widely now

90%
of leaders indicate they will use AI selectively or widely in 3 years

AI leaders are ahead in GenAI:

18%
of leaders use GenAI widely now

41%
of leaders indicate they will use GenAI widely in 3 years

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ÎLE-DE-FRANCE: A PIONEERING REGION IN AI AND SMART CITY INNOVATION

As one of Europe's most dynamic regions, Île-de-France, often called the Paris region, is positioning itself at the forefront of AI and innovation. The region has embraced cutting-edge technology to address pressing urban challenges while navigating political, economic, and technological complexities. Through its ambitious projects, Île-de-France is crafting a model for integrating AI into urban governance and public service, leveraging digital tools to improve infrastructure, enhance efficiency, and promote sustainability.

AI and digital twins: the backbone of innovation

One of Île-de-France's most notable technological advancements is its use of digital twins, which replicate the region's physical infrastructure in a virtual environment. These tools enable authorities to simulate and analyze scenarios such as traffic flows, energy consumption, and building designs. "Our digital twin is done for simulation, using high-performance computing to model scenarios like new roads, highways, and transportation systems," explained Achille Lerpinière, the region's chief information and technology officer. The region's high-resolution mapping project, supported by aerial imaging, feeds data into this platform, creating a comprehensive picture of its territory.

AI amplifies the potential of digital twins by enabling predictive maintenance and scenario modeling. "We are deploying a LoRa network to connect IoT sensors and consolidate all the data into our digital twins," Lerpinière noted, highlighting how the integration of AI and IoT technologies creates a "force multiplier" effect for urban management. The region currently deploys over 50 AI use cases, including applications in computer vision and natural language processing.

Enhancing public services with AI

The region's commitment to AI is evident in its wide-ranging use cases, from education to public safety. During the 2024 Paris Olympics, Île-de-France employed AI for video monitoring to detect suspicious patterns and potential threats to public safety, leveraging a special legal framework for the event. Lerpinière underscored the effectiveness of this use case: "We used AI to detect strange movements and other anomalies anonymously. This application of computer vision was key during the Olympics."

In the education sector, Île-de-France is virtualizing laptops for 500,000 high school students and incorporating AI tools to support learning. The integration of AI in schools not only modernizes education but also familiarizes students with emerging technologies. "We train high school students on how to use AI for their studies and to understand its workings," said Lerpinière. This initiative is part of a broader effort to build public trust in AI and ensure its ethical use.

Public transportation also benefits from these innovations. By leveraging AI, the region is optimizing transportation networks and improving the commuter experience.

ÎLE-DE-FRANCE (CONT.)

A commitment to sovereignty and collaboration

As Europe strengthens its AI capabilities, Île-de-France is investing in sovereign solutions. "We are trying to invest in Graphic Processing Units (GPUs) and sovereign generative AI models hosted in sovereign clouds," Lerpinière said. These initiatives ensure data privacy and compliance with the European AI Act and General Data Protection Regulation (GDPR).

The region also prioritizes partnerships with municipalities and enterprises. Through its cybersecurity incident response center (CSRIT), Île-de-France assists local governments and businesses in addressing vulnerabilities. "We scan all the municipalities in Île-de-France and provide a cybersecurity posture, helping them protect themselves," Lerpinière explained. This collaborative approach strengthens the region's overall resilience to cyber threats.

Navigating challenges

While the region's technological advancements are impressive, they come with significant challenges. Budget constraints, exacerbated by economic slowdowns, remain a pressing concern. To offset the reduction of its budget, the region has adopted a three-year roadmap strategy to align initiatives with political cycles and ensure continuity in the face of future funding uncertainties.

Cybersecurity is another ongoing challenge. Lerpinière described it as a "permanent risk," with the region facing daily threats like data breaches, phishing attempts, and distributed denial-of-service (DDoS) attacks. The rise of AI-powered attacks has further complicated the landscape. "They use AI to attack; we use AI to defend," he said, noting that the region has invested heavily in cybersecurity tools and training to stay ahead.

A vision for the future

Île-de-France aims to solidify its position as a European leader in AI and smart city innovation. By investing in GPUs, fostering collaboration with startups, and expanding its digital twin platform, the region is building a foundation for long-term success. Its focus on ethical AI deployment, public trust, and sovereign solutions sets a precedent for other regions to follow.

Despite the challenges, Lerpinière remains optimistic about the region's potential. "We can be leaders in terms of brains, research, and new ideas," he said, emphasizing that AI is not just a tool for efficiency but a transformative force for economic growth and social impact. Through its innovative initiatives, Île-de-France is redefining what it means to be a smart region, proving that technology can create a brighter future for all.

HARNESSING AGENTIC AI

According to NVIDIA's Edulbehram, "Agentic AI represents a type of AI capable of interpreting changes in its operating environment and making decisions beyond its predefined training or rules. This capability is especially critical in scenarios like self-driving cars, which require greater autonomy, the ability to reason effectively, and the capacity to learn dynamically based on real-time behavior. It combines tools from traditional AI and generative AI to construct workflows that enable rapid decision-making."

In urban settings, Agentic AI can appreciably enhance operational efficiency and service delivery. For instance, traffic control systems can use real-time data to adjust signals and prioritize emergency vehicles, while AI-powered public safety tools can detect disturbances through video analytics. In waste management, smart bins with sensors can notify collection systems to optimize truck routes.

One example of Agentic AI is NVIDIA's Video Search and Summarization Agent, which utilizes advanced AI models to process and analyze vast amounts of video data, enabling efficient search and summarization of video content.

Such technology can be instrumental for city authorities in monitoring public spaces, enhancing security, and managing events by providing quick insights from security footage.

Keeping humans in the loop

While Agentic AI offers impressive autonomy and efficiency, cities may find it too soon to use AI to independently make decisions, especially for critical or sensitive matters. For instance, decisions such as altering traffic light patterns or responding to emergencies may require not just computational precision, but also human judgment to consider context, ethics, and other issues.

Human-in-the-Loop (HITL) systems offers a potential solution, integrating human oversight into AI processes so that city managers can review, guide, or override AI decisions. HITL combines the speed and scalability of AI with the strengths of human intelligence and judgment.

"

Human-in-the-loop can play a key role in supporting the adoption of AI and fostering trust. AI is designed to augment human capabilities, not act independently. For example, in an intelligent traffic management system, AI might analyze congestion data and suggest potential adjustments.

However, human oversight ensures these suggestions are tailored to local context and priorities. This collaboration helps to make informed decisions, with human judgment at the center, ensuring a balance between AI's capabilities and human expertise.

— Alex Pazos, Senior Business Development Manager, NVIDIA

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DRANCY, FRANCE: THE POWER OF AI AND GENERATIVE AI IN SMALL CITIES

In the realm of smart city development, large metropolitan areas often steal the spotlight. However, small cities such as Drancy, France, prove that size is no barrier to innovation. Under the leadership of its CIO, David Larose, Drancy has embarked on an ambitious journey to become a smart city, leveraging AI and other advanced technologies to improve urban life.

Transforming Drancy with AI

One of the first major AI projects Larose initiated was using video cameras to detect littering, a significant issue for Drancy that cost the city considerable resources to manage. By leveraging the existing network of 200 video cameras installed in 2004, Larose saw an opportunity to address this problem now that advancements in AI modeling have made it feasible.

Expanding the scope of AI, Larose next implemented systems to manage traffic lights by analyzing vehicle types and traffic flow to optimize signal timing and reduce CO2 emissions. "We have an AI solution that manages traffic lights by analyzing the number and type of vehicles waiting at intersections," Larose explained. This innovation also led to a 25% reduction in CO2 emissions by adjusting signal lengths based on real-time traffic conditions.

The city also uses AI to manage traffic flow at roundabouts, ensuring that wait times are minimized. In addition, it uses AI to detect the presence of dogs in parks, ensuring compliance with local regulations and enhancing safety for children.

Preparing for GenAI

Larose's current focus is on preparing the city's departments for the use of generative AI. He is educating colleagues on how to collect the right data, train models, and understand its capabilities and limitations—particularly its problems with accuracy. He highlighted an instance where GenAI models failed to accurately answer questions based on the electoral code.

This underscored the need for continuous verification and validation of AI outputs. To address these challenges, Larose is developing a more dependable AI model. "I build my own document base and set the AI model to respond only based on the documents I provide," Larose explained.

He aims to eventually open AI models to the residents of Drancy, allowing them to access reliable information about city services.

"Once I'm sure about the AI we have developed internally, then I can open those models to the residents," Larose said. This initiative aims to make city information more accessible, reducing the need for direct inquiries and improving overall efficiency.

Managing data is a critical aspect of Drancy's AI initiatives. "We have to take the data, clean it, and make sure it is okay," Larose explained. He emphasized the importance of data accuracy and the need to update data continuously due to changing regulations and the dynamic nature of data management in the public sector. "Sometimes you could have a 'yes' that turns into a 'no' six months later," he noted.
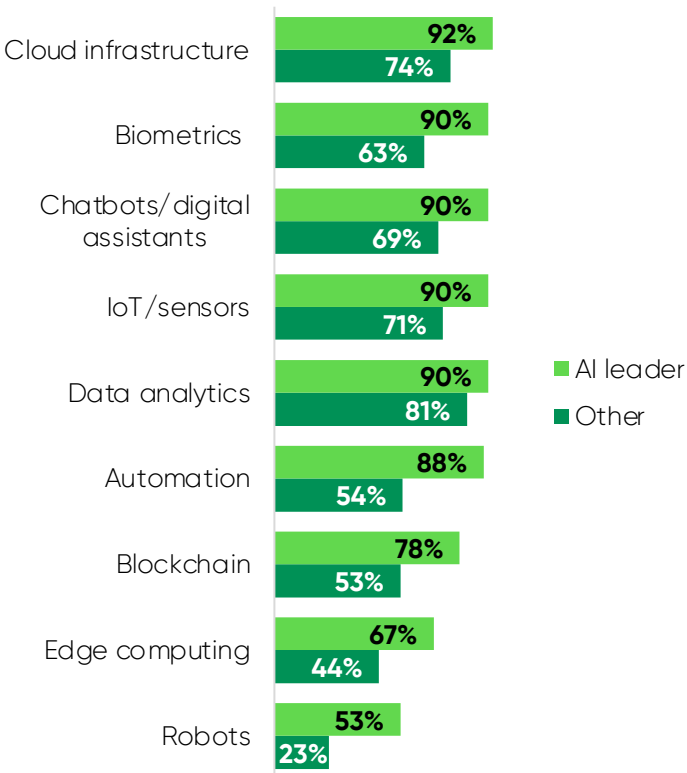
6. UNLOCK VALUE BY COMBINING AI WITH OTHER TECHNOLOGIES

Given their commitment to digital innovation, AI leaders are ahead of their peers in deploying advanced technologies and supercharging them through AI. The most common technologies include:

- **Cloud:** The cloud provides the infrastructure for processing large data sets and enabling scalable AI apps without a large upfront investment in hardware. Yizhuang, China (see case study on page 49) uses the cloud as the backbone for AI apps in smart medical services, including intelligent triage, pre-diagnosis consultations, and accurate appointment scheduling.

- **Data analytics:** When combined with AI, data analytics can uncover patterns and insights to help drive strategic decisions. London, Ontario uses AI with data analytics to predict the likelihood of an individual becoming chronically homeless, allowing for early intervention and support.

- **Cyber technologies:** To reduce the cyber risks caused by digitalization, AI leaders draw on a range of cybersecurity technologies, which can be made even more effective through AI. For instance, Boston told us it uses AI to strengthen its defenses against cyber threats and improve its overall security posture.

- **IoT:** City sensors generate vast amounts of real-time data, providing the fuel for many AI models. Jaipur uses IoT combined with AI for smart lighting, intelligent traffic management, and to reduce water wastage.

- **Chatbots:** Most AI leaders use digital assistants to provide personalized responses and recommendations. Many cities, such as Bucharest, another survey participant, incorporate AI into chatbots to deliver their services more effectively and trim labor costs.

- **Biometrics:** These systems enable cities to improve security and safety, while creating more seamless experiences for residents.

- **Automation:** AI leaders use robotic process automation to streamline processes and services. They often use AI to enable these automated tasks to learn from data and provide insights for decision-making. Bilbao told us that it blends automation with AI to free up city staff to focus on more strategic initiatives.

- **Mobile apps:** While many cities now use mobile apps to communicate with residents, AI leaders make these a centerpiece of a city experience. Leaders use AI to take make these experiences more personalized, smart, and frictionless. Los Angeles, Madrid, and Toronto are just some examples of cities surveyed that do so.

Technologies used most extensively by AI leaders

Technology	AI leader	Other
Cloud infrastructure	92%	74%
Biometrics	90%	63%
Chatbots/digital assistants	90%	69%
IoT/sensors	90%	71%
Data analytics	90%	81%
Automation	88%	54%
Blockchain	78%	53%
Edge computing	67%	44%
Robots	53%	23%

Source: AI-powered cities survey

RALEIGH: LEVERAGING AI AND DIGITAL TWINS

Located in the North Carolina Research Triangle, the city of Raleigh is well placed to partner with high-tech companies and nonprofits to incorporate AI into its future-ready plans. The city is doing this across urban domains, from environmental sustainability to transportation management.

AI and digital twin for microclimate modeling

In 2024, the city won an IDC Smart Cities North America award for its groundbreaking use of a full digital twin of the city—paired with an AI-powered microclimate modeling system designed by MITRE Corp—for more intelligent and resilient urban development in an era of climate change. Raleigh also uses AI with its digital twin for a variety of other applications.

The growing threat of extreme heat in the summer months is one driver behind the use of microclimate modeling. The digital twin can analyze how urban development can create heat islands in the city and help officials decide how to mitigate them, particularly in most-affected areas. The goals are to ensure that the city is more adaptable to climate change, to design for environmental sustainability and resilience, and to create more comfortable public spaces that take "real-feel" temperatures into account.

"As we get permits and building designs from developers, we are putting them in the digital twin," explained John Holden, smart city manager for Raleigh. "It shows how shade is positively or negatively affecting the area, as well as wind, and at different times of day. We also look at traffic patterns and safety concerns."

AI for Vision Zero

Raleigh already has made significant progress in AI-enabled traffic management. It has more than 100 cameras installed at intersections, making it possible to view activity in real time.

Live video feeds from these cameras are fed into computer vision models that can detect vehicles. Raleigh collaborates with ecosystem partners to study traffic patterns and counts at several intersections. It aims to reduce or eliminate traffic fatalities as part of the city's commitment to Vision Zero.

"We know when an accident happens, but we don't know about the near misses," said Mark Wittenburg, Raleigh's CIO. His team is training the AI model to detect near misses between vehicles and pedestrians and thereby help to make intersections safer.

AI to improve water management

Raleigh also uses AI to forecast flooding in stormwater systems, based on factors such as age and condition of infrastructure, soil materials, and previous failures.

Similarly, Raleigh's municipal water utility, Raleigh Water, uses machine learning to predict failures in the water and sewer systems. One project predicts water main breaks, so that the utility can do preemptive maintenance.

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7. KEEP DATA SECURITY AND PRIVACY TOP OF MIND

AI-powered cities run on data, making them susceptible to security and data breaches if not properly prepared. That's why most AI leaders install cybersecurity defenses, such as data backup and recovery systems, end-point detection, automated risk monitoring, identity management tools, and cybersecurity orchestration and automation.

The city of Santa Clara in the US, for example, indicated as part of the survey that it constantly improves encryption, intrusion detection and prevention systems, and incident response procedures to minimize breaches as it adopts new technologies, such as AI.
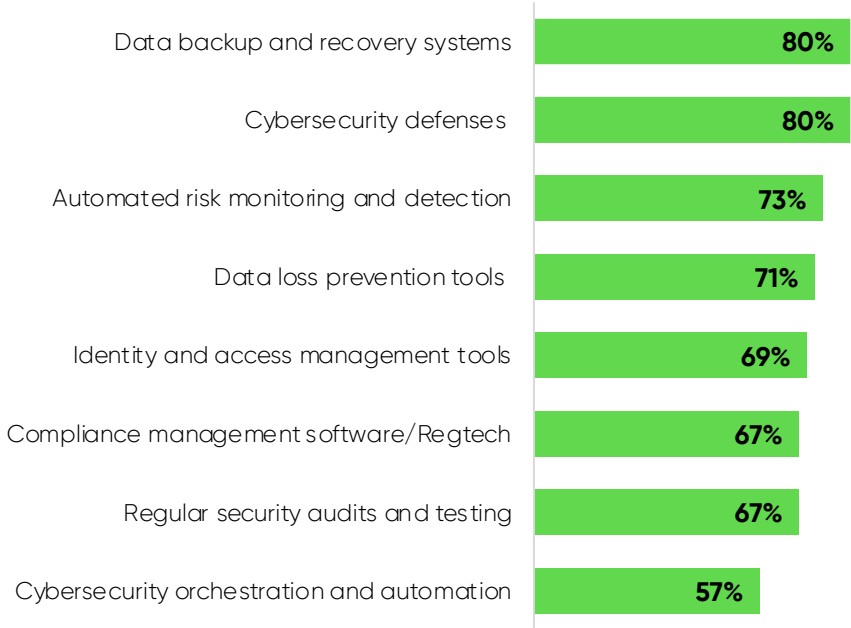
Protecting against cyber risks from use of AI and IoT

As cities beef up their AI programs, they often increase their use of data from connected IoT devices. This can expose cities to major threats, as these devices can be embedded in infrastructure, buildings, and public spaces to collect real-time data on traffic flow, air quality, energy consumption, infrastructure conditions, and water levels.

IoT devices may have security weaknesses that hackers can exploit to gain unauthorized access, disrupt services, or steal sensitive data. Between 2022 and 2023, the number of malware attacks on IoT devices increased 400%, according to a report by Zscaler. To protect against these attacks, Deepen Desai, Zscaler's head of security research, encourages cities "to enforce zero-trust principles when securing IoT and OT devices—never trust, always verify, and assume breach."

Aware of the dangers, cities such as Saltillo are already acting. Said a city leader there: "As the city becomes more connected, cybersecurity risks increase. To fix this, we are implementing robust cybersecurity measures, such as encryption, firewalls, and intrusion detection systems."

Top cybersecurity tools used by AI leaders

Tool	%
Data backup and recovery systems	80%
Cybersecurity defenses	80%
Automated risk monitoring and detection	73%
Data loss prevention tools	71%
Identity and access management tools	69%
Compliance management software/Regtech	67%
Regular security audits and testing	67%
Cybersecurity orchestration and automation	57%

Source: AI-powered cities survey

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Section 4:

ENABLING RESPONSIBLE USE OF AI

PROTECTING RESIDENTS THROUGH AI REGULATIONS AND GUIDELINES

While AI can create opportunities for cities, it can also usher in risks for residents. These include the potential for bias and discrimination, job displacement, misinformation, data breaches, and loss of privacy. As cities transfer more control to machines through GenAI and Agentic AI, the risk of misinformation and bad decisions could escalate without the proper safeguards. Such errors could be catastrophic in cities, where energy grids, infrastructure, and other systems are interconnected.

That's why AI leaders in our study take multiple actions to build robust AI governance. Most establish clear governance frameworks, implement digital systems and policies to enhance data privacy and security, and install robust AI auditing processes to uncover biases and misinformation. New York, for example, takes these and many more actions to ensure the responsible use of AI under its AI Action Plan. (See page 42 for more details.)

Looking outside for support

AI leaders also seek external support. They collaborate with experts, academics, and consultants on governance initiatives; work with other levels of government and regulatory bodies to develop AI policies; and benchmark themselves against national and international standards. A successful AI governance program should gather feedback from residents and address their concerns. For example, Montpellier, France organizes a local convention that provides a platform for dialogue on AI issues.

Some AI leaders also take proactive steps to mitigate job displacement, often by offering retraining programs and creating new job opportunities in AI-related fields. They also provide literacy programs for underprivileged communities and equitable access to AI technology.

Actions AI leaders take to build robust AI governance

Establish a clear AI governance framework	**73%**
Enhance data privacy and security with digital tools	**65%**
Implement guidelines for handling of personal data	**61%**
Work with experts, academics, and consultants to develop AI policies	**57%**
Set robust processes to uncover biases and hallucinations	**55%**
Work with government and regulatory bodies to develop policies	**53%**
Engage with residents to gather feedback and address concerns	**53%**
Benchmark governance against national or international standards	**43%**
Establish procedures to handle job displacement and retrain workers	**43%**

Source: AI-powered cities survey

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The integration of AI in cities raises concerns, including privacy and data security, bias and fairness, job displacement, and ethical considerations. Cities can overcome these challenges by implementing robust data protection regulations, developing fairness and bias-mitigation techniques, investing in workforce reskilling, and enabling transparent AI decision-making processes. Public engagement and education are important, as is fostering collaboration between government, industry, and academia to help drive innovation.

— Michael Flynn, Global Leader for Infrastructure, Transport, and Regional Government, Deloitte Ireland

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BUILDING TRUST
IN THE AI ERA

As cities forge ahead with AI, they may want to find a balance between moving fast to capitalize on AI and proceeding cautiously to avoid causing risks and citizen mistrust.

Installing governance structures and guardrails enables cities to fast-track AI innovation while ensuring citizen trust. Alex Pazos, senior business development manager at NVIDIA, suggests that cities adopt the four key pillars of AI trustworthiness—privacy, safety and security, transparency, and nondiscrimination. These foundational principles are crucial for ensuring that AI systems not only provide effective solutions but also operate in an ethical, fair, and accountable manner.

Using AI to foster trust

While AI can rupture citizen trust, it can also nurture it. Cities are finding that AI-enabled tools can support civic engagement, for example, by gathering feedback on the use of AI, analyzing data, and ensuring that the concerns of residents are heard.

One example is Zencity, a platform and set of AI tools that are used to collect and analyze community and citizen data. Government officials in more than 350 cities, counties, and agencies, such as San Diego, Austin, Fort Lauderdale, and many more, use the Zencity platform to extract insights and incorporate community concerns and feedback into their decisions.

Another example is CitizenLab, a company that provides community engagement solutions for local governments, which launched an AI assistant called Sensemaking in early 2024. The tool scans, organizes, and creates reports from large volumes of resident responses and feedback, thereby helping make government engagement with residents more efficient and impactful.

While off-the-shelf solutions are increasingly available, many cities also construct their own tools that are built into their internal and customer platforms.

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NEW YORK CITY'S AI ACTION PLAN

With the publication of the AI Action Plan in October 2023, New York City became a national leader in the responsible use of AI technologies. The plan introduces actions the city will take to help agencies evaluate risks and determine whether a digital tool will deliver positive outcomes for New Yorkers.

The plan outlines 37 key actions, which include:

- Establish a framework for AI governance that acknowledges the risks of AI, including bias and disparate impact.

- Create an external advisory network to consult with stakeholders across sectors regarding the opportunities and challenges posed by AI.

- Build AI knowledge and skills in city government to prepare city employees to effectively and responsibly work with AI.

- Enable responsible AI acquisition with AI-specific procurement standards or guidance to support agency-level contracting.

- Publish an annual AI progress report to communicate the city's AI implementation.

The plan also defines key terms and phrases to help ensure that city employees and the public understand them. And it sets out core principles to guide the use of AI across city departments and help ensure they share the same goals. The principles include validity and reliability, social responsibility, information privacy, cybersecurity, and trust and transparency.

"The AI Action Plan exemplifies how the city is using the technology of tomorrow to better serve New Yorkers today," said First Deputy Mayor Sheena Wright. "This framework will help city agencies take advantage of AI's potential to better deliver vital services while protecting New Yorkers' privacy and concerns about bias."

To bolster the plan's success, the city established an internal AI steering committee to oversee AI governance. That committee works with the city's Office of Technology and Innovation (OTI) to implement the AI Action Plan and provide expertise on AI use cases, successes, risks, and barriers to adoption. The committee collaborates on identifying best practices in key areas, such as AI implementation, research and development, procurement strategies, and risk management.

The city also has set up an AI Advisory Network consisting of experts from private industry, academia, labor, and civic organizations, among others. This will enable the OTI to ensure that conversations and work efforts are solution-based and technically sound, and that they will address urgent challenges.

New York City's CTO, Matthew Fraser, sees this plan as just a salvo shot: "As we continue to implement the plan, the knowledge and experiences of city government and industry experts will play an integral role in sharpening our thinking and efforts."

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THE RESPONSIBLE USE
OF GENERATIVE AI

Here are a few of the many examples of GenAI governance policies that cities have made public.*

Boston

In March 2023, the city issued Interim Guidelines for Using Generative AI, outlining acceptable uses (including examples of dos and don'ts):

The City of Boston's guidelines ask that city employees:

- Fact-check and review all AI-generated content for inaccurate or biased information, especially if used in public communication or decision-making.
- Disclose the use of AI-generated content, including the specific versions.
- Not share sensitive, private, or confidential information in the prompts.

San Jose (US)

The city spearheaded the Government AI Coalition, bringing together local, state, and federal agencies to promote responsible use of AI in the public sector. GovAI provides a set of templates and resources that all cities can use.

Seattle

The city released its Generative Artificial Intelligence Policy in late 2023. The policy requires city departments, employees, and vendors to:

- Obtain permissions from Seattle IT before accessing any GenAI product.
- Use the city's acquisition process to purchase all GenAI software services.
- Ensure copyrighted material is not published without proper attribution or rights.
- Label content produced using GenAI.
- Screen AI-generated material for biased, harmful, or offensive content.
- Not submit sensitive, confidential, regulated, or personal identifiable data about members of the public to generative AI systems.
- Be aware that GenAI content may create public records subject to the Washington Public Records Act.

Singapore

The city issued its Model AI Governance Framework for Generative AI in early 2024:

1. **Accountability:** Putting in place the right incentive structure for different players in the AI system development life cycle to be responsible to end users
2. **Data:** Ensuring data quality and addressing potentially contentious training data in a pragmatic way, as data is core to model development
3. **Trusted development and deployment:** Enhancing transparency regarding baseline safety and hygiene measures based on industry best practices in development, evaluation, and disclosure
4. **Incident reporting:** Implementing an incident management system for timely notification and improvements
5. **Testing and assurance:** Providing external validation and added trust through third-party testing, and developing common AI testing standards for consistency
6. **Security:** Addressing threat vectors arising through GenAI
7. **Content provenance:** Promoting transparency about where content comes from as a useful signal for end users
8. **Safety and alignment R&D:** Accelerating R&D through global cooperation among AI Safety Institutes around the world to improve model alignment with human intention
9. **AI for public good:** Harnessing AI to benefit the public by democratizing access, improving public-sector adoption, upskilling workers, and developing AI systems sustainably

*These are examples of policies identified in our research and are not meant as endorsements.

AMSTERDAM AND HELSINKI: BUILDING TRANSPARENCY THROUGH AI REGISTRIES

" Algorithms play an increasingly important role in our lives. Together with the city of Helsinki, we are on a mission to create as much understanding about algorithms as possible and be transparent about the way we as cities use them.

— Touria Meliani, Deputy Mayor of Amsterdam (Digital City)

At its core, AI and the underlying algorithms are nothing more than automation of human actions and decisions. These actions and decisions need to be held to the same standards as those of government employees—adhering to relevant laws and regulations.

Everyone should ideally have access to understandable and up-to-date information about how algorithms affect their lives. However, algorithms and AI are often complex, technical systems that often require technological know-how to understand. As they become more advanced, the algorithms become less self-explanatory.

Aiming to be open and transparent about their use of algorithms and AI, Helsinki and Amsterdam have become the first cities to launch an open AI registry.

Said Pasi Rautio, project manager at the City of Helsinki: "The use of artificial intelligence is becoming more common in the world, and its use will also increase in the city's services in the future as artificial intelligence becomes more familiar and the city learns more about its applications. The wide-ranging utilization of artificial intelligence is conditional on maintaining trust in the city's activities. Therefore, the city strives to strengthen this trust with the greatest possible openness. This is why the Artificial Intelligence Register has also been created."

The AI register describes the who, what, where, and how of AI applications, answering questions such as: Which datasets are used for training purposes? How are the algorithms and models assessed for potential bias or risks? In what ways do humans use the AI services? And what city department is using the AI service and who is the individual responsible? The goal of the registry is to make the use of AI as responsible, transparent, and secure as other local government activities.

The registry is also a tool for managing AI governance in the development and operations processes. It helps teams create and maintain documentation systematically across all their projects, regardless of the technologies and partners involved. Importantly, the registry allows residents to provide feedback, participate in research and pilots, and help Helsinki and Amsterdam build out their human-centered AI program.

At the time of this writing, there were 42 AI services available in Amsterdam's registry and 10 AI services available in Helsinki's registry. At least nine additional cities have followed the example of Amsterdam and Helsinki, by establishing their own AI and algorithm registries. These cities include Barcelona, Bologna, Brussels Capital Region, Eindhoven, Mannheim, Rotterdam, and Sofia. As part of their annual reporting process, New York City's Office of Technology and Innovation provides similar data on the algorithms used.

Section 5:

THE USE OF AI ACROSS URBAN DOMAINS

GOVERNMENT OPERATIONS

One use of AI is to boost efficiency. So, it is hardly surprising that a large majority of AI leaders surveyed are piloting or using AI to streamline government management and operations across areas such as data analysis, document digitization and analysis, and continuous service improvement. Almost six in 10 leaders are also piloting or using AI to create urban development models, answer resident queries, analyze documents, and screen and process procurement requests.

Yizhuang, a suburb of Beijing (see page 49), created the AI-driven Yizhi platform, which serves as a large-scale government service model and provides residents with intelligent consultation and interaction capabilities. Residents can access services via their mobile phones, receive guidance on filling out forms, upload documents, and submit applications. The AI assistant Xiaoyi further enhances the experience by offering personalized recommendations and solutions.

Helsinki's AI-enabled digital twin exemplifies how AI supports better decision-making. It allows officials to evaluate the impact of urban development projects at the planning stage. Residents can view a project and provide feedback via their mobile devices. They also have access to underlying data on renovation costs and energy efficiency of public projects, which they can use to improve their homes.

Unifying data sources through AI

The district of Gamle Oslo in Norway employed an AI-powered tool to pull together various data sets regarding social issues, employment, education, job opportunities, and others. Having such a central repository for diverse data helps the district analyze the data, optimize resource allocation, and make better decisions. Instead of having to go to multiple data sources, city officials and workers have greater visibility of data on a single platform. With improved data accessibility and visibility, the district can give its workers better insights and its residents better services.

Government operations AI use cases
(piloting or using)

	AI leader	Other
Analysis of huge volumes of data	76%	49%
Document digitization and accelerated processing	69%	47%
Continuous service improvement with feedback loops	65%	23%
Visualize and create models for urban development	59%	29%
Answer resident queries and make recommendations	59%	28%
Document retrieval and analysis	57%	40%
Screen and process procurement proposals	55%	35%
Tailor services to meet individual needs of residents	51%	25%
Drafting memos and rules	35%	18%
AI-enabled "city brains" providing a holistic view of the city	31%	9%

Cities surveyed that are advanced in AI for government operations

Bangkok	Denver	Melbourne
Beijing	Guangzhou	Seattle
Daegu	Halifax	Vancouver
Dammam	Jaipur	

Source: AI-powered cities survey

Our 24/7 chatbot assistance enhances the accessibility of government services, including the sharing of health data reports and other tax information.

—Nairobi city official

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SAFETY, SECURITY, AND RESILIENCE

Recent flash floods in Valencia and wildfires in Los Angeles are poignant reminders of how dangers can arise suddenly in cities with catastrophic effects. Whether it be weather events, traffic accidents, disease outbreaks, or other emergencies, cities face disruptions most every day.

AI leaders surveyed are now using new AI solutions to enhance city safety, security, and resilience. Using cameras to monitor urban environments in real time is the most common way. For example, a city leader or Monrovia, the capital of Liberia, said they use AI in video monitoring and analysis, which helps monitor crowds, detect suspicious behaviors, and respond to emergencies swiftly. Similarly, New Orleans employs an AI-enabled road safety system, which has reduced the both the number and severity of accidents caused by rear-end collisions.

Improving disaster response through AI

Six out of 10 AI leaders surveyed are piloting or using AI to predict and respond to natural disasters and disease outbreaks, as well as to manage and allocate resources for emergencies. Over five in 10 conduct scenario analysis. In the Ukrainian city of Kyiv, the Kyiv Digital app provides an offline map of shelters, helping residents stay safe. A city manager surveyed from nearby Warsaw, Poland, said the city uses AI to predict flooding emergencies faster and more accurately than traditional methods.

Tokyo, a city accustomed to natural hazards, has implemented a comprehensive disaster preparedness system. This consists of a network of AI sensors combined with predictive modeling, simulation tools, and community-based disaster management initiatives. In addition, the city has installed a network of high-altitude cameras in strategic locations. These cameras can automatically detect early signs of impending disasters, such as fires and building collapses. By issuing rapid alerts to emergency services, this system helps speed up response times during critical situations, potentially saving lives.

Safety, security, and resilience AI use cases
(piloting or using)

	AI leader	Other
Video camera optimization	76%	45%
Video monitoring	73%	49%
Crime forecasting	65%	47%
Natural disaster response	61%	45%
Emergency response resource allocation and management	61%	29%
Data analysis to predict disasters or disease outbreaks	61%	43%
Scenario analysis of impacts of future trends	53%	34%
Emergency callbox, fire hydrant monitoring, etc.	53%	39%

Cities surveyed that are advanced in AI for safety and security

Amsterdam	Ljubljana	Susono
Boston	Lucknow	Taipei
Bratislava	Madrid	Utsunomiya
Hong Kong	Mexico City	
Istanbul	Perth	

Source: AI-powered cities survey

"

Sensor-based condition monitoring can improve the resilience and sustainability of the city's infrastructure.

—Jacksonville city official

LIVING, HEALTH, AND TRUST

AI leaders are turning to AI to enhance the lives and health of their residents and trust in government. One way they do this is through AI-enabled chatbots that provide personalized assistance and self-service portals that simplify the use of public services.

Kyiv's smart digital platform, Kyiv Digital, has evolved into a life-saving platform, now with over three million active users and nearly 90% penetration of the city's population. The app's enhanced functionality has proven crucial during the ongoing war, providing real-time air raid alerts, shelter locations, and essential updates.

AI-enabled health initiatives

Nearly two-thirds of AI leaders surveyed are piloting or using AI-supported risk factor identification tools to identify and analyze factors contributing to health trends. More than 40% of AI leaders also piloting or using AI to manage social services and predict disease outbreaks.

Yizhuang is using AI to revolutionize healthcare. With an investment of over seven billion yuan, it is developing a cloud-based infrastructure that connects medical institutions across Beijing. This system serves as the backbone for AI applications in smart medical services, including intelligent triage, pre-diagnosis consultations, and appointment scheduling.

Yizhuang's AI-driven healthcare solutions focus on creating high-quality disease data areas that allow for precise and personalized treatments. It is turning public hospitals into smart medical pilot sites, where AI is being tested and refined to improve patient care. (See case study on next page.)

Living and health AI use cases
(piloting or using)

	AI leader	Other
Chatbots to provide personalized assistance	67%	34%
Track and analyze data on resident needs and health trends	63%	32%
Risk factor identification through public health records	63%	32%
Intelligent self-service portals	59%	35%
Social services case management and administration	43%	22%
Simplified applications and information for aid and services	41%	26%
Disease outbreak prediction	41%	14%
Sentiment analysis	33%	17%

Cities surveyed that are advanced in AI in living and health

Beijing	Gold Coast	Salzburg
Charlotte	Helsinki	Taipei
Cork	Jaipur	Toledo
Denver	Kuwait City	Tucson
Edinburgh	Niteroi	Wellington
Edmonton	Pachuca	

"

AI has helped us to identify disease patterns and enables targeted treatments and resource allocation."

—Niteroi city official

Source: AI-powered cities survey

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BEIJING: PIONEERING AI ACROSS URBAN DOMAINS

On the southeastern outskirts of Beijing lies Yizhuang, a thriving economic and technological development zone that has become a focal point for innovation and industry. Unlike the bustling heart of the capital, Yizhuang is a specially designated area designed to accelerate the development of high-tech industries and scientific breakthroughs. With ambitious investments, cutting-edge technologies, and a focus on practical applications, Yizhuang is at the forefront of building a future-ready city that harnesses AI to improve the lives of its residents while shaping the future of urban development.

A vision for the future: Yizhuang's AI roadmap

Yizhuang's vision for AI is bold and practical. The city's leadership envisions a thriving AI ecosystem that drives economic growth, enhances public services, and creates new opportunities for innovation. By 2026, Yizhuang aims to achieve major breakthroughs in core AI technologies, with a strong focus on building an integrated AI industry chain and developing high-performance computing infrastructure.

At the heart of this vision is the "one center, two bases, and three platforms" strategy, which includes a national AI software and hardware collaborative innovation center, an AI training base, a public computing power platform, and more. These facilities are designed to support the entire AI development lifecycle—from data aggregation and algorithm research to industrial transformation and application deployment.

With an ambitious plan to gather 200 AI industry companies and create a computing power capacity of 10,000 PFLOPS, Yizhuang is not just preparing for the future; it is actively building it. The city's approach to AI is comprehensive, addressing the needs of multiple industries while focusing on scalability and sustainability.

AI in action: Autonomous driving and transportation

One of Yizhuang's most effective AI applications lies in autonomous driving, a field where the city has made significant strides. Yizhuang is pioneering the development of a vehicle-road-cloud fusion system, which integrates data from vehicles, roads, and cloud platforms to create a safer and more efficient transportation network. This system supports autonomous taxis, buses, freight trucks, and even unmanned delivery vehicles, transforming how the city manages mobility.

The city's autonomous driving zone is a key part of this initiative, offering multi-scenario demonstrations of fully autonomous vehicles. This zone showcases how AI can be applied in real-world transportation systems, improving not only the safety of these vehicles, but also their integration with public transit. The ultimate goal is to create a smarter, more efficient transportation network that can alleviate traffic congestion, reduce emissions, and improve the overall quality of urban life.

(Continued on next page)

BEIJING (CONT.)

Transforming healthcare with AI

In the medical field, Yizhuang is leading efforts to use AI to revolutionize healthcare delivery. With an investment of over seven billion yuan, the city is developing a cloud-based infrastructure that connects medical institutions across Beijing. This system serves as the backbone for AI applications in smart medical services, including intelligent triage, pre-diagnosis consultations, and accurate appointment scheduling.

Yizhuang's AI-driven healthcare solutions focus on creating high-quality disease data areas that allow for more precise and personalized treatments. Public hospitals are being turned into smart medical pilot sites, where AI technologies are tested and refined to improve patient care. These efforts are not just about efficiency; they aim to save lives by providing better, faster, and more accurate healthcare services.

AI in public services: making governance smarter

AI has also transformed public services in Yizhuang. The Yizhi platform, which serves as a large-scale government service model, provides residents with intelligent consultation and interaction capabilities. Through this platform, residents can access services via their mobile phones, receive guidance on filling out forms, upload documents, and submit applications.

Yizhuang's focus on smart governance extends beyond resident services. The city is reshaping its internal government processes by integrating AI into decision-making, policy analysis, and departmental collaboration. This has led to more efficient government operations, allowing the city to respond to public needs more quickly and effectively.

Pioneering AI in industry and retail

Yizhuang's commitment to AI extends to the industrial sector, where it is fostering innovation through AI-driven industrial design and manufacturing processes. The district is building a public-service platform that uses large AI models to support industries such as automotive design and mechanical modeling. These advancements not only streamline production but also enhance industrial design.

In the retail sector, Yizhuang works with companies to create AI solutions that enhance both online and offline customer experiences. By analyzing consumer behavior through AI, businesses can offer personalized recommendations, dynamic pricing, and targeted promotions. This fusion of AI with retail operations represents the future of shopping, where data-driven insights guide every aspect of customer interaction.

Building the future with AI

Yizhuang's progress in developing AI is nothing short of remarkable. With a clear vision, strategic investments, and a commitment to practical applications, Yizhuang is setting a new standard for how cities can integrate AI into urban life. From autonomous driving to healthcare to public services to industry, Yizhuang is proving that AI has the power to transform cities and improve the lives of residents.

As the world continues to embrace AI, Yizhuang stands out as an AI leader, a city that is not just keeping pace with technological advancements but is driving them forward. It is paving the way for a smarter, more efficient, and more innovative urban experience—one where technology and humanity work hand in hand.

MOBILITY AND TRANSPORTATION

AI-enabled mobility is becoming table stakes for AI leaders. The vast majority of those surveyed are using or piloting AI to improve traffic management and flow prediction and for intelligent public transportation routing.

One example is Toronto, which is using AI to address its infamous traffic jams. To cut wait times and improve traffic flow, Toronto relies on AI to analyze traffic patterns and adjust traffic signals in real time. Another example is Hangzhou, whose official surveyed said it employs AI to track traffic in real time, optimize traffic light patterns, and predict traffic jams. This has accelerated emergency response by nearly 50% and cut congestion by 15%.

AI leaders surveyed are also using or piloting AI to facilitate smart parking management. Amsterdam provides AI-powered apps that enable drivers, including those with disabilities, to find parking spaces in real time. These smart parking tools are not only integrated with GPS systems but also provide predictive analysis to help drivers anticipate where they may find parking before they arrive.

Sao Paulo's AI-driven approach to mobility

More than half of AI leaders are also using or piloting AI for predictive maintenance of transportation infrastructure as well as transportation planning and forecasting. Sao Paulo, one of the most congested cities in the world, does all these things and more. Sao Paulo Metro has developed an AI predictive maintenance tool that can anticipate faults across escalators, lifts, trains, and tunnel ventilation and power supply systems. It can therefore schedule maintenance ahead of a failure occurring.

The city also worked with the World Bank to use AI to optimize transportation management and planning, including developing a mobility-as-a-service (MaaS) app to make it easier for residents to navigate the city. In addition, the city teamed up with the University of Washington's Taskar Center for Accessible Technology to use AI to help residents find the best walking routes.

Mobility and transportation AI use cases
(piloting or using)

	AI leader	Other
Traffic management and flow prediction	82%	44%
Smart parking management	78%	44%
Intelligent public transportation routing	78%	38%
Transportation management, analysis, and forecasting	53%	34%
Predictive maintenance and planning	53%	39%
Special event management	41%	26%

Cities surveyed that are advanced in AI for mobility

Amsterdam	Melbourne
Ankara	Porto
Boston	Taipei
Hobart	Takamatsu
Hong Kong	Toronto
Jaipur	Vancouver

"

AI-driven traffic management systems assess real-time traffic data from diverse sources, like cameras, sensors, and GPS devices, to enhance traffic flow, alleviate congestion, and boost overall efficiency.

—Melbourne city official

Source: AI-powered cities survey

URBAN INFRASTRUCTURE

The use of AI to improve urban infrastructure is becoming ubiquitous among most AI leaders surveyed. Over 60% of AI leaders identified by our research are piloting or using it for smart infrastructure design, and nearly as many for predictive maintenance and network optimization. Fifty-five percent use it for network condition monitoring and digital infrastructure security.

Coral Gables uses AI to improve the design and deployment of smart infrastructure, such as smart lights, sensors, and video cameras. The city is collaborating with academic institutions to improve its structural health monitoring capability. Advanced sensors gather data on vibration, strain, temperature, and corrosion within buildings, aiding in the early detection of structural problems.

Stockholm, a city long admired for its approach to innovation, uses AI for condition monitoring and predictive maintenance of bridges and public buildings, spotting issues before they become critical. Tucson has implemented AI software to manage its extensive water infrastructure, including 4,600 miles of water distribution pipes.

Venice: Mitigating the effects of excessive tourism

Venice is an example of how cities use AI to optimize existing networks. The city welcomes over 20 million tourists each year but is home to a permanent population of just 50,000 people. This huge influx of tourists poses a significant threat to the city's already fragile infrastructure.

To address this, the city has implemented an AI-enabled smart control room, which gathers real-time data from existing digital infrastructure assets, including intelligent sensors, subsystems, and video cameras. This data provides a comprehensive view of the city, enabling officials to optimize network functionality in several areas, including vehicle flows, pedestrian movements, tidal conditions, air quality, and water management processes.

Urban infrastructure AI use cases
(piloting or using)

	AI leader	Other
Smart infrastructure design/optimization	61%	39%
Predictive maintenance	59%	42%
Network optimization	59%	33%
Sensor-based condition monitoring/analysis	55%	34%
Digital infrastructure security	55%	37%

Cities surveyed that are advanced in AI for infrastructure

Amsterdam	Jaipur	Montpellier
Ankara	Los Angeles	Taipei
Beijing	Lucknow	Toronto
Boston	Melbourne	
Hong Kong	Mexico City	

"

Among the various use cases we have come across, predictive maintenance stands out as the most effective, providing advantages in minimizing downtime and improving the flow of operations.

—Philadelphia city official

Source: AI-powered cities survey

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ENVIRONMENT AND SUSTAINABILITY

Most AI leaders identified as part of our research leverage AI technology, sometimes with digital twins, to enhance sustainability and climate resilience. Over 70% are piloting or using AI to improve water management systems, the top use case in our survey.

Helsinki employs a digital twin, supported by AI, to improve water management. Its data-driven asset optimization tool unifies data from numerous systems related to heating and water supply, as well as pipeline age, type, and condition, into a single view of pipeline health. This has helped the city improve its predictive maintenance and early leak detection capability in its heating and water and sewage pipelines.

Two-thirds of AI leaders surveyed are piloting or using AI for waste management, carbon emission reductions, and energy optimization. Amsterdam employs decentralized smart grid technology to improve energy efficiency in buildings, enhance energy storage and distribution efficiency, and empower communities to take control of their energy supply.

In Singapore (see case study on page 17), AI-enabled sensors collect data on air and water quality, waste management, and energy consumption. This information is used to optimize waste collection routes and enhance energy efficiency.

Raleigh: Using an AI-enabled digital twin to bolster climate resilience

The US city of Raleigh, which experiences extreme summer heat, uses a full citywide digital twin to model the microclimate impacts of new developments. This digital twin is integrated with an AI-driven microclimate modeling tool that forecasts weather conditions. This allows Raleigh to assess how current and future developments might affect urban heat levels, which helps city planners improve urban livability through strategic interventions. (See case study on page 36.)

Environment and sustainability AI use cases (piloting or using)

	AI leader	Other
Water management and monitoring	71%	40%
Waste management and recycling	67%	42%
Carbon emissions and air quality monitoring	65%	28%
Energy optimization/smart grid management	65%	41%
Design and manage smart buildings	57%	31%
Climate modeling and prediction	49%	31%
Conservation and biodiversity monitoring	18%	13%

Cities surveyed that are advanced in AI for sustainability

Abidjan	Jaipur	Montpellier
Amsterdam	Los Angeles	New York
Boston	Lyon	Orlando
Curitiba	Madrid	Paris
Harare	Melbourne	Tokyo

Source: AI-powered cities survey

" **AI-enabled carbon emissions and air quality monitoring has produced tangible benefits for the environment, residents, and the economy, including reduced pollution levels and improved public health.**

—Vienna city official

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MELBOURNE: DRIVING SUSTAINABILITY THROUGH AI

"Our vision is to leverage artificial intelligence in various sectors in order to enhance urban life, improve service delivery, and promote sustainability," said a senior Melbourne city official. Sustainability is the focus of one of the city's most important AI initiatives, an AI-enabled system used by Melbourne Water to manage urban water and wastewater by collecting real-time data and making predictions to improve distribution and support predictive maintenance for water infrastructure.

The AI-powered water management system includes AI models to detect contaminants and predict water quality issues in real time. It is can forecast the quality of recycled water by combining historical data, machine learning algorithms, and predictive analytics.

The city official said the technology can forecast recycled water quality up to 48 hours in advance, with an accuracy rate of 75%, providing valuable insights for water management and ensuring high standards of water safety and quality. "This technology has improved the quality of water and reduced water waste by 25% to 30%," he noted.

Melbourne Water is also using its AI-powered Wetlands Analytics Visualisation Environment (WAVE) tool to analyze aerial photography to monitor the health of plant growth in the city's wetlands. Wetlands can act as a natural filter for water, help recharge groundwater, and aid flood control.

Other AI-enabled sustainability initiatives

Melbourne doesn't stop there. It uses AI to overcome many other sustainability challenges:

- **Waste dumping:** The city employs AI and uses sensors to monitor illegal waste dumping behaviors and garbage compactors. The AI-gathered information allows waste management officials to review what has been thrown away and identify any dangerous items in the trash.

- **Pollution monitoring:** The city leverages AI to improve pollution control and monitor air quality. It also uses AI to track trees in the city and make plans for future planting as part of its Urban Forest Strategy. That helps the city address challenges such as climate change, population growth, and urban heating.

- **Analytics and optimization:** Melbourne uses AI for climate modeling and prediction, design and management of smart buildings, energy optimization, and smart grid management.

"The integration of IoT, data analytics, and 5G technologies with artificial intelligence is transforming our city into a smart city, which has further helped us to be well positioned to tackle future challenges and emerge as a leader in urban innovation," said the city official.

Section 6:

STEPS
FORWARD

STEPS FORWARD

Jumbi Edulbehram

Global Business Development, Smart Cities and Spaces, NVIDIA

Becoming an AI-powered city is an ongoing process. It starts with using AI to do existing things better and then evolves to doing things that could not be done before. To start this journey, city leaders should consider eight key steps:

1. Educate the city's workforce on AI technology.

2. Work with AI thought leaders to learn about the art of the possible.

3. Study the AI success stories and use cases from other cities.

4. Target use cases that have meaningful impact and can be customized with city data.

5. Identify internal resources and augment them with AI expertise from partners and service providers.

6. Build data-intensive foundation models, or customize existing ones, to acquire, refine, analyze, and safeguard data.

7. Assess infrastructure, architecture, and operating models to support AI use, while considering the impact on costs and energy consumption.

8. Use governance frameworks, tools and best practices to ensure that AI is adopted responsibly across the city.

William D. Eggers

Executive Director, Deloitte US

Focus on mission outcomes. City leaders should focus on what part of the mission the technology helps them achieve. The more success can be measured through a mission lens, the more competitive tech projects can be in a tight budgeting process.

Develop a behavior-first approach to AI transformation. Technology transformation does not happen in silos; when one area makes a change, other areas throughout the organization may also have to change to keep the whole system operating smoothly. But organizations can't typically change without convincing their people to also adjust and adopt behaviors that support the larger organizational transformational efforts.

Build with scale in mind. One key tenet of scaling successful innovations is pivoting toward data- and evidence-based decision-making. There should be intentionality in selecting the right pilot, establishing measures of success, developing a scaling road map, and growing a network of partners to scale solutions.

Nick Holmes

Global Director, Sustainable Infrastructure and Transportation, ServiceNow

AI-powered cities use scalable digital foundations that are flexible, can be implemented in a modular way, and can work alongside or on top of legacy systems. A great end-to-end IT platform will leverage existing data stores within AI-powered workflows. It will protect your data from and ensure that AI is available in a way that supports, rather than limits, human interaction.

Just like physical infrastructure, digital infrastructure needs to be fit for future purpose. To prepare for the AI era, cities need a single, intelligent platform—one that can responsibly and securely harness data from residents, transportation, the environment, and more to bring AI into every corner of the city. By empowering rather than limiting human interactions, AI can free people to do the work that truly matters.

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Section 7:

METHODOLOGY
APPENDIX

RESEARCH BACKGROUND

A rigorous AI benchmarking survey of 250 cities in 78 countries

In the second half of 2024, ThoughtLab conducted a rigorous study of the AI plans, practices, and investments of 250 cities in 78 countries.

Valuable insights into practices

ThoughtLab analyzed the AI strategies and solutions used by cities to achieve their future goals, along with the challenges they face in achieving results. They also explored the steps that cities were taking to prepare themselves for the AI era.

A rich set of city benchmarking data

To facilitate rigorous benchmarking, ThoughtLab analyzed cities across all regions, representing 734.2 million residents, 9% of the world's population—one of the most comprehensive benchmarking studies on urban AI practices ever conducted.

67
North America

50
Europe

50
Asia Pacific

27
MENA

31
Latin America

25
Africa

The study covered progress across six urban domains:

1. Environment and sustainability
2. Urban infrastructure
3. Mobility and transportation
4. Safety, security, and resilience
5. Resident living, health, and trust
6. Government management and operations

250
cities

78
countries

734m+
residents represented

9%
of global population

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THE SURVEY ANALYZED
A DIVERSE SET OF CITIES

To gain a more balanced perspective, ThoughtLab surveyed a range of cities in terms of size, location, and level of economic development.

Our sample included cities of different population sizes, ranging from 50,000 to over 37 million. Forty-five percent of the cities had less than 1 million inhabitants, and 55% had over 1 million residents.
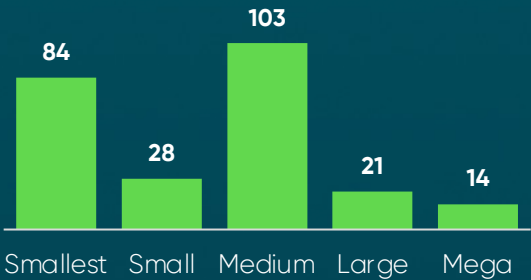
The cities varied by level of economic development. The sample included a cross-section of cities by income level.

We surveyed a mix of respondents who had intimate knowledge of their cities' future-ready plans. About a third worked in the mayor's office, and another third served in management, strategy, planning, and operating roles. The rest were involved in technology, innovation, sustainability, and finance.

Respondents by title

City manager/administrator	20%
Finance/budget	16%
Mayor	15%
Deputy mayor	12%
Technology	12%
Smart cities/innovation	6%
Chief of staff/deputy	5%
Environment/sustainability	4%
Chief operating officer	5%
Director of urban planning	4%
Director of policy/strategy	2%
Other	1%

Number of cities by population

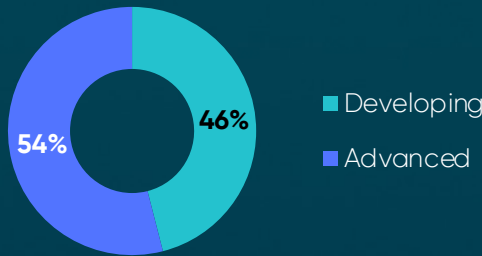| Smallest	Small	Medium	Large	Mega
84	28	103	21	14

2.95 million
Average population

Smallest: 50K to 600K
Small: 600K to 1M
Medium: 1M to 5M
Large: 5M to 10M
Mega: 10M to 37M

Cities by level of economic development

54% Advanced
46% Developing

- Developing
- Advanced

$3.4 billion
Average FY2024 operating budget

AI MATURITY MODEL

As part of the research, ThoughtLab economists created a maturity model to identify the most advanced cities in the use of AI. The model is based on self-reported data and measured a city's progress in AI across four pillars of excellence:

1. The level of traditional and GenAI usage in the city

2. AI usage across multiple urban areas

3. The number of controls in place to ensure the responsible use of AI

4. The future-ready foundation needed to succeed in AI

Using data on progress across the four pillars, ThoughtLab economists developed an overall AI maturity score for each of the 250 cities in our benchmarking sample. This score was calculated by averaging the scores from each of the four pillars. (See following pages for more information on each pillar).

ThoughtLab then classified each city into three categories: AI leaders, AI advancers, and AI adopters. Twenty percent were classified as AI leaders, 60% as AI advancers, and 20% as AI adopters.

To supplement the self-reported survey data, ThoughtLab economists and analysts conducted secondary research to verify the index results. The secondary research included a review of articles, papers, city websites, and databases.

AI-powered city index methodology

Our scoring ranges from 0 to 100, with zero being the lowest and 100 being the highest. The actual index scores ranged from 7.2 to 82.7, with an average value of 48.4 and a median value of 51.8.

We classified the cities into three groups. Cities that had an index value in the top 20th percentile were classified as "AI leaders," those with a value in the bottom 20th percentile were classified as "AI adopters," and the cities that fell in between were classified as "AI advancers."

AI leaders: score greater than or equal to 60.7

AI advancers: score between 33.8 and 60.6

AI adopters: score less than or equal to 33.7

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SCORING METHODOLOGY

The use of types of AI

One input into the AI maturity model was based on the following survey question.

Q20. How extensively is your city using the following technologies to achieve its future-ready plans?

Traditional AI (machine learning, computer vision, natural language processing)

Generative AI (capable of generating content by learning the underlying patterns in data)

Q20 scoring methodology

We used the following scoring methodology:

1. Not using: 0 points
2. Planning: 1 point
3. Piloting: 5 points
4. Selective use: 10 points
5. Wide use: 20 points

We scored each respondent on their use of traditional AI and generative AI and averaged the scores.

AI use across urban areas

Another input was based on how much progress the city has made in using AI across domains.

Q22. What progress in using AI has your city made in the following domains?

- Environment and sustainability
- Urban infrastructure
- Mobility and transportation
- Safety, security, and resilience
- Living, health, and trust
- Government management and operations

Q22 scoring methodology

We used the following scoring methodology:

1. Not using: 0 points
2. Planning: 5 points
3. Piloting: 10 points
4. Actively using: 20 points

We scored each respondent across the six areas and averaged the scores to arrive at an overall score for how extensively the city is using AI.

SCORING METHODOLOGY

Responsible use of AI

The third input in the model was related to the steps that cities are taking to ensure the responsible use of AI.

Q25. Which actions is your city taking to ensure the responsible use of AI?

- Establish a clear AI governance framework
- Implement guidelines for handling of personal data to ensure privacy
- Implement AI auditing processes to uncover biases and hallucinations
- Work with other government and regulatory bodies to develop AI policies
- Collaborate with experts to develop AI policies
- Engage with residents to gather feedback and address concerns
- Establish procedures to handle job displacement and retrain workers
- Benchmark AI governance against national or international standards
- Enhance data privacy and security through digital tools and systems
- Ensure that city employees disclose their use of AI
- Provide training to employees on responsible AI use

Q25 scoring methodology

Respondents received two points for each action the city is taking to ensure the responsible use of AI. The scores for this pillar ranged from four to 20.

Future-Ready City Index

The fourth input in the model was the Future-Ready City Index that was calculated as part of our associated Future-Ready Cities study. The index assesses the city's progress in building required digital skills, processes, and IT infrastructure, and in making urban domains future-ready. It incorporates secondary data on how they perform against urban, pollution, traffic, safety, and healthcare indicators.

For more information, please see the full Future-Ready City study here: link.

FULL LIST OF 250 CITIES CATEGORIZED

AI leaders

Amsterdam	Boston	Denver	Harare	Ljubljana	Melbourne	New York	San Antonio	Seoul	Tallinn
Austin	Bratislava	Dublin	Helsinki	Los Angeles	Mexico City	Niteroi	San Francisco	Sofia	Tokyo
Barcelona	Chicago	Edinburgh	Hong Kong	Lucknow	Montpellier	Orlando	San Jose, CA	Stockholm	Toronto
Beijing	Curitiba	Edmonton	Istanbul	Madrid	Montreal	Paris	Sao Paulo	Sydney	Vienna
Berlin	Dammam	Guangzhou	Kuwait City	Marseille	New Orleans	Quebec	Seattle	Taipei	

AI advancers

Abidjan	Barranquilla	Cape Town	Jacksonville	Lyon	Monrovia	Philadelphia	Salzburg	Surabaya	Tulsa
Abu Dhabi	Belo Horizonte	Caracas	Jaipur	Maebashi	Monterrey	Pittsburgh	San Bernardino	Susono	Tunis
Addis Ababa	Berkeley	Cardiff	Jeddah	Makassar	Mumbai	Porto	San Juan	Tacoma, WA	Ube
Agadir	Bilbao	Casablanca	Jersey City	Manama	Murcia	Porto Alegre	Santa Clara	Taiyuan	Utsunomiya
Al-Ain	Bologna	Gold Coast	Johannesburg	Manchester	Nairobi	Qingdao	Santa Fe	Takamatsu	Vancouver
Amman	Boulder	Guayaquil	Juarez	Mecca	Naples	Quezon City	Semarang	Tampa	Victoria
Anaheim	Brighton and Hove	Halifax	Kampala	Medina	Ningbo	Rabat	Sheffield	Tangshan	Vila Velha
Ankara	Brisbane	Hanoi	Kansas City	Memphis	Oakland	Raleigh	Shijiazhuang	Tbilisi	Vilnius
Aracaju	Bucaramanga	Hartford	Kinshasa	Merida	Oklahoma City	Recife	Shimonoseki	Tehran	Warsaw
Auckland	Bucharest	Hobart	Kochi	Miami	Ostrava	Rosario	Shiraz	Toledo	Wellington
Bakersfield	Buenos Aires	Houston	Kyiv	Milton Keynes	Pachuca	Sacramento	St Louis	Toulouse	Wroclaw
Baltimore	Cambridge	Indianapolis	Las Vegas	Milwaukee	Palma de Mallorca	Salt Lake City	Stockton	Toyama	Yokohama
Bangkok	Can Tho	Izmir	Louisville	Minneapolis	Perth	Saltillo	Strasbourg	Tucson	Zaragoza

AI adopters

Abha	Asuncion	Bridgeport	Cordoba	Galway	Kuala Lumpur	Luanda	Nashville	Puebla	Sanaa
Abuja	Atlanta	Cartagena	Corpus Christi	Ho Chi Minh	Libreville	Lusaka	Ottawa	Qiddiya/Neom	Sharjah
Accra	Bamako	Christchurch	Dallas	Honolulu	Limerick	Manchester, NH	Pearland	Quito	Sunderland
Adelaide	Beirut	Cincinnati	Duitama	Kano	Lisbon	Montevideo	Port Harcourt	Riga	Valencia
Algiers	Blantyre	Cleveland	Durban	Kigali	Liverpool	Muscat	Pretoria	Salvador	Western Sydney

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More information can be found at nvidia.com

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