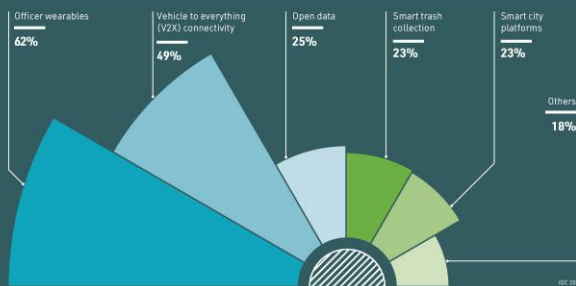


# How the Internet of Things is Building Smart Cities

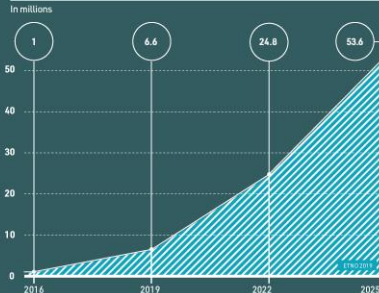
## SMART CONNECTIONS

GLOBAL GROWTH RATES FOR SMART CITY SPENDING FROM 2017-2022, BY USE CASE



However important the internet of things will be for business, its impact is transformative when it comes to our cities. Around the world, IoT-enabled smart cities are changing the way we live, using technology to increase the speed and efficiency of urban services. The results are wide-ranging, from greater safety on our streets to valuable time shaved off our daily commutes, as well as cleaner air and water, and, in some regions, more disease-free years of life.

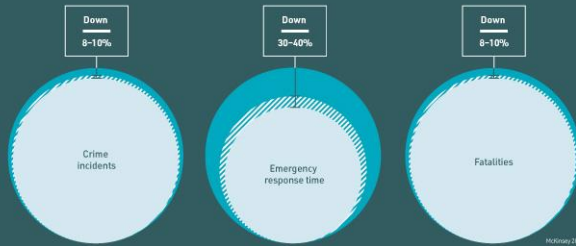
NUMBER OF ACTIVE IoT CONNECTIONS IN EU SMART CITIES



### 01 EMERGENCY SERVICES/SAFETY

Predictive policing, real-time crime mapping and gunshot detection - these IoT-enabled processes could save up to 300 lives a year in cities such as Rio de Janeiro

ESTIMATED IoT-RELATED BENEFITS TO PUBLIC SAFETY/CRIME LEVELS



### 02 TRANSPORT

New smart roads and technologies can shave up to 30 minutes off the daily commute

GLOBAL IoT TRANSPORTATION AND LOGISTICS SPENDING

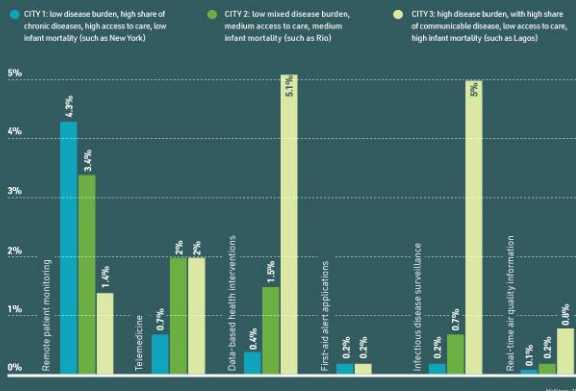


### 03 HEALTH

Smart cities can help tackle chronic diseases, using data to fight preventable disease and improve patient engagement

IoT TECHNOLOGY IMPROVING URBAN QUALITY OF LIFE

Percentage reduction of disability-adjusted life years, the WHO's primary metric for conveying the global burden of disease, by different cities

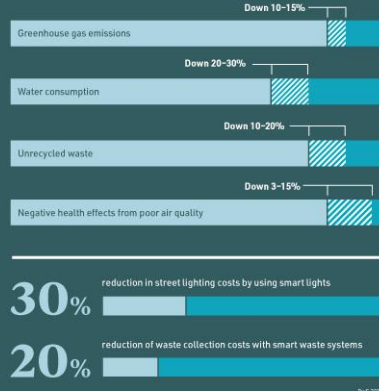


### 04 ENVIRONMENT

Using a range of technological applications, smart cities can cut emissions, reduce waste and save up to 80 litres of water per person per day

CLEANING UP OUR ACT

From air to water to waste, smart-city applications deliver a more sustainable environment



# How the Internet of Things is Building Smart Cities

Urban populations are rising around the world, but cities are struggling to keep up.

As the silent force that has revolutionized our world, technology is now being leveraged to manage rapid urbanization and to create smarter cities.

Today's infographic from [Raconteur](#) explores how the Internet of Things (IoT) has become a vital component in the creation of more efficient, sustainable, and resilient cities, and illustrates the growing impact this will have on both people and the planet.

## The Growth of Smart Cities

Since 1950, the amount of people living in cities has risen almost six-fold, from 751 million to over **4 billion** in 2018—more than half of the planet's population. Over the next three decades, cities are projected to add yet another 2.5 billion more people.

This continuing migration to urban areas puts greater pressure on public services as well as urban planning. As a result, cities are implementing solutions driven by technology and data to reduce the added strain created by this growth.

## Smart City Innovations

With spending on smart city development to reach \$158 billion by 2022, significant growth is expected from emerging innovations such as:

- **Officer wearables:**  
Devices that equip police officers with real-time information to improve awareness and make better decisions  
Global CAGR (2017-2022): 62%
- **Vehicle to everything (V2X) connectivity:**  
Allows cars to communicate with other cars, transport infrastructure, and pedestrians  
Global CAGR (2017-2022): 49%
- **Open data:**  
Data that anyone can access that contributes to the transparency of government and smart city initiatives  
Global CAGR (2017-2022): 25%
- **Smart trash collection:**  
Solar powered, sensor-equipped smart bins allow waste collectors to track waste levels and optimize their fuel usage  
Global CAGR (2017-2022): 23%
- **Smart city platforms:**  
Systems that collect data from different areas such as pollution levels and traffic density to better manage smart cities  
Global CAGR (2017-2022): 23%

These technologies could lead to a wide-range of transformative effects for cities that are willing to embrace them.

## Measuring the Impact

Smart city technologies have the power to improve the health and well-being of citizens, while also providing new avenues for economic development.

# How the Internet of Things is Building Smart Cities

## Safety

To enhance public safety, cities are adopting real-time crime mapping, gunshot detection, and predictive policing tools to help identify potential hotspots and prevent crimes from happening.

According to McKinsey, tapping into these technologies could reduce crime rates and fatalities by 8-10%, potentially saving up to **300** lives each year in cities with a population size and crime rate similar to Rio de Janeiro.

## Transport

As more vehicles join the IoT ecosystem, the bigger the IoT logistics and transportation industry grows, with spending estimated to reach over \$43 billion by the end of this year. New innovations like smart roads that support automated vehicles are beginning to get more investment from cities. These roads will be able to communicate with automated vehicles to ensure the safety of drivers, and better optimize traffic—potentially decreasing the average commute time by **30 minutes**.

## Health

Technology is providing new strategies for the prevention and treatment of chronic diseases.

In China, drones with facial recognition technology are being used to track those affected with coronavirus to ensure they do not break quarantine and risk spreading the virus. The most effective use of technology however, is data-based health interventions for maternal and child health, which rely on the use of analytics to identify new mothers and to direct prenatal and postnatal educational campaigns to them. Using interventions to prevent diseases before they occur has proven to be particularly effective in cities with a high disease burden and low access to care, such as Lagos in Nigeria.

These new technologies are reducing cities' burden of chronic disease. This is measured across the WHO's central metric disability-adjusted life years (DALY), which is equal to one year of "healthy" life lost due to contracting a disease. For example, using data-based interventions for maternal care could reduce DALYs by more than **5%**.

## Environment

While a significant portion of greenhouse gas emissions come from cities, these can be cut by up to **15%** with smart city solutions by reducing electricity and heat production. Smart cities will also play a pivotal role in reducing water consumption. Applications such as smart irrigation systems, water leakage, and quality and consumption monitoring could save a city between **25-80 liters** of water per person, per day.

## Citizen-Led Smart Cities

The growing uptake of 5G can help fuel these economic and social benefits. With its high-speed connectivity and ability to support more devices, 5G could empower smart cities to scale—making it a defining feature in the next generation of innovative smart city projects. However, this is not the only model that can be leveraged. Some newer iterations of smart cities are grounded in the principles of equity and social inclusion. For instance, Vienna regularly tops the Smart Cities Index for its inclusive and

# How the Internet of Things is Building Smart Cities

collaborative way of approaching smart city initiatives. The city advocates for socially-balanced solutions that consider citizens from all socio-economic backgrounds and age groups.

Vienna is just one of many European hubs that are leading the way in the sheer volume of smart city project investments. In fact, the continent is expected to have as many as **53 million** active IoT connections by 2025.

While every city has a different strategy, citizens will prove to be their most important asset. With a flurry of exciting new smart city applications becoming the new normal over the next decade, it is clear that humans will be at the heart of actualizing their true potential.

Published 5 days ago on February 25, 2020 By Katie Jones

References:

Jones, K. (2020, February 25). How the Internet of Things is Building Smarter Cities. Retrieved from <https://www.visualcapitalist.com/iot-building-smarter-cities/>