

# TAIPEI, TAIWAN

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City as a Living Lab



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Professor:  
Dr Sevin Yildiz

Team members:  
Austin Busch  
Bhumika Dahiya  
Haley McDonnell  
Nicholas Gruenwald



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# **How has the foundations of Urban Information System planning affected the development of Taipei, and what has it enabled when responding to disparate challenges?**

## TAIWAN LANDSCAPE

**23 m**

Population

**36,197 km**

Landmass area (squared)

**0.916**

Human Development Index (HDI)

**£22,691**

Nominal GDP Per Capita (2021)

# INTRODUCTION

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Taipei literally translates to “Taiwan North”, an apt description of its relative geographic position on the island. Taipei City lies in the northern region of Taiwan Island, positioned at the northeastern edge of the Taipei Basin, surrounded by New Taipei City on all fronts. Taipei is located in its namesake basin at the confluence of the Tamsui and Xindian rivers, surrounded by mountains on three sides, including the Datun Volcanic group to its north, well known for being home to Yangmingshan National Park.

Taiwan, officially recognized as the Republic of China (ROC), is an island located across the Taiwan Strait from China (Mainland, 2024). Taipei’s urbanization abruptly ends to the south with the Songshan Hills and Qingshui Ravine creating a natural barrier.

Taipei City covers a total area of 271.7997 square km and is divided into 12 districts known as *qu*, each *qu* is further divided into “urban villages” known as “*li*”, which are then further divided into neighborhoods known as “*lin*”. The most well-known district is arguably Xinyi, one

of Taipei’s newest districts (only established in 1990), and is now Taipei’s economic center, being home to Taipei 101 and the Taipei Municipal Government and some of the most expensive real estate on the island.

Further east, the Zhongzheng District (named after the honorific title for controversial former president Chiang Kai-Shek) is home to most institutions of the Taiwanese government including the Presidential Palace and most government ministries. The Zhongzheng district is also home to the Chiang Kai-Shek Memorial Hall and Taipei Main Station. Other major districts in Taipei include Wanhua (one of the oldest and poorest areas in the city, includes the Longshan Temple and Ximending shopping district), Daan (an upmarket district home to National Taiwan University and a large park), and Shilin (an upmarket district home to a large expatriate population in addition to the Shilin Night Market and National Palace Museum).

Taipei City is completely surrounded by New Taipei City, the largest city in Taiwan

with a population of just over 4 million people. New Taipei City was formally known as Taipei County, and is a conglomeration of various smaller suburbs of Taipei which were consolidated into a new unified municipal government in 2010.

Located just west is the special municipality of Taoyuan, a city of almost 2.3 million people, and home to Taiwan Taoyuan International Airport. Taoyuan city was enlarged in 2014 to include all of the former Taoyuan County in its municipal jurisdiction. Just to the east of the Taipei Basin lies the city of Keelung, a major port city home to 350,000 people. Taipei City, New Taipei City, Taoyuan City, and Keelung form a combined metropolitan area with a population of over 9 million people, comprising over a third of the Taiwanese population.

## Fun fact

While Mandarin is the predominant language in Taipei, the mother tongue of most people who live in Taiwan is not Mandarin Chinese, but Taiwanese, also called *Min Nan Yu*, or *Hokkien*



Fig 1 Location context(Encyclopedia Britannica Inc)

# HISTORY

## Prehistory

30,000 BC Indigenous Formosan peoples migrate to Taiwan, eventually further spreading out throughout the indo-pacific ocean

## 16th Century

1542 Sailors from a passing Portuguese ship named the island Ilha Formosa

## 17th Century

1624 Dutch establish a colony with the capital at Tainan. Han Chinese migration begin

1653 The Dutch colony in Taiwan began to thrive as a crucial trade link between China, Japan and European colonies in Southeast Asia.

1662 Dutch overthrown by Koxinga, who establishes the Kingdom of Tungning, a rump state of the Ming Empire

1683 Qing Empire takes over Taiwan, incorporates it into Fujian Province, placing Taiwan first time under Chinese rule

1732 Indig near Dajia



Scan here to watch a video of how Taipei became Taipei

## 3rd Century

igenous rebellion  
central Taiwan's  
n River

## 19th Century

- 1875 Taipei is formed by a merger of two small towns in the north of Taiwan
- 1887 Taiwan was made a full province of the Qing Empire
- 1895 After the Sino-Japanese war, Taiwan becomes part of the Japanese Empire, Taipei is renamed "Taihoku". While Japanese rule brought improvements to public infrastructure, there was severe disenfranchisement of the indigenous population

## 20th Century

- 1905 Taiwan's economy achieved self-sufficiency and no longer required Japanese financial support
- 1945 After Japan's defeat in the second world war, Taiwan is given to the Republic of China, led by Chiang Kai-Shek and the Kuomintang (KMT)
- 1949 China became a communist country
- 1960 Broad economic and political reforms launched
- 1974 In response to Taiwan's growing manufacturing sector and the oil crisis, the "ten major construction projects" are announced, including new airport and port facilities

- 1979 The United States breaks off formal relations with the Republic of China

- 1996 Taiwan holds its first truly democratic elections

## 21st Century

- 2004 Taipei 101 is completed
- 2014 Sunflower Movement
- 2022 Ministry of Digital Affairs created



臺灣

# DEMOGRAPHICS

Taiwan has a population of roughly 23.4 million people as of 2023, like many other countries in East Asia, Taiwan witnessed rapid population growth in the mid-20th century, particularly in the 1950's, when over one million soldiers and civilians fled Mainland China after the KMT lost the civil war to Mao Zedong and the Chinese Communist Party (CCP).

Also similar to many other countries in the region, Taiwan has witnessed a plummeting birth rate since the 1970s, falling below replacement rate in 1984. Due to its low fertility rate and high rate of economic emigration, Taiwan has witnessed very slow population growth, and sometimes shrinkage, in recent years.

The Taiwanese government

estimates that roughly 97% of the population is of Han Chinese descent. The overwhelming majority of Han Chinese in Taiwan (roughly 70%) are Hoklo, whom are descended from immigrants who came from Fujian province, located just across the Taiwan Strait. Most Hoklo live in the southern and eastern parts of the island, close to the former capital city of Tainan, which was the cultural and economic center of gravity for Taiwan until the period of Japanese colonization which began in 1895.

The Hoklo primarily speak Hokkien, a variety of the Southern Min (Minnan) dialect group that originated from Xiamen, a city in Fujian Province just 6 miles from Kinmen, an island controlled

by Taiwan. Hokkien is mutually unintelligible with Mandarin and is considered by the Taiwanese government to be a separate language.

The Han Chinese who came to Taiwan after the fall of the KMT government in Mainland China are known as waishengren (literally "People from outside provinces") and make up roughly 10% of the population. Waishengren are primarily Mandarin-speaking and live in the northern parts of Taiwan around Taipei, and the more sparsely populated Eastern Coast.

From the end of the Second World War until Taiwan-born Lee Teng Hui became President in 1988, Waishengren dominated the Taiwanese political landscape.

Taiwan ethnic composition (2003)

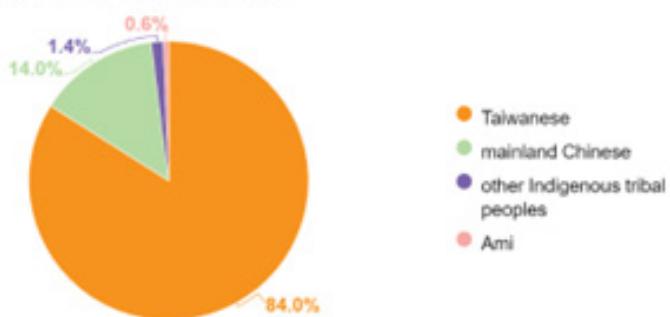


Fig. 2: Ethnic Groups in Taiwan (Encyclopedia Britannica)

A further 15% of Taiwan's Han Chinese population are Hakka speakers, who primarily live in the northwest near the cities of Hsinchu and Taoyuan. Like other countries in Southeast Asia, the predominant religions in Taiwan are a mix of Chinese Folk Religion, Taoism, and Buddhism.

As of 2020, Buddhism is the most practiced religion on the island at 35.1% of the population, with Taoism close behind at 33.4%. 18.7% of Taiwanese identify as irreligious, and the island features over 15,000 temples.

Population: **23,373,283** (June 2023)

Population structure :

- 0-17 years: 15.41%
- 18-64 years: 66.67%
- 65 and above: 17.92%



Ethnicity :

- Han Chinese: 95%
- Indigenous peoples: 2.5%
- New immigrants: 2.5%



**Fig. 4 Taiwan Life Expectancy**

Source: [https://www.taiwan.gov.tw/content\\_4.php](https://www.taiwan.gov.tw/content_4.php)

# CULTURE



Taiwan's history, including its incorporation into the Republic of China in 1945, has shaped its rich cultural landscape, blending traditional and modern elements in a way that is distinctively Taiwanese. The culture of Taipei, Taiwan, is a vibrant tapestry woven from its complex history, multicultural influences, and dynamic urban landscape. As the capital of Taiwan, Taipei maintains strong ties to Chinese culture, encompassing language, cuisine, and customs. "Taiwan is sometimes said to be more Chinese than China". Additionally, the period of Japanese rule from 1895 to 1945 left a lasting imprint on Taipei's architecture, cuisine, and certain customs.

Taipei is celebrated as a multicultural hub, welcoming diverse communities from around the world. The presence of expatriates, immigrants, and international students enriches the city's cultural fabric, contributing to a vibrant scene of cuisines and traditions. Furthermore, Taipei stands as a beacon of technology and innovation, emphasizing digital culture and entrepreneurship. Its modern skyline, high-tech infrastructure, and innovative startups solidify its position as a global tech center (Life of Taiwan, 2013).

Taiwan's cultural landscape has also been shaped by traditional Japanese influences, characterized by a clan-oriented and feudal

society that esteemed the military, particularly the samurai class. Additionally, the culture of Taiwan has been influenced by its indigenous peoples, who maintain a tribe-oriented way of life. Due to Taiwan's less settled environment, Chinese migrants placed greater emphasis on security and commerce over education. Furthermore, unlike the mainland, Taiwan exhibited a lesser emphasis on factors such as water control, which traditionally necessitated a strong central government. The blend of influences in modern Taiwanese culture extends beyond Chinese and Japanese to incorporate Austronesian and Western elements (Britannica, 2019). Unlike the Chinese mainland,





(Taiwan's Culture and Festivals | Life of Taiwan Tours, 2024)

Taiwan's history allowed for the preservation of traditional religious practices and customs, leading some to remark that Taiwan is 'more Chinese than China.' Family ties are deeply ingrained in Taiwanese society, with close-knit and extended families remaining prevalent. Parents often provide support, sometimes perceived as interference, to their grown children, with multigenerational households being common.

Taiwan, often hailed as the "Food Paradise," is celebrated for its distinctive culinary heritage, amalgamating influences from across Asia with its own vibrant history and customs. The roots of Taiwanese cuisine trace back to the Qing Dynasty era (1683-1895), when Chinese immigrants infused their Hakka, Fujianese, and Cantonese culinary practices into the local food scene (Novak, 2023). Additionally, the Japanese colonial period spanning from 1895 to 1945 left a lasting impact on Taiwanese, introducing novel ingredients and cooking methodologies.

Taiwanese temples have

an important place in the culture of Taipei (Culture in Taipei, Taiwan - a Colorful Picture Guide!, 2017). It's often remarked that the number of temples in the capital rivals that of its restaurants. The prevalent Chinese religious practices in Taipei encompass a blend of ancestral reverence, Confucian principles, Buddhist customs, Taoist philosophies, and various other eclectic beliefs.

Festivals hold significant importance in Taiwanese society, serving as historical and cultural touchstones while also driving the tourist industry. Many festivals follow the traditional lunar calendar, offering colorful celebrations that provide opportunities for feasting, relaxation, and community bonding. Taiwan is renowned for its preservation of traditional Chinese arts, crafts, and customs, making it a unique and fascinating destination for cultural exploration. From literary arts and folk festivals to the lively atmosphere of night markets, Taiwan's traditions are closely intertwined with everyday life, adding to a thriving culture in which the past gives vitality and depth to the present.

In recent years, South Korea has been able to gain international visibility with '**K-pop**' and productions such as '**Parasite**' and '**Squid Game**'. This momentum has caught the attention of Taipei as well.

In response, the Taiwan government established the **Taiwan Creative Content Agency (TAICCA)** in 2019. This agency serves as a vital link between the government and private sectors, aiming to foster local creative talent and enhance their global reach (Global Taiwan Institute, 2022).

# GOVERNANCE

Taiwan is a unitary semi-presidential republic that scores highly on The Economist's Democracy Index. The most powerful figure in the government is the President of the Republic of China, who is democratically elected every four years, with the most recent election being held in early 2024. The President-Elect, Vice-President Lai Ching-Te, will succeed incumbent Tsai Ing-Wen later this year. Both Lai and Tsai are members of the pro-independence DPP, and 2024 is the first time in Taiwan's democratic history that a party has held the Presidency for more than two consecutive terms. The other important figure in the executive branch is the Premier, who functions as the head of the government and the Executive Yuan, Taiwan's cabinet of ministers. Taiwan has just one legislative house, known as the Legislative Yuan. As of 2024, the KMT are currently the largest party in the Legislative Yuan. The other branches of the Taiwanese government include the Judicial Yuan, the Examination Yuan (which oversees the Civil Service Exam), and the Control Yuan, which oversees disciplinary matters relating

to government officials and performs audits of government agencies.

On the subnational level, Taiwan is divided into 6 special municipalities, 13 counties, and 3 cities. The distinction between a Special Municipality and a City is based on population, a City needs a population of at least 1.25 million in order to be considered a Special Municipality. Counties are the jurisdiction for less populated areas, including both the sparsely-populated mountainous interior of Taiwan, and the offshore islands of Kinmen and Penghu, the former of which is located just a couple miles offshore of Fujian Province in Mainland China. The mayorship position in Special Municipalities is arguably one of the most powerful political positions in Taiwanese Politics, and is often a stepping stone to the Presidency. During the 2024 Taiwanese Presidential Election, both Taipei mayor Ko Wen-Je and New Taipei mayor Hou Yu-Ih were major candidates., and the President-Elect, Lai Ching-Te, served as mayor of the Special Municipality of Tainan before becoming Premier and later

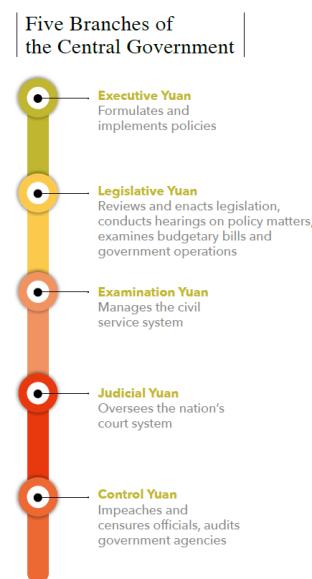
Vice-President. Han Kuo-Yu, current President of the Legislative Yuan and former mayor of Kaohsiung (Taiwan's second largest city) was the KMT Presidential candidate in 2020, and former presidents Lee Teng-Hui, Chen Shui-Bian, and Ma Ying-Jeou all served as Mayor of Taipei before their Presidencies.

Since the arrival of democracy in 1996, Taiwanese politics has been roughly divided into the Pan-Blue and Pan-Green coalitions. The Kuomintang (KMT) has positioned itself as the leader of the pan-blue camp, which seeks greater ties to the mainland for cultural and economic reasons. The KMT is more popular in the Taipei area due to the higher number of waishengren compared to the rest of the island. The last KMT president was Ma Ying-Jeou, who was president for two terms from 2008 until 2016. Ma's presidency was marked by increasing economic ties to Mainland China, and in 2015, Ma met Chinese President Xi Jinping in Singapore, marking the first meeting between the leaders of the CCP and KMT since the two parties united to fight the Japanese during the second world war. Ma's

second term was marked by increasing uneasiness with his openness to the Mainland, which culminated in the Sunflower Movement in 2014.

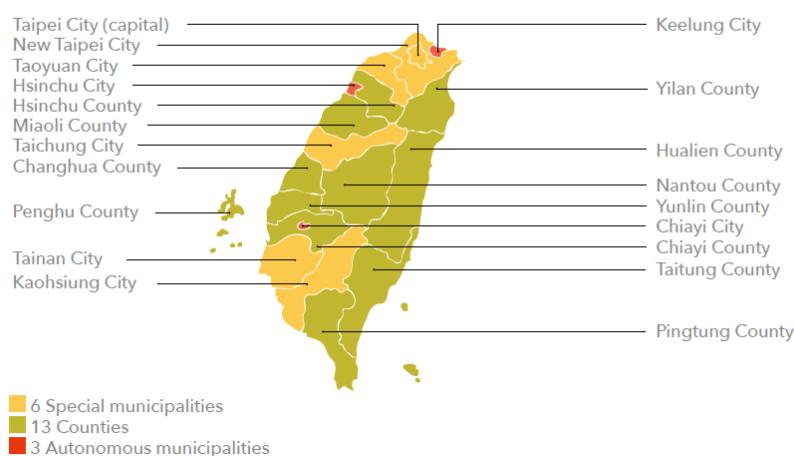
Founded in 1986, the Democratic Progressive Party (DPP) is the current ruling party in Taiwan, and is the dominant member of the Pan-Green coalition, which supports increased democratization, Taiwanese Nationalism, and is increasingly socially progressive (Taiwan was the first Asian country to legalize gay marriage). The DPP is descended from the Tangwai (literally “outside the party”) movement of the Martial Law

era, when opposition parties were forbidden, and only a small number of seats in the legislature were open for non-partisan, independent candidates. The KMT government tried to restrict the powers of the Tangwai lawmakers and institutions in order to prevent the formation of a political alternative, the most infamous crackdown was the 1979 Kaohsiung incident. Many Tangwai politicians became important political figures within the DPP, most notably Chen Shui-Bian, who was elected as the first non-KMT President of Taiwan in 2000.



**Fig. 6** Diagram of the Five Branches of the Central Government  
Source: [https://www.taiwan.gov.tw/content\\_4.php](https://www.taiwan.gov.tw/content_4.php)

### | Local Administrative Regions |

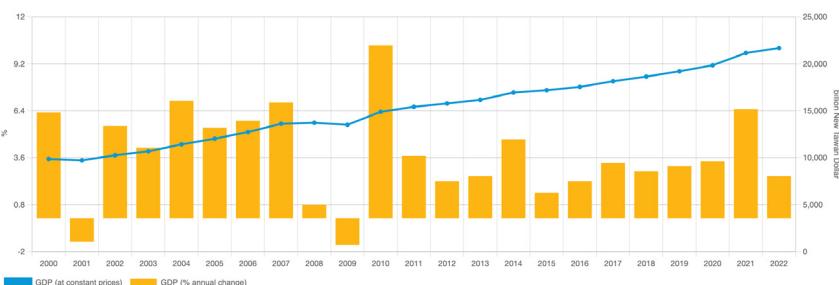


**Fig. 5** Map of Local Administrative Regions  
Source: [https://www.taiwan.gov.tw/content\\_4.php](https://www.taiwan.gov.tw/content_4.php)

# ECONOMY

## Background

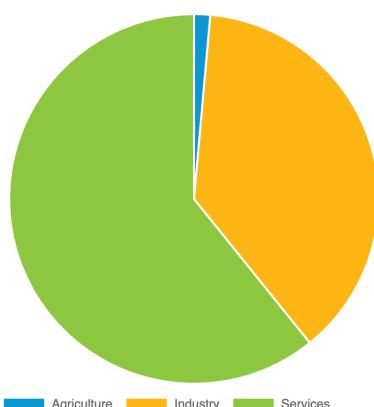
Taiwan has continually maintained its strategic position in trade, in part because of its lack of natural resources. Trade is a way of survival. The economy expanded initially under Dutch and Chinese rule in the mid-1600s and late 1800s, respectively, and as a Japanese colony from the late 1800s to the mid-1900s. During the mid-1900s, it experienced a decline due to a weakened economy resulting from war destruction, an increase in migrants, and hyperinflation. Despite this, the country was tasked with redevelopment, and the government implemented reform policies targeting the hyperinflation and stabilization of the Taiwanese



**Fig. 8** Taipei GDP graph (Key Indicators Database – Taipei, China 2023)

dollar, redistribution of land from the gentry to the lower class expanding agricultural production, and US aid subsidized industrial production costs resulting in export expansion. Additionally, the low interest and subsidies increased economic growth and research and development investment in the microchip industry. In the 1960s, major companies began sourcing electronic components from Taiwan, including chips. In the 1980s, there was a shift from capital-intensive industries to more knowledge-based ones. In the 1990s and into the early 2000s, economic growth slowed during the East Asian Financial Crisis of 1997 and the 2001 recession caused by political immobility. (Analysis of Taiwanese economic history and policies 2020) (Copper, 2024)

The country has undergone various transitions as development and political interventions have occurred. While all aspects of the economy have dealt with transitions, some have a more substantial impact. Due to the climate and soil quality, Taiwan is known for agriculture, namely the exports of sugar and rice. However, this has decreased somewhat as a sector of the economy. Another important sector in the past was the extraction of minerals, namely coal, which was nearly completely exploited at the beginning of the 21st century. Manufacturing and trade have impacted economic development and the country's physical landscape due to industrialization. Taiwan shifted from the light industry, including textiles and small appliances, to more capital-intensive products like electronic devices, computers, and other ICT products.



**Fig. 7** Taipei services chart (Key Indicators Database – Taipei, China 2023)

(Analysis of Taiwanese economic history and policies 2020)(Copper, 2024) While capital-intensive products are what Taiwan is known for, the focus on family businesses has caused staleness in competitiveness. Regardless, the country's manufacturing economy driven by the ICT industry has increased in production value, largely due to this industry being that all other export goods are biased in international trade. The expansion of this industry has negatively impacted the country as well, through the enlargement of the income due to the removal of labor

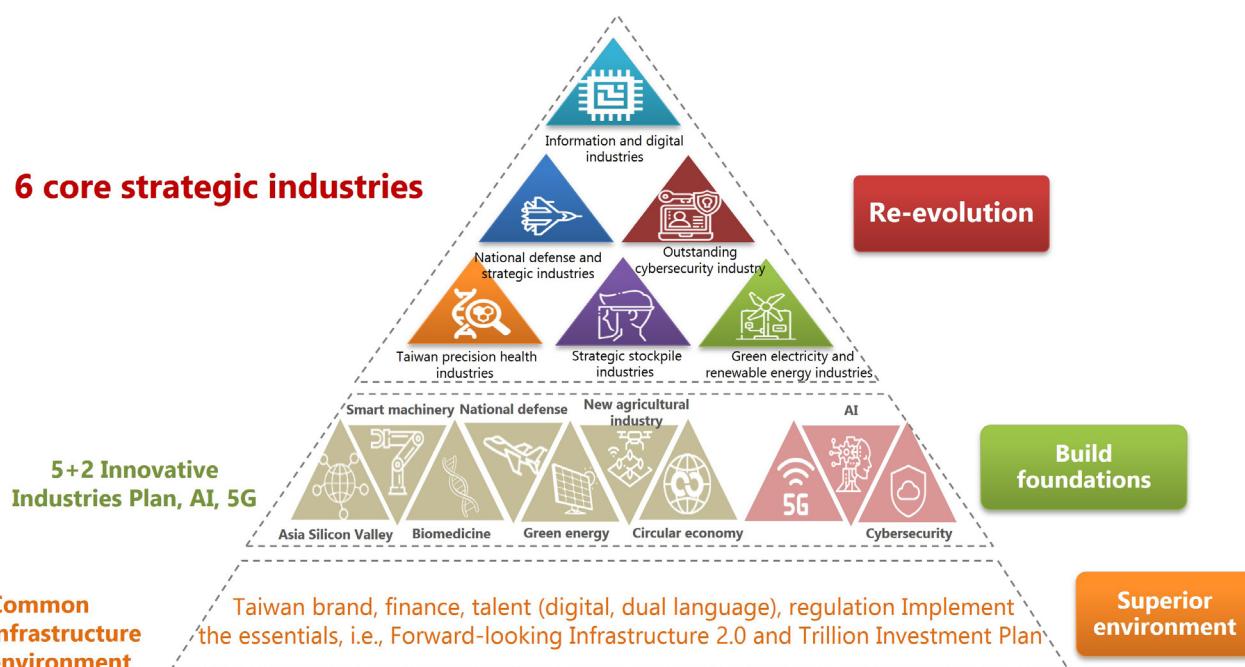
jobs for under-educated citizens. (Chiang, 2022)

### Current & Future

In July of 2020, a national development plan for 2021 to 2024 was approved by Executive Yuan. This plan "provides a blueprint for the development of strategic industries to secure a key position for Taiwan on the global industrial chain." (Cabinet approves National Development Plan (2021-2024) 2020) The plan outlines high-level strategies to start a new 2.0 economic development model, enable a caring society for

all ages, facilitate regional development that ensures quality of life for everyone, and engage in peaceful foreign relations. In July of 2020, a national development plan for 2021 to 2024 was approved by Executive Yuan. This plan "provides a blueprint for the development of strategic industries to secure a key position for Taiwan on the global industrial chain." (Cabinet approves National Development Plan (2021-2024) 2020) The plan outlines high-level strategies to start a new 2.0 economic development model, enable a caring

## 6 core strategic industries



**Fig. 9** Six Core Strategic Industries Program (National Development Council Program for promoting six core.. N.D.)

society for all ages, facilitate regional development that ensures quality of life for everyone, and engage in peaceful foreign relations. The document specifies the further development of core industries, including local start-up ecosystems, the creation of a smart digital nation, and the modernization of industry, in addition to nationwide English proficiency by 2030, sustainable fiscal health, and the development of talent that meets the demands of this new era. (National Development Council-National Development Plan (2021-2024) 2021)

Recommendations in the plan are structured as such: "(I) Forging six core strategic industries: To respond to the heavy impact of US-China trade war and COVID-19 pandemic on global trade, economy and supply chains, meet the need of the development of Industry 4.0 worldwide, grasp opportunities arising from changes in international division of labor and restructuring of supply chains, and activate key technology innovative R&D capability to drive industrial digital transformation, the

government will actively develop, on the basis of the 5+2 Industrial Innovation Plan promoted by the government over the past four years, the six core strategic industries, namely, information and digital industries, cybersecurity industry, precision health industry, green and renewable energy industry, national defense and strategic industries, and strategic stockpile industries, through promoting top notch industries, enhancing technology innovation, expanding international cooperation, and many other strategies,. The aim is to allow Taiwan to grasp advantages from restructuring of global supply chains in the post-pandemic era and become a key driving force in the global economy in the future." (National Development Council-National Development Plan (2021-2024) 2021) The objectives and goals of such work are still quite broad and likely would require more time to implement fully. However, the focus on including digital infrastructure and practices in economic development planning is promising for the country's future and can function as a model for other countries seeking to become

more digitally integrated through varying economic sectors.

Additionally, the government is advancing a "Forward-Looking Infrastructure Development Program to meet national infrastructure needs over the next 30 years". (Economy ND) The program includes railway development, green energy, urban-rural development, nurturing talent and employment, and digital infrastructure. This program, in coordination with the National Development Plan, provides Taiwan the opportunity to give digital technology and infrastructure more attention and explore the potential impacts it will continue to have on the country's economic development.

One element of concern regarding the future of Taiwan's economic structures is the percentage of the population that is aging. This is particularly important as it impacts the labor force and the costs of support through retirement benefits and pension funds. The pension fund structure is already inadequate to provide for retirees, and with an increased aging population, this will be exacerbated.

# THE DEPARTMENT OF INFORMATION TECHNOLOGY

The Department of Information Technology (DOIT) traces its history back to 1979, when the Taipei City government created the "Taipei City Government Data Processing Center" to facilitate the development of a centralized location for data from many different sectors of the city government including human resources and land administration.

With the development of the internet during the 1990's, the data processing center was renamed the "Taipei City Government Information Management Center" in 1996. With the renaming, the center transitioned away from purely data management of government agencies, and towards that of an office facilitating Taipei's transition to the 21st century. Initiatives during this period included implementing internet

infrastructure in government buildings and implementing the CyberCity plan in 1999, launching Taipei into the smart city era.

In 2016, DOIT established the Taipei Smart City Project Management Office (TSCPMO), which aimed to serve as a bridge between the public and private sector, and to use the municipal government as a "smart city platform" (Lee, 2021).

## Taipei Cybercity

Taipei CyberCity was the first Information and Communication Technology (ICT) plan for the city, implemented from 1999 through 2006. Then-Mayor Ma Ying-jeou, serving Taipei from 1998-2006, set a goal of making the Taipei a "cyber city" through several related initiatives aimed at providing constituent services through paperless means. With soft goals for government cost efficiency and reduced physical travel demand, the city aimed to be a leader in the digital revolution. (Orne, 2010)

The adopted CyberCity plan focused on internet connectivity networking infrastructure, and the initial implementation years were largely spent on developing a complete Geographic Information System (GIS) mapping data from the city's various departments (Huang, 2012).

Between 2003 and 2009, the Taipei City government focused on improving internet access (both through teaching citizens how to use the technology, and installing internet in private homes), data collected by the government through their GIS initiatives showed that

**CyberCity** focused on **closing the digital divide**, with five key factors:

1. The distribution of ICT infrastructures
2. Basic skills of using ICT
3. The relative cost of ICT use
4. The ownership of devices
5. The content and design of public websites

in the Datong and Wanhua districts, two of Taipei's oldest and poorest areas. As a result of this initiative, the percentage of households with internet access in Datong and Wanhua between 2003 and 2009 increased from roughly 49% to 70% and 56% to 65%, respectively (Huang, 2012). There was little definitive evidence that the CyberCity initiative was solely responsible for this result, however.

As a part of the CyberCity initiative, the city government began deploying the **Advanced Intelligent Transport System (AITs)** in 2005, consisting of:

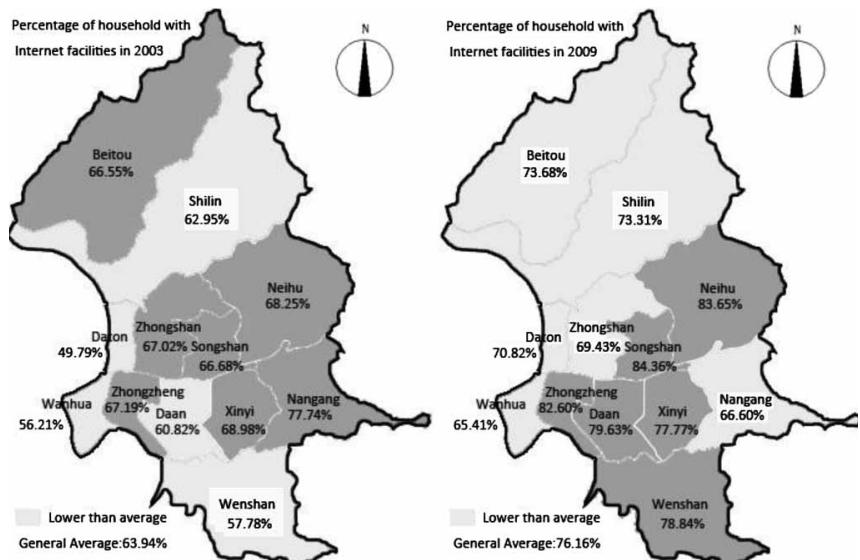
1. **The E-parking system**, providing real-time parking information.
2. **The E-bus system**, offering the real-time location and arriving time of buses.
3. **The Taipei City Advanced Traveler Information Systems (ATIS) website**, compiling maps containing the information provided by the E-parking and E-bus systems, as well as the image, speed, and service level of each road and public information on bike rentals in real-time.

## WiFly Taipei

A major component of the CyberCity's ICT strategy, WiFly Taipei was a public-private partnership to provide publicly-accessible wireless internet connectivity throughout the city, with a goal of reaching 90 percent of the city's population within two years of its initial deployment. The project involved coordinating wireless transmission infrastructure with public facilities, such as street lamps, public buildings, and metro stations. The private operator also extended the network to 7-11 and Starbucks franchises, as part of their corporate agglomeration. The private interests were granted a nine-year contract in which they could charge users for the service.

The initiative saw mixed results due to the competing interests of the city government and its private partners, where the former viewed internet access as a public utility and wanted to focus on covering as much of Taipei as possible, while the private-sector side wanted

to focus on key arteries with high traffic. As such, the WiFly initiative was not as successful as the Taipei City government hoped for, showcasing the challenges brought forth by initiatives that run ahead of citizen demand (Graham & Marvin, 1999).



**Fig. 10** Data from 2003 and 2009 on the percentage of household Internet facilities in Taipei City.

## UI Taipei

In 2007, the Taipei City Government launched a second ICT planning initiative, UI Taipei, which aimed to transform Taipei into a “ubiquitous and intelligent” city. As part of this initiative, was the formal establishment of the DOIT as the primary instrument for the initiative. The lessons of CyberCity were to focus future ICT initiatives on user-focused design away from a more technologically determinist position. In other

words, ICT initiatives should be focused on fulfilling the need for a public good rather than implementing a novel technological service for the sake of technological process. Based on these conclusions, the UI Taipei initiative was focused on a three-pronged approach based on “E-government, e-community, and e-life”. The UI Taipei initiative was successful enough that in 2012, the DOIT was upgraded to become

a first-level agency within the Taipei City Government, showcasing the increasing emphasis being placed on smart city initiatives in Taipei.

### UI Taipei:

1. E-government
2. E-community
3. E-life

## Taipei Smart City Project Management Office

The Taipei Smart City Project Management Office (TSCPMO) is the latest step the Taipei City Government and DOIT have taken to improve the quality of digital governance in both Taipei and Taiwan as a whole. The TSCPMO seeks to implement a “5+N” approach to its smart city initiatives. The “5+N” refers to the 5 key quality of life areas that the initiative is seeking to improve (transportation, public housing, payment, healthcare, and education), and the letter “n” refers to innovation (Wu, 2020).

For example, the Taipei Government’s “smart transportation” initiative focuses on continuing to shift Taipei away from being a city reliant on personal vehicles to

one where citizens will choose alternative forms of transit. While the Taipei Government has been encouraging citizens to use alternative means of transport since the opening of the first line of the Taipei Metro in 1996, the Smart Transportation initiative seeks to further encourage citizens using 21st century technology. The RunKeeper app was developed by the National Taiwan University of Science and Technology (NTUST) in collaboration with Taipei’s EasyCard (a contactless payment card used on public transportation and various financial transactions) to track fitness and location data to gauge which businesses people were using (Wu, 2020).

The initiatives of the DOIT and the TSCPMO are examples of the “top-down” aspect of smart city governance, which also relies on an equally important “bottom up” component. Since the first smart city initiatives of the 1990s, the Taipei Government has rolled out initiatives attempting to use technology to help improve quality of life outcomes for its citizens. While there have been some failures, the Taipei Government has improved its methods of implementing technology through increased public feedback and strategic public-private partnerships to assist in its initiatives.

# SUNFLOWER MOVEMENT

Almost as important as the White Lily movement of 1990 and the first democratic elections of 1996, the Sunflower Movement of 2014 was the catalyst for the rise of direct democracy in Taiwan. To recap, the Sunflower Movement was instigated in response to the economic policies of President Ma Ying-Jeou, who was initially elected in 2008, and wanted to further integrate Taiwan's economy to the much more rapidly growing Mainland one. The bill that triggered the protests was the Cross-Strait Service Trade Agreement (CSSTA), which was designed to open up investment opportunities for Mainland companies into the Taiwanese economy and vice versa.

After its initial signing in Shanghai in June 2013, the bill got stalled in the Legislative Yuan as DPP politicians criticized the lack of transparency from the government on the benefits of the bill for Taiwan, though did not strongly oppose it (Ho). One of the major areas of concern were the implications increased economic integration with the Mainland would have for civil liberties within Taiwan, as Hong Kong's increasing economic integration with

the Mainland at the time was leading to increasing self-censorship in the media sphere and increasing Central Government leverage on Hong Kong affairs. In some ways, the sunflower movement was simply a wider manifestation of activist discontent over Ma's Mainland policy, and its implications for civil liberties in Taiwan. The Sunflower Movement was preceded by the Wild Strawberry movement in 2008, in which protests broke out over the government removing references to Taiwan when a Mainland official was visiting, and the Anti-Media Monopoly campaign of 2012, which was against the takeover of two media outlets critical of the Mainland government by a media conglomerate perceived to be pro-China (Rowen).

The Sunflower Movement itself began on March 18th, 2014, when hundreds of student activists opposed to the CSSTA occupied the Legislative Yuan, severely limiting the operations of the government, the occupation lasted for four weeks. The students had 4 primary demands: to withdraw the CSSTA from the legislature, to enact the bill on Cross-Strait Supervision (CSAS), to

prioritize passing CSAS before the legal review of CSSTA, and to convene a citizen's constitutional congress (Ho). The standoff lasted until April 10th, a total of 23 days, and included numerous protests outside the Legislative Yuan in support of the students, including one on March 30th that was attended by up to 500,000 people. There were smaller anti-student, pro-government protests as well. Some KMT leaders, notably Ma himself, remained steadfast in support of the bill, though other members of government, including Minister-without-Portfolio Jaclyn Tsai, were more critical and willing to have a dialogue with the students (Schneider). Tsai saw the lack of transparent communication from the government regarding the CSSTA as one of the primary issues which triggered the occupation of the legislature, and reached out to the digital activist collective g0v to discuss the creation of a platform where a "bottom up" approach to civil society that could facilitate a discussion on major issues that would then translate into policy from the government.

Scan the QR Code  
for more information  
regarding the 2014  
Sunflower Movement

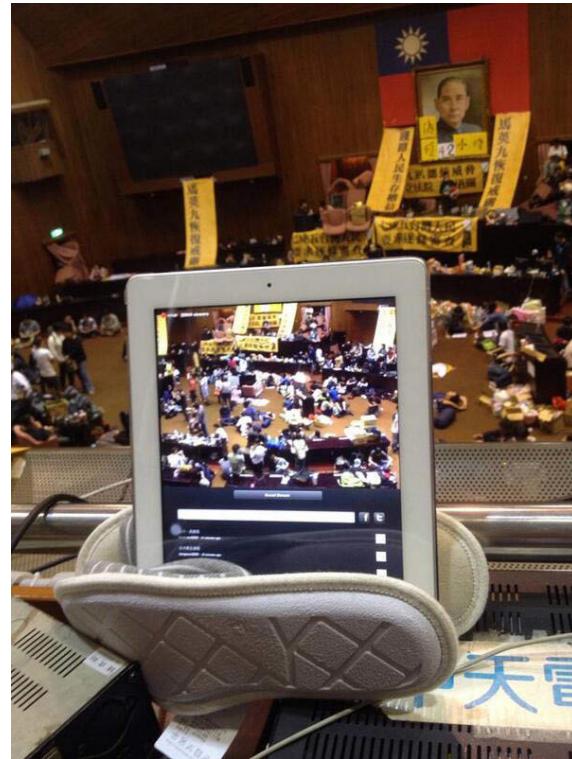
Source: Aljazeera



**Fig. 14** Student Activists occupying the Legislative Yuan in Taipei, 2014  
Source: P1000310 by Kevin-WY/Flickr

# DIGITAL DEMOCRACY

The Sunflower Movement was notable for being technologically enabled in unforeseen ways, including a wireless internet setup, livestreaming of protests in the parliament, crowd-edited transcription and data documentation, and crowdfunded financial support. (Cheng, 2015) Ubiquitous wireless internet access and the technological capabilities of activists were crucial for the success of this movement, allowing a physical protest to digitally spread to the widespread public citizenry.



*Fig. 11 A pair of flip-flops and a live-streaming iPad became a symbol of the Sunflower Movement's digital DNA. Credit: Diung Libiu / Chang Liyou.*

## g0v

Pronounced “Gov Zero”, [g0v](#) is a hacker group formed in 2012 with a mission to “fork” the government. Using the open-source software term “fork”, traditionally describing the splitting of code into a separate project, the civic hackers of g0v aimed to split off and reimagine the existing governance (O’Flaherty, 2018). g0v made specific use of the expansion of open data to explain the effects of government policies under debate, which led to the activist capacity that enabled 2014’s Sunflower Movement.



*Fig. 12 An “unconference” held during the 2014 g0v summit at the Academica Sinica in Taipei. Credit: g0v.tw*

# vTaiwan

[vTaiwan](#) was the premiere digital project to be borne of the gov. Beginning in 2016, it presented a novel digital solution for democratic consensus-building, focused on developing policies for digital economy regulations. Through four stages, the platform develops policy recommendations with widespread public input. (GovLab, n.d.)

With up to 31,000+ participants voting in individual policy debates, the platform saw robust public engagement. This went on to directly affect central

government policy on specific issues, notably in the cases of the regulation of Uber and FinTech. (Horton, 2018)

The central government created a similar service in 2017, [Join](#), leading to conflicting dominance between the activist-led vTaiwan and the central government's own service. vTaiwan was specifically focused on policy in the digital economy, while Join is a broader forum for all policy areas. Both projects have been overseen by Audrey Tang, an activist participant in the Sunflower Movement who

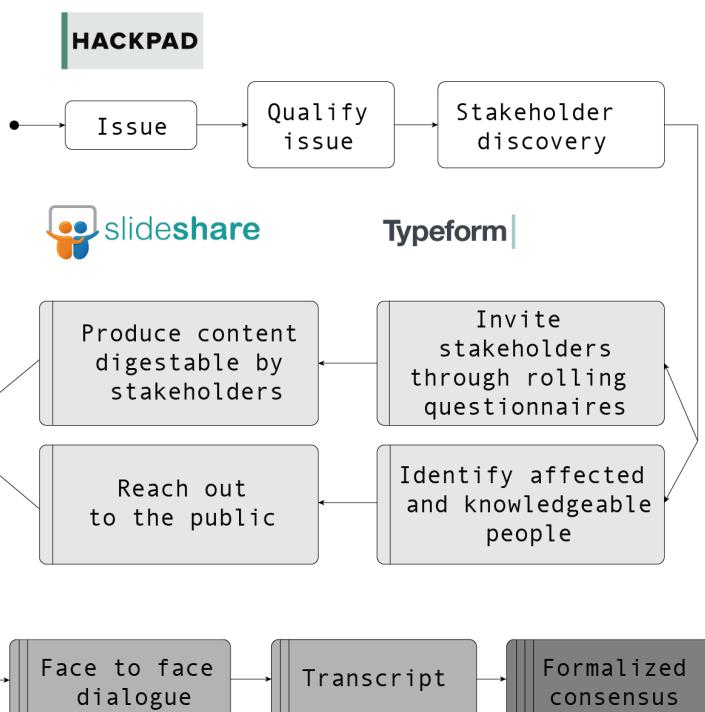
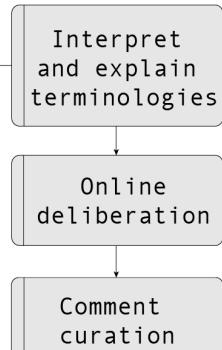
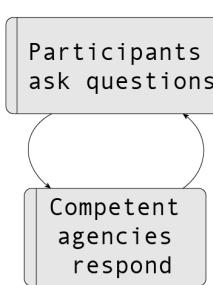
was subsequently appointed as a minister without portfolio in the central government's Executive Yuan.

**Scan to watch a 2018 mini-documentary on the vTaiwan project.**



Stage:

- Proposal Stage
- Opinion Stage
- Reflection Stage
- Legislation Stage



**Fig. 13** A guide to the four stages of policy develop through the vTaiwan platform. Credit: [info.vtaiwan.tw](http://info.vtaiwan.tw)

# SMART CITY



Scan here to watch a video of how Taipei is redefining its future

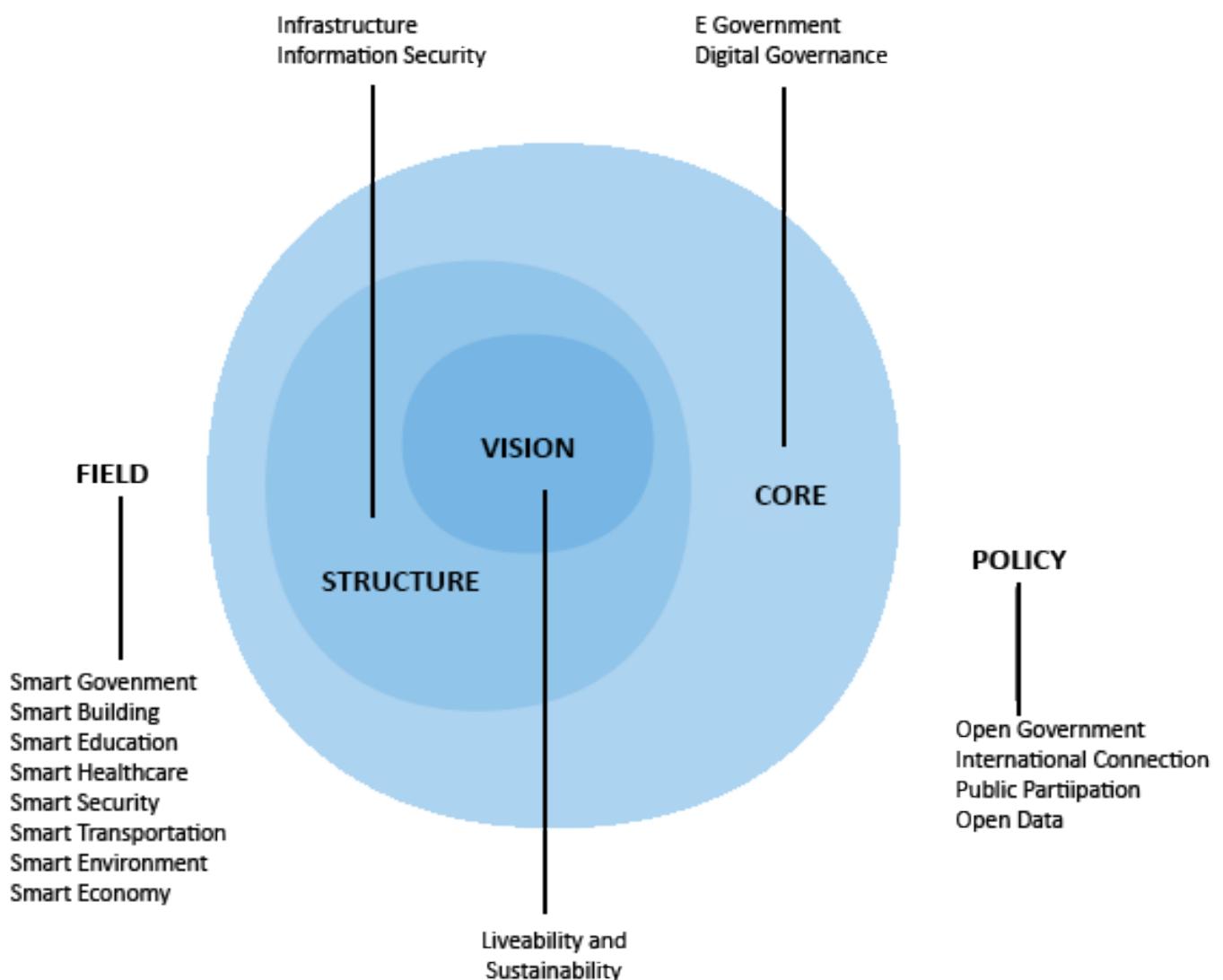
Urbanization is a global trend in development, and the push for sustainable practices and enhanced efficiency is fueling the growth of smart city initiatives worldwide.

Through the development of "smart government," "smart life," "smart economy," "smart

security," and a "sustainable environment," New Taipei City aims to establish a comprehensive smart city model that is both sustainable and resilient. To foster a smart economy, the government has long supported businesses in adopting technology such as cloud computing, big

data analysis, and mobile applications. Among these advancements is a pollution prevention app that operates 24/7, enabling citizens to report pollution incidents citywide.

Additionally, technology is utilized to map criminal

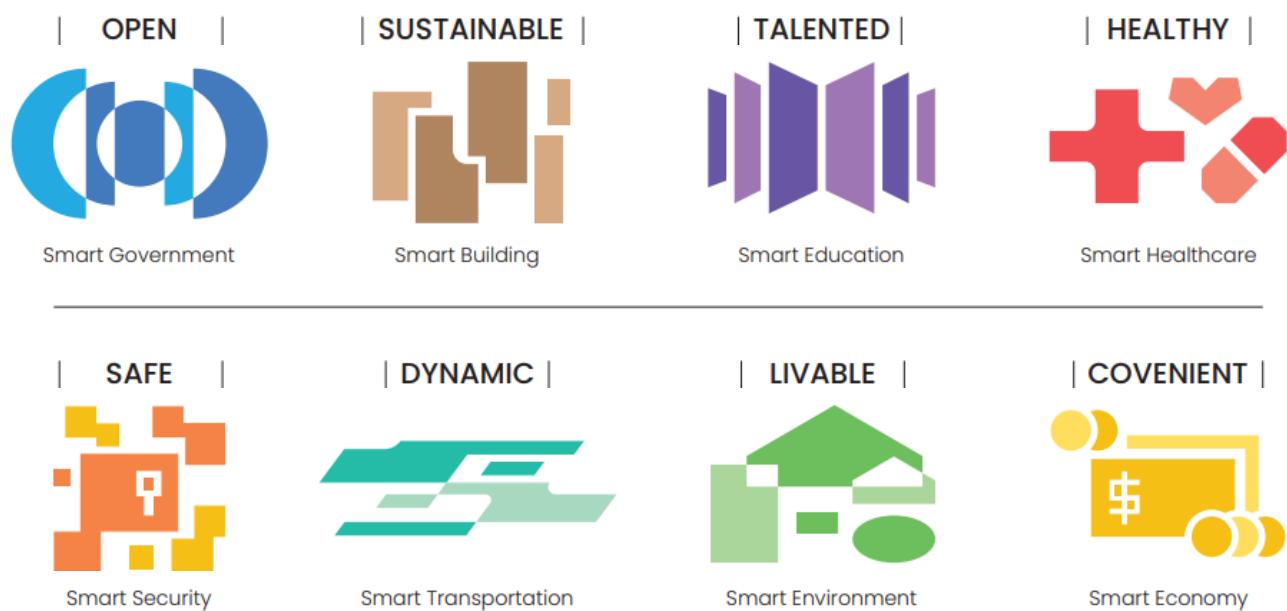


**Fig 15** Taipei Smart City development framework (*Smart Taipei, 2023*)

networks and assist the police in solving cases more effectively, ensuring a safer living environment for residents. Street monitors provide valuable data for police investigations. Furthermore, the implementation of apps like the "New Taipei Fire

Safety App," "cloud-based certification package inquiry," "New Taipei Life APP," and "Smart Community App 2.0" enhances convenience and safety for citizens, contributing to an overall smarter and safer living environment (New Taipei City Government, 2017).

"The Smart City Index 2021 ranked Taipei City fourth globally and second place in Asia" (Taipei Advances to Fourth Place in the 2021 IMD Smart Cities Ranking, 2021).



**Fig 16** Priority 'smart fields' to promote smart city initiative (*Smart Taipei*, 2023)

The PMO devised a comprehensive strategy, known as the "*Living Lab*" aimed at involving citizens, the government, and the ICT community:

1. **Citizen Engagement:** The PMO will introduce programs to actively involve citizens and gain insights into their requirements and preferences.
2. **Top-Down Collaboration:** Direct collaboration with government agencies will be facilitated by the PMO to pinpoint opportunities and provide backing for their smart city endeavors.

**3. Bottom-Up Engagement:** The PMO will take proactive steps to engage the ICT community, encompassing multinational corporations, small and medium-sized businesses, and startups. This engagement will foster the promotion of innovative solutions through a proof of concept (PoC) framework.

The Taipei City Government has embraced the "Smart Fields" framework to advance its smart city endeavors. At the core of this initiative lies the concept of "smart

government," which focuses on enhancing "digital governance" and "digital government affairs."

This framework emphasizes seven priority areas:

1. security
2. buildings
3. transportation
4. education
5. environment
6. health
7. economy

(Disruptive Asia, 2018)

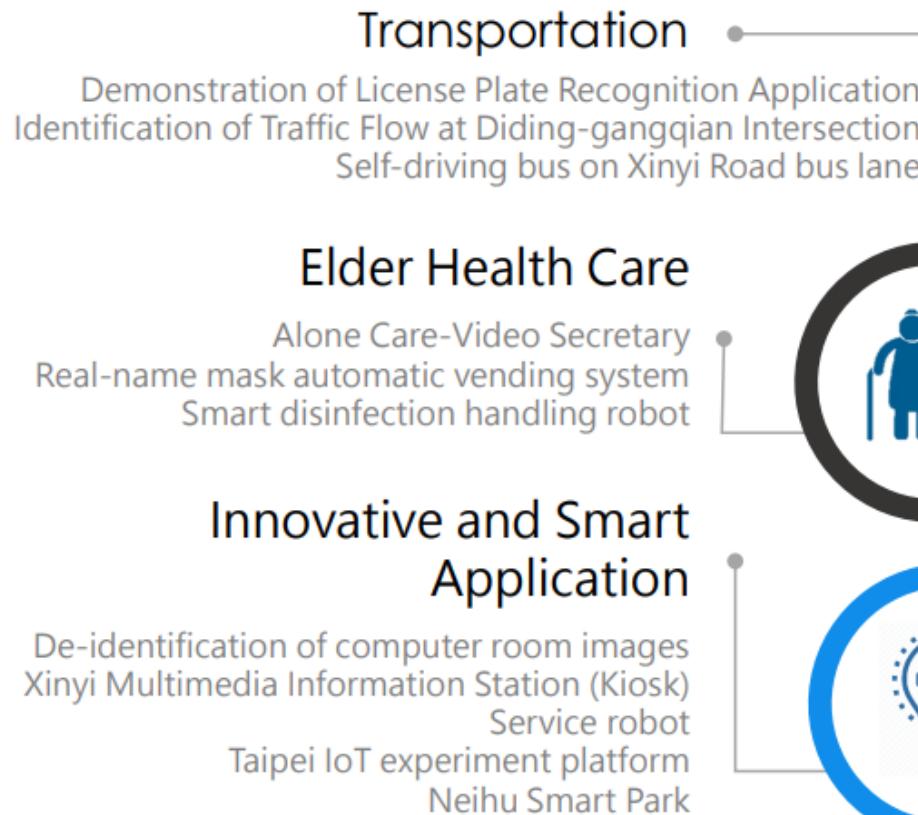
*"It is forecast that by 2050, 68 percent of the world's population—more than 6 billion people—will live in cities and their suburbs"(United Nation, 2018).*

Taiwan has developed a comprehensive Smart City Blueprint that outlines the vision, goals, and strategies for building smart cities. This blueprint focuses on leveraging technology and data to improve urban living, sustainability, and efficiency. Taipei has been investing in smart infrastructure, including high-speed broadband networks, IoT sensors, and smart grids. For instance,

Taipei's government has implemented a city-wide Wi-Fi network, providing residents and visitors with access to free internet connectivity in public spaces. By offering free Wi-Fi in public spaces, Taipei aims to promote digital inclusion and ensure that all residents, regardless of their socio-economic status, have access to the internet. This initiative helps bridge the digital divide by providing connectivity to those who may not have access to broadband services at home. It serves as a foundational infrastructure for various smart city applications, such as real-time information dissemination,

smart transportation, and environmental monitoring (Planning and Implementing a Smart City in Taiwan, 2016).

In order for these urban centers to thrive, governmental authorities must confront and address the pressing challenge of upgrading city infrastructure and streamlining operations to ensure essential services are readily available to citizens.



**Fig 17** Smart Field Proof of Concept Projects (*Smart Taipei, 2023*)



(DIGI+ Taiwan, 2018)

## Environment and lifestyle

Air box project  
eSIM remote access certificate water quality monitoring  
Neihu Smart Street Light Project  
Structural Monitoring of Shezi Bridge  
Smart Management of Feicui Reservoir Area  
Energy-saving lamp control in front parking lot  
Intelligent garbage collection system (iTrash)

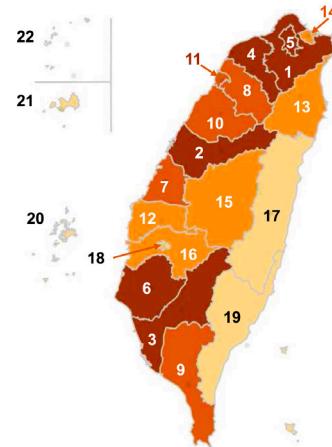
## Education

Mixed reality (MR) course teaching  
Campus security monitoring electronic fence  
Taipei English Learning Village  
DSA Network Sharing Experiment Pilot Project

# COVID 19 RESPONSES

Taiwan has been revered globally for its immediate and effective response to the COVID-19 pandemic, which began impacting the world in January of 2020. While e-governance and big data analytics, the technology-based components of their response, have been highlighted in scholarly literature from various fields and in the news, there was an undercurrent of other systems and structures that already existed that supported and enabled the nearly overnight response to begin mitigation and control of the virus. These systems and structures include the role of governance and government intervention, e-governance and relationship with the citizenry, and big data infrastructure.

Additionally, because the pandemic response is coming from the national level, this exploration of the intersection of urban information systems technology and the COVID-19 pandemic response will look solely at information about Taiwan. However, this research generally allows the same conclusions to be made about Taipei, as the city would be required to follow any guidelines put forth by the



**Fig 18** Distribution of domestic cases from 2020 to January 13, 2022 (*Lai et al., 2023*)

country's government.

## Reponse Timeline

COVID-19 is a transboundary public health emergency that reached Taiwan in early January 2020. Prior to the first infection in the country, government officials had sent doctors to Wuhan to gather information on the virus. (Yen, 2020) Additionally, the Central Epidemic Command Center (CECC), established in the early 2000s in the wake of the SARS epidemic, was operationalized to begin organizing resources and implementing interventions. The SARS epidemic significantly impacted the COVID-19 response through the creation of the National

Health Command Center (NHCC) and the amendment to the Communicable Disease Control (CDC) Act. (Lai et al., 2023) The NHCC is a central command point during any future public health emergency, while the CECC is a subunit of the NHCC that is composed of experts from varying departments and fields. The first steps taken by the CECC were to survey medical supplies and enact border controls, pausing Wuhan resident's entrance to Taiwan and banning Chinese visitors until February. (Bhatia et al., 2022) Additionally, the CECC instituted a 14-day quarantine period for visitors and guidelines for social distancing and mask-wearing.

(Hsieh et al., 2021) Despite the impacts of the after-effects of the country's experience and response during the SARS epidemic, these elements of public health emergency response are only a piece of the puzzle in the country's effective response and management of coronavirus.

### Role of Governance & e-Governance

The Taiwanese government's role in responding to the pandemic is twofold: it utilizes both conventional democratic practices and the collaborative and transparent approach

empowered by the inclusion of digital civic participation. Furthermore, the role of every government in the face of an event such as this is to balance the communication of detection, treatment, and preventative measures with the uncertainty that both the administration and the public are feeling.

Taiwan enacted a highly preventative response model, evidenced by the rapid adoption of border control measures, quarantine requirements, and mask-wearing guidelines. Masks

are a central component of mitigating the spread of the virus, and supply issues were a central challenge of many countries' guidelines. Due to state intervention, Taiwan did not face this challenge. After the CECC was reinstated, an export ban was put on masks, and the production of domestically produced masks increased from 1.8 million masks per day to 16 million masks per day over the course of three months. Additionally, a rationing system was introduced to allow citizens to receive two masks weekly, later increasing to nine masks every 14 days. This increase in production was the result of a public-private partnership in which the government intervened to lower costs and coordinate production. The administration met with the Industrial Development Bureau of the Ministry of Economic Development Affairs and the Taiwan Textile Research Institute, in addition to face mask-related manufacturers, raw material providers, and downstream mask manufacturers, to produce a plan for increasing production. The government introduced two subsidies, amounting to US\$9.6 million, to build 92 new



**Fig 19** Early border control and quarantine measures (Hsieh et al., 2021)

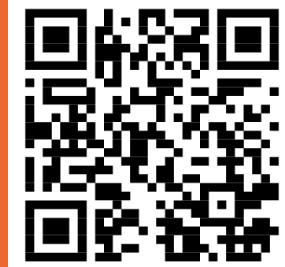
mask production lines. The government intervention also set up future profitability and demand in a post-COVID world, which was a concern for manufacturers. To achieve this, they used a price-setting model by setting the purchasing price structure, making masks a fundamental national security requirement, and the government agreed to purchase a fixed number of masks to maintain a level of demand. Additionally, when export bans were removed, manufacturers could export masks to further increase profitability. (Yen, 2020)

Digital governance, or e-governance, also relies on existing structures to increase the effectiveness of prevention and mitigation response measures. The central interventions of e-governance include the integration of health record databases to travel history, active surveillance and geofencing through phone data, and mapping of locations with a stock of masks. E-governance actions exemplify the benefit of

cross-department and intra-agency collaboration and coordination as the actions taken require information and tools from elsewhere. For example, the government engaged telecom companies to track people's whereabouts using their phone's GPS data to ensure compliance with quarantine requirements. An equally important measure was the communication channels created to convey the current state of the impact of the virus. The first channel is the daily press conference that was used to educate on false information. The second channel comes from social media in the form of civic technology communities, like g0v, that work to fight misinformation. (Chen et al., 2020) In the case of the COVID-19 response, the government facilitated a partnership, partly due to Digital Minister Audrey Tang's background in civic hacking, to correct misinformation. (Yen, 2020) Another response was to employ the country's meme culture to counter misinformation by posting pictures of a Shiba Inu

explaining the facts. ("As Taiwan's first Digital minister," 2021) (Lien & Wu, 2021)

Additionally, the Taiwan Can Help Campaign was a crowdfunded campaign to place an ad in the New York Times to advocate



Scan here to watch an interview with Audrey Tang

for Taiwan's effective and efficient response. The goal of this campaign had another motive, though, to increase coordination internationally. (Yen, 2020) Taiwan is excluded from the World Health Organization (WHO) because of China's claim of the country as a province and not an independent state. (Griffiths, 2020) While digital, this campaign has deeper ties to existing political tensions and the current administration's party affiliation. The Democratic Progressive Party won for a second term shortly before the lockdowns began and this party is more antagonistic to China. This distrust and exclusion from broader international collaboration may have led to a quicker response from Taiwan for its own protection.



**Fig 20** Social media post to combat misinformation (Lien & Wu, 2021)

The collaborative relationship between the citizenry and the administration is exemplified by the bottom-up actions taken by Taipei in response to the influx of visitors to the city due to a major international airport being located in the city. For example, the city government started supplying taxis for travelers in February of 2020 to stop them from using the mass transit system and potentially infecting other passengers. In the following months, the central government adopted this practice and required this of everyone arriving from other countries. Additionally, Taipei created a hotel quarantine service to help travelers and a daily stipend. The CECC required all travelers to quarantine for 14 days, but some may not be able to do so at home due to the risk of infecting family members. The CECC implemented this service for all travelers quarantining. (Hsieh et al., 2021)

### Role of Big Data Analytics

Big data analytics (BDA) was used during the COVID-19 pandemic response in some countries for digital health management, including “contract tracing, quarantine compliance, outbreak prediction, supply rationing, movement control, information update, and symptom monitoring.” (Azmi et al., 2022) Big data is a “large-scale dataset related to volume, variety, velocity, and/or variability that require

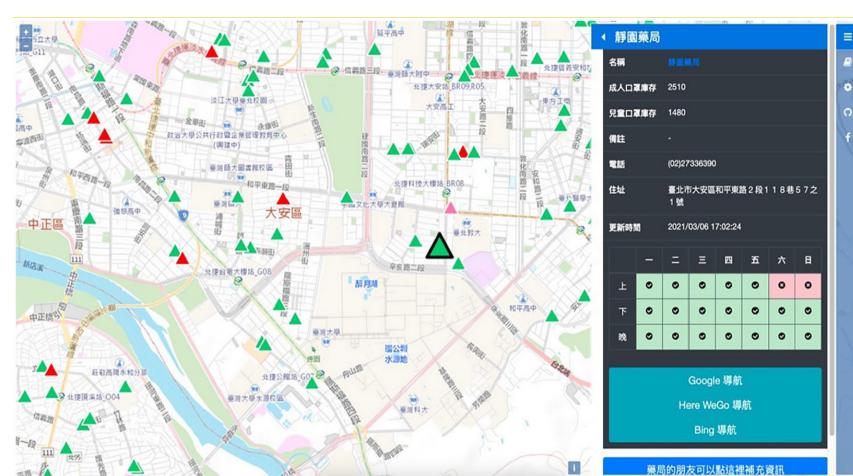
a scalable architecture for efficient storage, manipulation, and analysis.” (Azmi et al., 2022) While big data analytics is used in various contexts for public health management, there are five steps: acquisition, storage, management, analytics, visualization and reporting. In Taiwan, BDA was an essential factor in the effectiveness of COVID-19 response and management. The technology was used to achieve the interventions that e-governance enacted.

**Geofencing:** Taiwan used big data and phone GPS tracking, active surveillance, to guarantee quarantine compliance and to acquire real-time data on zones of high risk. (Mehta & Shukla, 2021) (Bhatia et al., 2022) This system was enacted the week following the first case in Taiwan. The process of tracking worked by first having the CDC compile a quarantine list that health facilities and civil agencies reviewed to verify phone location and address.

Quarantining individuals were called twice a day to check on physical and mental health conditions. People were also able to self-report using a chat app. After the verification process, telecom companies received phone numbers to begin tracking. If someone could not be contacted or the phone location changed, an alarm was sent to the individual and local authorities via text. The authorities would also visit the individual to verify their location. (Bhatia et al., 2022) (Yen, 2020)

For example, when a cruise ship docked in a harbor along the coast of Taiwan, the country utilized mobile contract tracing through geopositioning to identify people who came into contact with passengers. Individuals were sent a message to self-quarantine. (Azmi et al., 2022)

**Face mask rationing:** To communicate access to and optimize face mask distribution, the government adopted a platform created



**Fig 21** Mask availability map (Hsieh et al., 2021)

by civic hackers that displayed the mask stock at around 6,000 local pharmacies to help shorten wait times. The government added a purchasing platform to the system so people could preorder through the government website, the National Health Insurance app, or at convenience stores. (Yen, 2020) ("As Taiwan's first Digital minister," 2021) (Chen, 2023)

**National Health Insurance (NHI) system:** The NHI is a universal coverage system for all citizens run by the government. It enabled the data collection of individuals in Taiwan to form a strong database from the NHI MediCloud and My Health Bank, providing information from both healthcare providers and patients. This database was combined with the immigration and customs database to enable alerts on potential infections based on health symptoms and travel history. The healthcare facilities had access to individuals' travel history, first limited to two weeks and later extended to 30 days. (Yen, 2020) (Azmi et al., 2022) (Chen, 2023) To effectively enact this collation and management of data, intra-agency collaboration, a central piece of Taiwan's democratic process, is required to keep the country safe. Access to this information on such a broad scale also helped real-time monitoring. However, it was because Taiwan already

had these systems in place that action could be taken so quickly.

**QR code system:** A gov (GovZero) initiative instituted a digital contract tracing process. In public venues, entrance was predicated on individuals scanning a QR code with a phone. This would commence a process where a unique number with 15 digits that identified the venue would be sent to a toll-free number. The system was designed so individuals do not need to contact one another while scanning, reducing the risk of infection. This also mitigates some of the challenges with geolocation-based data alone as this data does not take into consideration the presence of walls that may separate persons infected with the virus and those who are not potentially inducing more quarantining than is necessary. ("As Taiwan's first Digital minister," 2021) (Chen, 2023)

The use of big data analytics in various actions taken to manage and mitigate the impacts of the COVID-19 pandemic in Taiwan demonstrates the strength of bottom-up actions and the impact that a more digital-focused government can have on gaining citizen trust and action. Likely, Taiwan's COVID-19 response would not be revered as effective as it has been without both the usage of digital technology

to meet people where they are by communicating in a language the citizenry understands, social media, and the access to the internet generally in the country. Because of the infrastructure improvements the country has made since the late 1990s, nearly 90% of residents have access to broadband internet (Biberman, 1970), which is an essential piece in the ability to respond as Taiwan has.

### Question of Privacy

With the use of private data comes the question of when the use of private data for collective benefit goes too far. Some have interrogated whether Taiwan's methods of pandemic management, particularly the use of big data, have done just that. With the newness of the country's democracy and levels of authority given to various agencies in the wake of this public health crisis, concerns have arisen about the levels of power given and what this means for the future. So, the question remains: What measures can be taken to protect against the long-term collection and usage of private data?

The question of private data collection and use is also an ethical one. The application of big data analytics in contract tracing programs, in particular, accessed and utilized private data in the most overt way. Despite this, the QR code system managed to implement a

strategy that allowed for a level of anonymity. The system achieved this by not requiring individuals to provide personal information about the venues they visited, the role of the telecommunications companies in storing data, data deletion after 28 days, and the restricted use of the data by only the National Health Command Center (NHCC) for prevention of this virus. (Chen, 2020) The role of the telecommunications companies is vital here in limiting government oversight and control as the administration does not store the information. This structure demonstrates the public-private collaboration structure of the digital democracy of Taiwan. Additionally, it showcases the goal of transparent communication the country has by allowing individuals to know where and how their data is being stored and what it will be used for, further building trust between the administration and the citizenry.

The Central Epidemic Command Center (CECC) is at the forefront of this conversation about privacy due to the amendment to the Communicable Disease Control (CDC) Act and the creation of the Special Act on COVID-19 Prevention, Relief, and Restoration. These policies enable the CECC to take whatever means the agency deems necessary for the prevention

and management of the public health crisis. There is an existing argument that the authority of the CECC to penalize individuals who fail to adhere to response guidelines is granting this department too much control at the cost of individual privacy and the general public interest. (Yen, 2020) This contentious point is the manifestation of the challenge of balance that the government must strike in the face of uncertainty in its response.

Beyond the question of the levels of authority and ascribing too much power to one entity, the question of how these decisions impact the future of Taiwan's digital democracy also emerges in the conversation around privacy. The Personal Data Protection Act (PDPA) "governs the collection, processing and usage of personal data, including by the private sector and nongovernmental agencies." (Bhatia et al., 2022) However, in the context of an emerging public health crisis, efficient responses are sometimes prioritized, potentially infringing on privacy rights. COVID-19 required a transboundary approach that, in some cases, subverts existing legislation. While the response is required in balancing efficiency and uncertainty, it can result in inadvertent effects that have an impact on private data security. For example, the regulation of encryption

fails to enforce penalization when anonymization is insufficient. Additionally, in the face of COVID-19, contract tracing utilized data for prevention and prediction, but regulations on data sharing have the potential to increase surveillance beyond the public health crisis. Finally, consent is another component to be examined in future participation in big data analytics, and transparency in use should be defined.

Taiwan's successes in efficiency and effectiveness were partly spurred by the experiences of the SARS epidemic. COVID-19 responses will influence future public health crisis responses, but due to e-governance and the age of the country's democracy, legislation and regulations will be important in the next few years as the world moves into a post-pandemic state. While generally, most are "living with" the virus now, the pandemic is not over but has shifted into a new stage that positions governments to think about their responses and the impacts they can have both in the short- and long-term.

# CONCLUSION

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Taiwan's precarious status as an unrecognized state weighs heavily on the politics and culture of its primary city, Taipei. In stark comparison to the People's Republic of China, the island has seen a flourish of democracy in the past two decades maintained through an active citizenry and a robust governmental service sector.

Since its modern democratic establishment, the government has been adaptable to the new trends made possible as a part of the digital revolution, and Taipei has been a global leader in the "top-down" planning and implementation of urban information technology deployment. Additionally,

there is ample participation from the public through "bottom-up" strategies that engage volunteers and activists to concurrently build and deploy projects affecting government policy. This has coalesced in a feedback loop, in which initial city investments into internet access and digital proficiency have developed an online constituency that can influence public policy on the effects of the digital economy.

Recent iterations of the idea of "Smart Cities" have largely promised a techno-futuristic tracking and monitoring system to deploy governing services, though Taipei's development strategy has differed by largely focusing

on the people's utilization of communication technology and the systems to distribute it. The resiliency of an engaged online citizenry was on display during the COVID-19 pandemic, when the government and volunteers collaborated on an overall response widely regarded as an international success story. Rather than a technologically-oriented society, Taipei has worked to create a technologically-enabled society, providing the means for new types of interpersonal connections that guide the economic, cultural, and political trends of the city.



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**UPP 508 Global Urbanization and Planning**

Professor: Dr Sevin Yildiz

Team members:

Austin Busch  
Bhumika Dahiya  
Nicholas Gruenwald  
Haley McDonnell

