

An Investigation of Cultural Infrastructure in Hangzhou, China Through Comparative Analysis and Citizen Feedback



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Table of Contents

Authorship	<i>iii</i>
Table of Contents	<i>vi</i>
Table of Figures	<i>ix</i>
Table of Tables.....	<i>x</i>
Executive Summary	<i>xi</i>
1 Introduction	1
2 Background	3
2.1 Relevant Chinese History	3
2.1.1 Cultural Revolution	4
2.1.2 Post Cultural Revolution.....	6
2.1.3 Conclusion.....	6
2.2 Quality of Life.....	7
2.2.1 Leisure Activities.....	7
2.2.2 Education.....	9
2.2.3 Parks and Sports Facilities	10
2.2.4 Conclusion.....	11
2.3 Cultural Infrastructure in Urban Planning.....	12
2.3.1 Urban Planning	12
2.3.2 Cultural Infrastructure	13

2.3.4 Conclusion.....	15
2.4 Demographics.....	15
2.5 City Layout	18
2.5.1 Hangzhou, China	19
2.5.2 Worcester, Massachusetts	23
2.5.3 Conclusion.....	29
2.6 Stakeholders.....	30
2.6.1 Hangzhou Citizens	30
2.6.2 Hangzhou Government	31
2.6.3 Tourists to Hangzhou.....	31
2.6.4 Conclusion.....	32
3 Methodology.....	33
3.1 Assessing Public Cultural and Sports Facilities.....	33
3.1.1 Preliminary Research.....	34
3.1.2 Surveying Hangzhou’s Citizens and Tourists	35
3.2 Analyzing Public Usage and Perception	35
3.3 Identifying Strengths and Weaknesses	36
3.4 Data Management and Translation.....	37
3.5 Gantt Chart	37
4 Conclusion	39

5 References	40
Appendix A: Cultural Facilities Survey	45

Table of Figures

Figure 2.1-1: Propaganda depicting an Enthusiastic Crowd Cheering for Mao	5
Figure 2.5-1: Map of China	19
Figure 2.5-2: Map of Zhejiang Province	20
Figure 2.5-3: Map of Hangzhou Districts	21
Figure 2.5-4: Graph of Number of Institutions of Culture in Hangzhou	22
Figure 2.5-5: Map of the United States	23
Figure 2.5-6: Map of Massachusetts and nearby states	24
Figure 2.5-7: Public cultural facilities in Worcester	25
(a) Libraries	
(b) Museums	
(c) Sports facilities	
(d) Theaters	

Table of Tables

Table 2.4-1: Demographics in Hangzhou, China	17
Table 2.4-2: Worcester 2017 Census Data	17
Table 2.4-3: Land Area and Population Density in Hangzhou	18
Table 2.5-1 Number of Institutions of Culture by Region (End of 2016)	22
Table 2.5-2: Sports facilities in Worcester	27
Table 2.5-3: Buffone Arena pricing	27
Table 2.5-4: Worcester YMCA membership fees	28
Table 2.5-5: Meridian Pilates pricing	28
Table 2.5-6: Worcester Fitness pricing	28
Table 2.5-7: Worcester Jewish Community Center membership fees	29
Table 3.5-1: Gantt chart	38

Executive Summary

The quality of life of citizens in a city depends on many factors, one being the cultural infrastructure. The Cultural Revolution was a decade-long event launched by Mao Zedong in 1966 to eliminate counterrevolutionaries, or anyone who was merely accused of going against the communist party. In modern times, Chinese society refers to the Cultural Revolution as an “unmitigated disaster” (Kenley, 2012), where Mao’s government destroyed much of China’s cultural infrastructure. In the 40 years since the Cultural Revolution, China has made progress in recovering from the economic and cultural damage done. However, the development of China’s cultural infrastructure still lags behind the pace of economic growth.

Cultural infrastructure creates a sense of community by providing resources that enable people to gather in one place to participate in a hobby or activity that they all enjoy. In a city, one’s quality of life depends on many factors, including exercise, education, and hobbies. Having many options to satisfy the needs of the citizens within a city encourages people to participate in the activities on offer.

The goal of this project is to raise the quality of life in Hangzhou by identifying the strengths and weaknesses of its cultural infrastructure, and to determine how to improve this infrastructure in the future. At the suggestion of our sponsor, Professor Wang of Hangzhou Dianzi University (HDU), the team decided to investigate the cultural infrastructure of Worcester, Massachusetts before traveling to China in order to develop an understanding of cultural infrastructure. The team will apply this understanding in Hangzhou, the site of our primary analysis, as a complement to the Hangzhou-oriented research. The team divided the

goal into three objectives: to assess the public cultural and sports facilities in Worcester and Hangzhou, to analyze the public usage and perception of these facilities in Worcester and Hangzhou, and to identify points of strength and areas of improvement in Hangzhou's cultural infrastructure.

The project employs two methods to achieve this goal. Firstly, the team will research the state and distribution of cultural infrastructure in Worcester to serve as a reference for the future investigation in China. The team will conduct similar research in Hangzhou upon arrival in China. Secondly, to ascertain the needs and preferences of the city's residents, the group will use an online and in-person survey distributed in Hangzhou.

Cultural infrastructure provides a source of physical activity and cultural enrichment for the surrounding citizens, greatly raising the overall quality of life. By the conclusion of the project, the team will produce meaningful recommendations for Hangzhou's cultural infrastructure through analysing the strengths, weakness, opportunities, and threats (SWOT analysis), grounded in the needs of the populace.

1 Introduction

Cultural infrastructure, more commonly referred to as cultural facilities, play an integral role in the overall happiness of a community. Cultural infrastructure has a range of definitions including interconnected social hierarchy (Thomas, 2015) and just leisure activity buildings in general (*Under Construction*, 2008). For the purposes of this project, a cultural facility is defined as a place that fosters a sense of community while providing activities for leisure time, outlets for creative energy, and sources of knowledge. A city with vibrant cultural infrastructure makes affordable and engaging leisure activities available to the majority of members in the community (Zheng, Y., 2018). Hangzhou, China, currently has room to improve its cultural infrastructure for both residents and tourists.

Professor Guofeng Wang of Hangzhou Dianzi University (HDU) intends to improve Hangzhou's cultural activities. Since the Cultural Revolution, "the standard of living of Hangzhou residents has been greatly improved" (G. Wang, personal communication, September 2, 2018). However, this increased standard of living is mostly in terms of material goods, due to the economic growth of China over the last four decades. Cultural infrastructure has not made the same progress in this time, and as a result, the citizens of Hangzhou need improved and expanded leisure activities and facilities. By collaborating with Professor Wang's students at HDU, this WPI project will propose recommendations to address this problem. In preparation for the investigation in Hangzhou, the team assessed the distribution and pricing of cultural infrastructure in Worcester, Massachusetts. Meanwhile, the students of HDU

conducted a similar study of cultural facilities in Chongqing, China. Both groups are combining knowledge and collaborating to provide Hangzhou with a more comprehensive assessment of its cultural infrastructure.

The project ultimately intends to provide a detailed assessment to Professor Wang of how to meet the demands of the citizens and tourists in Hangzhou (G. Wang, personal communication, September 2, 2018). The primary focus of this project is on sports and cultural facilities in both Worcester and Hangzhou. The sponsor of the project defines sports facilities as public areas such as “gymnasiums, gyms, or ping-pong rooms, dance rooms, etc,” (G. Wang, personal communication, September 18, 2018) where people can exercise and play, as opposed to large sports stadiums, which are beyond the scope of this project. This study first looks at the current facilities in Worcester, Massachusetts, focusing on distribution and, price. To assess the present state of cultural infrastructure in Hangzhou, the group will conduct short surveys to evaluate the citizens’ and tourists’ perceptions of the quality and availability of cultural facilities in their area. One research challenge is managing to survey a representative sample of Hangzhou citizens. Consequently, the group is conducting surveys, electronically through WeChat and in-person, to reach the greatest number of people. Distributing the survey electronically allows residents of any district to easily submit responses, which may result in broader and more representative sampling. Based on the findings from the survey and the team’s SWOT analysis, the group will provide the city of Hangzhou thorough and feasible recommendations to strengthen their cultural infrastructure.

2 Background

This section provides relevant background information to provide context for project's research. Section 2.1 provides an outline of China's recent history as it relates to the project. Section 2.2 defines the broad term of "quality of life" and analyzes it from a few, non-exhaustive angles. Section 2.3 presents information on the nature of urban planning in China and on the importance of cultural infrastructure in cities. Section 2.4 contains basic statistics on the populations of Worcester and Hangzhou. Section 2.5 consists of information on the layout and size of each city, with special attention paid to the distribution of public cultural facilities throughout Hangzhou and Worcester, and section 2.6 describes the project's various stakeholders.

2.1 Relevant Chinese History

China has a rich history of almost 5,000 years, with the first Chinese dynasty dating back to 2100 BCE (Asia for Educators, 2009). However, this proposal focuses on the comparatively recent event of Mao Zedong's Cultural Revolution, and developments since then. Section 2.1.1 gives an overview of the Cultural Revolution. The Cultural Revolution is the key event in Chinese history that is critical for understanding the motivation of the project. Section 2.1.2 briefly discusses what China has done since the Cultural Revolution to undo the economic and societal damage done by Mao's rule.

2.1.1 Cultural Revolution

To address modern cultural infrastructure in Hangzhou, it is important to understand the history that is central to the development of the project. The Cultural Revolution was a decade-long event launched by Mao Zedong in 1966 to eliminate counterrevolutionaries, or anyone accused of going against the communist party. Mao utilized impressionable youth, such as college graduates and teenagers, who quickly seized the opportunity to join Mao—partially due to facing an inevitable mass unemployment (Singh, 1968). These young activists became known as the Red Guard. Under Mao’s control, the Red Guard started by tormenting school authorities and teachers, then eventually Chinese society as a whole (Yongyi, 2011). Universities shut down due to the Cultural Revolution, which had a long-term consequence of a poorly educated generation (Kenley, 2012). The government and the Red Guard accused and beat people with minimal of evidence, including not displaying adequate communist enthusiasm or showing signs of western sympathy. Many of Mao’s political opponents committed suicide rather than face persecution by the Red Guard. During this time Mao became a god-like figure, commonly referred to as the “Reddest-red Sun of Our Hearts” (Kenley, 2012), through numerous propaganda tools like statues, posters, and books. Figure 1 is an example of one of these propaganda posters.

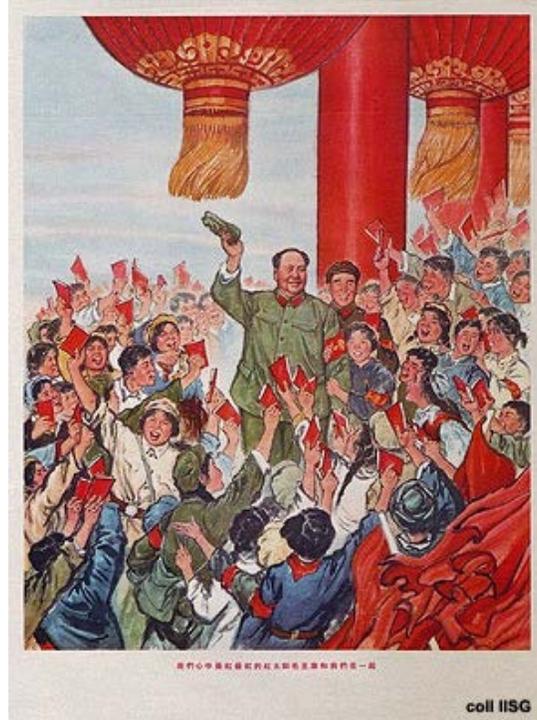


Figure 2.1-1: Propaganda depicting an enthusiastic crowd cheering for Mao. (Zhejiang Workers, Farmers and Soldiers Art Academy Collective, 1968)

The Cultural Revolution came to an abrupt end in 1976 when Mao died of natural causes. In modern times, Chinese society refers to the Cultural Revolution as an “unmitigated disaster” (Kenley, 2012), where Mao’s government destroyed much of Chinese culture and history to censor citizen’s access to past regimes and dynasties. In the 40 years since the Cultural Revolution, China has made progress in recovering from the economic and cultural damage done. This event resulted in China losing a large portion of its history, traditions, universities, and economic stability to censor its citizens during Mao’s reign.

2.1.2 Post Cultural Revolution

After Mao's reign, Deng Xiaoping, Mao's successor, wanted to undo the damage done by the Cultural Revolution. He wanted to modernize China in four areas: agriculture, industry, science, and the military (Kenley, 2012). Most notably, Deng pushed for huge economic reform, opening up China's borders to the rest of the world. He created Special Economic Zones where foreign companies could build and hire with almost no government interference. This was incredibly successful; Shenzhen, the first of these zones, grew from a population of a few thousand to over fourteen million (Kenley, 2012). Despite this progress, economic development was not always smooth. After the incident at Tiananmen Square in 1989, international investors were uneasy to continue their business in China, thinking that Deng would reverse his stance on economic openness. However, Deng made it clear through public announcements that China would remain economically open and not return to being a nation with closed borders. China is an economic powerhouse in the world today, with their economy being second largest in the world, behind only the United States (Kenley, 2012). China's cultural infrastructure has not experienced as significant of a growth as their economy over the past 40 years mostly due to the Cultural Revolution.

2.1.3 Conclusion

In general, it is essential to learn from history so that future generations learn from the mistakes of our ancestors. The current investigation, initiated by Professor Wang, intends to help China renew what it lost to the Cultural Revolution through improving cultural

infrastructure. With the knowledge of this part of China's history, the team focused the scope and objectives of the project on the resources the citizens need most. Having knowledge of the Cultural Revolution helps identify the historical, and continuing, need for infrastructure reform in China. This provides insight into the state of the quality of life of Chinese citizens in the present day.

2.2 Quality of Life

Being more involved in one's community both raises levels of happiness and is beneficial to one's mental health (Wei, Huang, Stodolska, & Yu, 2015). In a city, one's quality of life depends on many factors, including exercise, education, and hobbies. Having many options to satisfy the needs of the citizens within a city encourages people to participate in the activities being offered. Cultural infrastructure creates a sense of community by providing resources that enable people to gather in one place to participate in a hobby or activity that they all enjoy.

2.2.1 Leisure Activities

Leisure activities are an important part of daily life as they positively impact a person's health and well-being (Larson & Cloutier, 2016). The definition of leisure activities is hobbies and other types of activities that people enjoy in their free time. Studies done on the relationship between leisure activities and quality of life show that people who engage in social leisure activities are more satisfied with their lives (Lloyd & Auld, 2002). Improving cultural facilities in an area provides citizens with more opportunities to discover something they enjoy doing in their spare time, and thus increase their health and well-being.

During the Cultural Revolution, people could only participate in traditional Chinese activities. These included games, like poker, reading government-approved novels and cartoons, playing Chinese checkers, and collecting items (Wei et al., 2015). In China today, things like surfing the Internet and playing computer games are the most popular leisure activities (Wei et al., 2015), which is a testament to the technological advancement of China in the last 40 years. However, Chinese cultural infrastructure did not maintain the same pace as other areas of China's advancement. In a study done by Wei, Huang, Stodolska, and Yu (2015), 500 students took surveys in Hangzhou asking about current cultural infrastructure options. More than half of the students said they were either 'not satisfied' or 'not very satisfied' with the current offerings. An influx of western culture after the Cultural revolution introduced new leisure activities to the Chinese, validating results that indicate people are dissatisfied with their traditional options. During the Cultural Revolution, Mao declared anything western as counterrevolutionary, due to the capitalistic tendencies of the western countries (Wei et al., 2015). In more recent years, the Chinese people have expressed a demand for more 'fashionable and trendy' western leisure activities, such as going to bars and mountain climbing (Wei et al., 2015). The National Survey predicts the demand will keep rising as China continues to recover from the Cultural Revolution (Wei et al., 2015). This increasing demand is a problem, because of the lack of available facilities for leisure activities. Additionally, those facilities that exist are often not open at times that work with the schedules of students or employees (Wei et al., 2015). Improving and creating more leisure offerings addresses the current dissatisfaction with current leisure activities and will enhance cultural infrastructure in Chinese cities.

2.2.2 Education

An essential part of a healthy culture is quality education. Education passes down the culture of a society to younger generations and equips them to produce their own contributions to art, science, or history. In general, people with higher education levels have a better quality of life because their access to more jobs and the economic advantages of education give these people a greater sense of control over their lives (Ross & Van Willigan, 1997). Museums and historical sites can enrich people's knowledge by providing more information and artifacts on specific topics.

China has a rich past, as highlighted by the many museums, pagodas, and other historical sites found throughout the country. These museums and historical sites supplement the lessons taught in the school systems by displaying artifacts and complementary knowledge on the relevant subjects. Children learn more easily inside these sites because the artifacts and the various exhibits inside the museum keep them engaged longer than a classroom setting could (Wu & Wall, 2017). During the Cultural Revolution, Mao condemned museums and historical sites for glorifying Historical China (Yongyi, 2011). The denouncement of Historical China stripped museums and sites of some history, making the museums of today un compelling to most Chinese locals (Sheng & Lo, 2010). Improved marketing, among other adjustments, will entice locals to return to these museums and help the local population continue to learn from them (Sheng & Lo, 2010).

2.2.3 Parks and Sports Facilities

Physical activity provides many benefits to the human body. People who incorporate exercise into their daily lives experience fewer instances of mild health issues and mental health issues, like depression and anxiety (Paluska & Schwenk, 2000). The benefits of regular exercise include reduced stress, clearer minds, and a higher level of happiness (Paluska & Schwenk, 2000). Including more sports facilities and green spaces in a city raises the quality of life by giving the residents more opportunities to stay active and healthy.

Sports facilities create an outlet for people who want to include more exercise and physical activity into their lives. For the purpose of this paper, the definition of sports facilities is any place one can go to exercise and play, like a Youth Men's Christian Association (YMCA) or gym. Using these facilities raises the quality of life because exercise can improve a person's daily life (Guedes, Hatmann, Martini, Borges, & Bernardelli, 2012). Daily exercise releases various chemicals in the brain, such as endorphins which cause someone to feel positive and energized (WebMD, 2018). Exercising improves a person's physical health as well. Instances of heart disease, high blood pressure, and heart attacks decrease with daily exercise (Paluska & Schwenk, 2000). By making sports facilities more accessible, more people will be able to reap these benefits.

Parks raise the quality of life in an urban area because they provide "a space for recreation, reflection, and cognitive growth" (Larson & Cloutier, 2016). Additionally, in China, parks play a larger role in daily exercise than in the United States. Many people use parks on a daily basis to go for a walk, a jog, play sports and outdoor games, and do Tai Chi (Professor Du,

personal correspondence, September 19th, 2018). In an urban setting, parks containing trees help the residents more than just with exercise and recreational space. Trees filter carbon and other emissions out of the air, which helps combat any pollution from cars and other sources (Nowak, Greenfield, Hoehn, & Lapoint, 2013) Chinese cities are also extremely crowded resulting in smaller apartments. The cramped conditions inside apartment buildings drives residents to spend free time elsewhere (Urist, 2013). Creating more parks, or fixing up the current offerings, provides more outdoor space for people to go in their spare time and promotes using these parks for physical activity and to relax.

More instances of places with space for physical activities encourages people to stay active. Establishing more aesthetically pleasing and easily accessible parks or sports facilities leads to a rise in physical activity among men and women in the surrounding area (Su et al., 2014). The benefits created by the rise in physical activity would help citizens reduce stress and be happier overall (Paluska & Schwenk, 2000). Bolstering the supply of available sports facilities and parks in a city promotes wellbeing and elevates the quality of life of the residents.

2.2.4 Conclusion

High quality of life is essential for residents of a city to want to stay. Poor cultural infrastructure lowers the quality of life because people may feel they are missing essential cultural activities, resulting in a less desirable city. Residents want to be close to amenities and infrastructure that they need on a regular basis, which would improve their quality of life. The design of the city is crucial in ensuring their even distribution throughout. Knowledge in urban

planning is essential to ensure that these facilities are accessible to a high concentration of people.

2.3 Cultural Infrastructure in Urban Planning

Some cities are better to live in than others, but why? There are countless factors that might make one city preferable to another, and many are beyond control, but city planning can steer the course of an urban area to a certain extent. Managing the complexity of a densely-populated area is difficult, however, and it is easy to overlook small-scale issues while also considering millions of citizens. One issue which takes place on a very local level is the state of cultural infrastructure. Each neighborhood in a city needs a diverse set of cultural facilities, but planners may overlook these local concerns while trying to cater to the city as a whole. Therefore, it is critical to find an effective strategy while guiding the growth of a city.

2.3.1 Urban Planning

Urban planning is a daunting task. There are countless intertwined factors which determine the livability, vibrancy, and global prominence of a city. City planners are responsible for balancing and advancing all these goals and more, despite the fact that the outcomes of their decisions are always difficult to predict accurately. However, even an imperfect attempt to guide a city's development is better than unchecked growth.

The organizational structures of most urban planning administrations tend to fall somewhere on a continuum from top-down to bottom-up (*Under Construction*, 2008). In a top-down approach, a central city (or even federal) government will set targets for the more local

levels of government to strive for, and will also dictate funding. A bottom-up approach, in contrast, gives local levels of government substantial freedom to choose their own projects, enabling local and grassroots groups to influence the places they live. China falls squarely on the former side of this spectrum, which accords with its strong centralization of power. This echoes the influence of the Union of Soviet Socialist Republics; single-party rule and five-year plans have had no small impact on China's development as a nation (Kong, 2007). However, there is evidence that bottom-up strategies yield better results, which reflect the desires of the city populace (Under Construction, 2008). This is the weakness of the highly-centralized Chinese model; spectacular skyscrapers with cutting-edge architecture may create an image of prosperity and advancement for outsiders, but they often have little value to city residents, who may remain underserved indefinitely (Kong, 2007). Cultural infrastructure is one example of this conflict, and successful implementations of it prove that a local focus is essential in large-scale urban planning.

2.3.2 Cultural Infrastructure

This proposal focuses on the characteristics of cultural infrastructure in cities. But before any research, analysis, or discussion can begin, it is helpful to decide on a single definition of "cultural infrastructure". This is no trivial task, as multiple definitions exist within a relatively small body of literature. The term can refer to the intangible structure of a culture itself—the "infrastructure" which establishes an interconnected social hierarchy (Thomas, 2015). This definition is most common in the literature on management, but holds little relevance to this research. The other available definitions, closer to our working definition, tend to refer to real-

world locations associated with culture to some degree. However, most of the literature available does not provide a rigorous definition of the term, and focuses on art facilities near-exclusively (Brooks & Kushner, 2001). While studios, galleries, and museums are within the scope of this project, this research also considers most public leisure destinations as cultural infrastructure. This includes entertainment facilities, such as movie theatres; outdoor spaces, such as parks and public gardens; and other spaces, including gyms and sports facilities. Although these examples may provide a general understanding, it is helpful to have a single, written definition. Thus, we use the CECC National Roundtable Dialogue (2007-2008) definition of cultural infrastructure:

[Cultural infrastructure is defined as] physical assets and spaces whether they are full time or part time, single purpose or multi-purpose, historic or contemporary that have cultural products and accommodate and satisfy the requirements of cultural activities and cultural industry (as cited in Under Construction, 2008, p. 17)

Consequently, there are a diverse array of facilities, ranging from libraries and playgrounds to basketball courts and concert halls, which are relevant to the project.

Cultural infrastructure plays an important role in elevating a city's quality of life. Once the population's standard of living rises sufficiently high to satisfy basic requirements—reliable food and shelter—the focus shifts from survival to happiness (G. Wang, personal communication, September 11, 2018). This is the role of cultural infrastructure; it provides activities for leisure time, outlets for creative energy, and sources of knowledge. Grodach and Loukaitu-Sideris (2007) state that cultural centers, areas of concentrated artistic or creative cultural infrastructure within cities, are “a significant factor in how individuals choose where to

live and work” (p. 349). The reasoning is simple: people place value in their culture, and places where it is accessible to them will naturally attract citizens. However, accessibility can be surprisingly difficult to implement. People usually frequent places which are only within about 15 minutes of their home by foot, and the upscale, “flagship” facilities are often prohibitively expensive, especially for habitual use (Kong, 2007; Zheng, 2018). The spatial distribution and makeup of cultural infrastructure therefore requires close attention, and is the focus of the project.

2.3.4 Conclusion

This study aims to determine the needs, met and unmet, of Hangzhou residents on a local basis. This is necessary because top-down urban planning is several degrees removed from the wishes of the citizens, and because the distribution of current cultural facilities will result in varying needs in different areas. By collecting input directly from the source, and analyzing it based on location, the research addresses both of these “blind spots”. As a result, the project is well-positioned to uncover new areas of potential improvement for the cultural infrastructure of Hangzhou. Another important step towards serving the city effectively is to understand the demographics of the two cities involved in the investigation, Worcester and Hangzhou.

2.4 Demographics

The cultural infrastructure needed by a city’s residents depends on the population’s makeup, but not necessarily on its size. As explained by our sponsor, Professor G. Wang, “Any city has a cultural infrastructure, which is an important aspect of urban construction and has

little to do with the size of the city..." (personal communication, September 11, 2018). As a result, our research team decided to compare Worcester, Massachusetts to Hangzhou, our city of primary concern, due both to its proximity and the team's familiarity with the city. Though Hangzhou's population of 9.18 million dwarfs Worcester's population of 185,677, their populations have the same basic needs for cultural infrastructure (United States Census Bureau, 2017; Zhejiang Provincial Department of Culture, 2017). Any variations between the cultural infrastructure of the two cities result from the types of people inhabiting the cities. Tables 2.4-1 and 2.4-2 tabulate the demographic data of Hangzhou and Worcester, respectively.

The most reliable way to compare the demographics of these two cities is through existing statistical data. Population numbers from the past reveal the astonishing growth rate of Hangzhou: based on a 5% population sampling survey, Hangzhou had 7.966 million long-term residents in 2008 (CPC Hangzhou Committee and Hangzhou Municipal Government, n.d.). This means a population growth of over one million residents in less than a decade. Tables 2.4-1 and 2.4-2 show that neither city has drastic differences in age distribution, but the data may mask more subtle differences. Table 2.4-3 shows the city's population density averages 554 people per square kilometer throughout the entire urban district, but this figure rises by an order of magnitude or more in several districts, especially Shangcheng and Xiacheng.

Table 2.4-1: Demographics in Hangzhou, China (2008) (CPC Hangzhou Committee and Hangzhou Municipal Government, n.d.)

Age in Hangzhou	People	Percent of Population
Persons 0-14 years	987,800	12.40%
Persons 15-65 years	6,109,900	76.70%
Persons 65 years and over	868,300	10.90%

Table 2.4-2: Worcester Census Data (2017) (United States Census Bureau, 2017)

Age and Sex	Percent of Population
Persons under 5 years	5.9%
Persons under 18 years	20.3%
Persons 65 years and over	12.7%
Female persons	50.8%
Male persons	49.2%

Table 2.4-3: Land Area and Population Density of Hangzhou (2016) (China Statistics Press, 2017)

Region	Land Area (sq. km)	Population (10,000 persons)	Population Density (persons/sq. km)
Whole City	16596	918.80	554
Shangcheng	18	35.32	19,622
Xiacheng	31	53.60	17,290
Gongshu	88	58.20	6,614
Jiangan	210	106.15	5,055
Binjiang (Hi-Tech)	73	33.56	4,597
Xihu	263	84.42	3,210
Urban District	4876	737.99	1,514
Xiaoshan	1,163	157.20	1,352
Yuhang	12,22	135.90	1,112
Fuyang	1,808	73.64	407
Tonglu	1,780	42.30	238
Jiande	2,364	44.70	189
Lin'an	3,124	58.85	188
Chun'an	4,452	34.96	79

2.5 City Layout

The layout of a city is a major factor in the success and popularity of cultural facilities. With poor urban planning, facilities are difficult to access, making it challenging to stay in business. Alternatively, facilities may be too close together, oversaturating the market, and producing decision paralysis among citizens. Analyzing the layout of Hangzhou and Worcester can show the location of cultural facilities and their distribution throughout both cities.

2.5.1 Hangzhou, China

Known as “Paradise on Earth”, “Cultural State”, “Home of Silk”, and “Tea Capital”, Hangzhou lies on the Southeast coast of China and is the capital of Zhejiang Province. Figures 2.5-1 and 2.5-2 are maps of China and Zhejiang Province, respectively. Hangzhou is the province’s center of economy, education, politics, science, and culture. As noted by the State Council, Hangzhou is also a national center for tourism and history in China (CPC Hangzhou Committee and Hangzhou Municipal Government, n.d.). Table 2.4-3 shows the total area of the city covers 16,596 square kilometers, and urban areas account 18.5% of it.



Figure 2.5-1: Map of China (Hangzhou Maps, n.d.)



Figure 2.5-2: Map of Zhejiang Province (Hangzhou Maps, n.d.)

There is a very large area within Hangzhou's administrative boundaries, although not all of it is heavily urbanized or even the city proper. Figure 2.5-3 shows the delineation of the area into eight northeastern districts and five southwestern counties. The districts (Shangcheng, Xiacheng, Gongshu, Xihu, Jianggan, Jinjiang, Xiaoshan, and Yuhang) partition the urban center and outskirts of Hangzhou city, while the counties (Fuyang, Lin'an, Jiande, Tonglu, and Chun'an), each a smaller city in their own right, occupy the remaining land. All are under the governance of Hangzhou City (General Situation, n.d.).

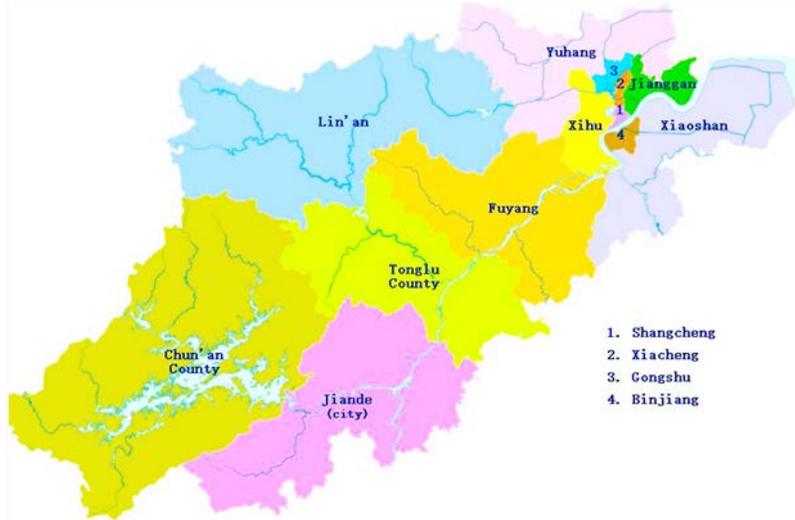


Figure 2.5-3: Map of Hangzhou Districts (Hangzhou Maps, n.d.)

Figure 2.5-4 plots the quantity of specific cultural facilities in Hangzhou regions. While some have increased recently, such as cinemas and museums, others experienced little-to-no development in 16 years or more. From 2000 to 2016, the number of libraries only grew from 10 to 15, and the number of theaters rose even less, from 9 to 11. Additionally, even the facilities which have improved in the last decade have grown unevenly. Their numbers remain constant, see a period of rapid growth, then stall once again.

Table 2.5-1 separates the number of cultural institutions by district. The urban district surpasses the outlying and rural districts in its offerings of cultural infrastructure for citizens. These figures show that Hangzhou citizens who live outside of the city center have few options for cultural enrichment.



Figure 2.5-4: Graph of Number of Institutions for Culture (2000-2016) (Zheng, Y.,2018)

Table 2.5-1 Number of Institutions of Culture by Region (End of 2016) (Zheng, Y.,2018)

District	Theatres	Opera Troupes	Cultural Centres	Cultural Stations	Libraries	Museums	Exhibition Buildings
Total	11	20	15	189	15	68	1
Urban Districts	11	18	11	118	11	60	-
Xiaoshan	-	1	1	27	1	9	-
Yuhang	2	1	1	19	1	5	-
Fuyang	-	1	1	24	1	3	-
Tonglu	-	1	1	14	1	2	-
Chuan'an	-	-	1	23	1	1	-
Jiande	-	1	1	16	1	4	-
Lin'an	-	-	1	18	1	1	-

2.5.2 Worcester, Massachusetts

Known as the “Heart of Massachusetts” and the second largest city in New England, Worcester lies in the center of Massachusetts (Worcester history , 2018). It became an official city in 1848, and currently covers an area of 38 square miles (City-Data, n.d.; The City of Worcester, n.d.). “Worcester is a hub of world-class colleges and medical facilities, and a place containing rich and diverse cultural assets...” (Worcester Cultural Coalition, 2017). Figures 2.5-5 and 2.5-6 show Massachusetts and neighboring states. Analysis of the current offerings of cultural infrastructure in the city can serve as a baseline, or possibly a counterexample, with which to compare Hangzhou.

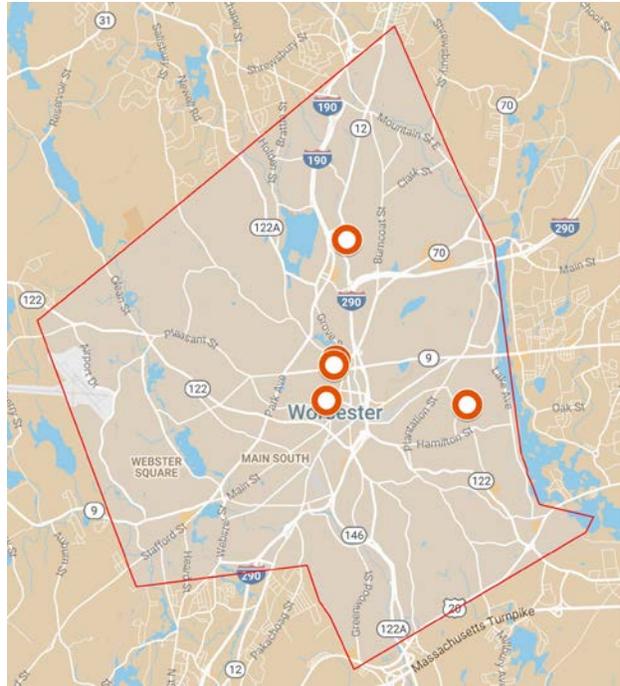
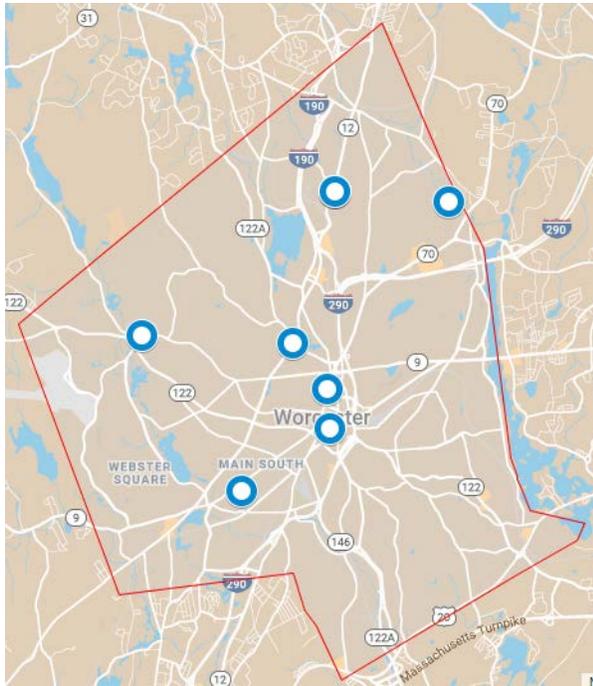


Figure 2.5-5: Map of the United States. Massachusetts in red. (File Map of USA, n.d.)



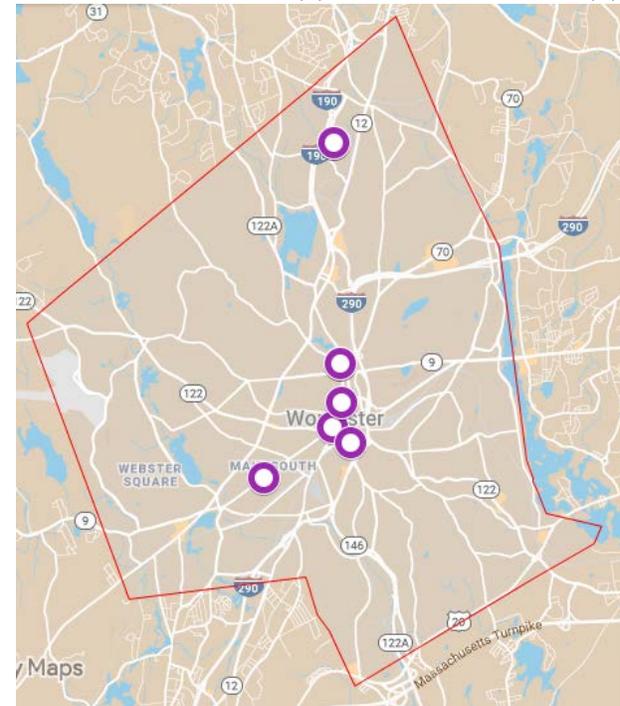
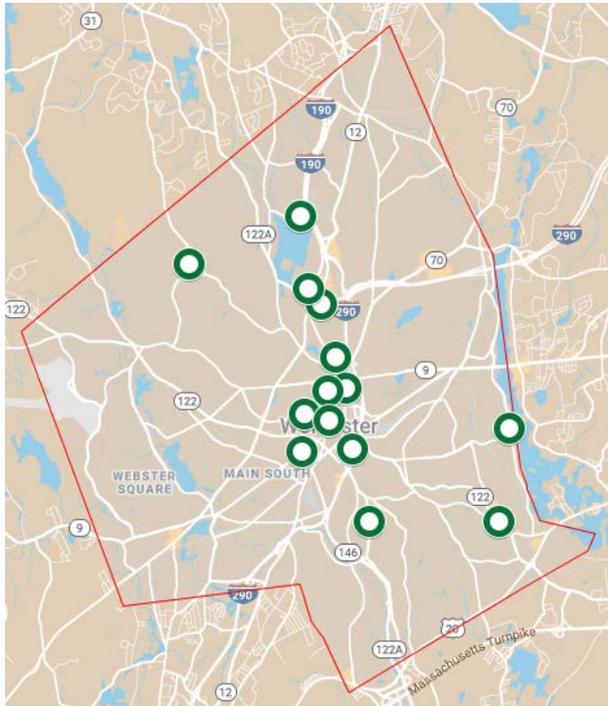
Figure 2.5-6: Map of Massachusetts and nearby states. Worcester outlined in red. (Google, n.d.)

To obtain information in Worcester that will serve as a reference during the investigation in China, the group pinpointed the geographical locations of cultural and sports facilities. Figure 2.5-7 shows the layout of the facilities in Worcester. The group identified Worcester’s centralization of its facilities as they lie in a linear fashion going from north to south. Several places branch out to the east and west, which increases their accessibility to the residents living near the city limits. This layout represents Worcester’s cohesion as one city body under one central government, which the team will compare to Hangzhou’s many districts having their own governing bodies.



(a)

(b)



(c)

(d)

Figure 2.5-7: Public cultural facilities in Worcester: (a) libraries, (b) museums, (c) sports facilities, and (d) theaters (Google, n.d.)

2.5.2.1 Libraries

Figure 2.5-7a shows that the public libraries are spread throughout most of the city. These six libraries provide sufficient coverage for most of the city, except for the southeast quarter. In addition, there are two nearby libraries in the center of the city. This may reduce the load on both libraries, which see more traffic than those nearer to the city limits, but may represent an imperfect distribution of libraries throughout Worcester.

2.5.2.2 Museums

Figure 2.5-7b displays the locations of Worcester's five museums. One example of these, the Worcester Art Museum, showcases a variety of works from around the world; another, the Salisbury Mansion, tells the story of the Salisbury family and its impact on Worcester. Three of the five are in the city center, and the remaining two leave the south and west sides of Worcester without any nearby museums. However, since cross-town travel is feasible for occasional outings, this may be an acceptable distribution of museums.

2.5.2.3 Sports Facilities

To better understand recreational facilities in Worcester, the team analyzed membership and admission fees. Tables 2.5-2 through 2.5-7 below highlight a few of the sports facilities in Worcester, and list their prices for use or membership. Figure 2.5-7c shows that there are a large number of sports facilities in Worcester, but few are in the residential area surrounding the city center. Most would entail a daily commute for regular use. It is worth noting, however, that Chinese people are already accustomed to doing various exercises in public parks for free

(Professor Du, personal correspondence, September 19th, 2018). As a result, people may not be interested in paid fitness programs in China. Therefore, Western-style sports facilities, such as Meridian Pilates and Worcester Fitness, may not be as popular in China.

Table 2.5-2 Sports Facilities in Worcester (Google, n.d.)

Facility	Type
Body Mind Balance	Training Studio
Buffone Arena	Ice Rink
Central Community Branch YMCA	YMCA
Dennis F. Shine Jr. Swim Pool	Pool
Enlightened Interventions, LLC	Wellness Center
Fidelity Bank Worcester Ice Center	Ice Rink
Greendale Family Branch YMCA	YMCA
Kinetex Athletic Training and Fitness Center	Gym
Meridian Pilates	Pilates
Snap Fitness	Gym
Worcester Fitness	Gym
Worcester JCC	Community Center
Worcester Yoga Center	Yoga
X Core Fitness	Gym

Table 2.5-3 Buffone Arena pricing (Worcester - Buffone Skating Arena, n.d.)

Service	Fee
Ice Rental	\$240 (50min/hr)
Public Skating	\$6.00
Public Hockey	\$10.00
Skate Rental	\$6.00

Table 2.5-4: Worcester YMCA membership fees (YMCA of Central Massachusetts, n.d.)

Age	Monthly Fee	
	Central Community Branch YMCA	Greendale YMCA
One-time joining fee	\$25.00	\$50.00
Young Adult (18-28 years) [no enrollment fee at Greendale]	\$32.00	\$45.50
Adult (29+ years)	\$33.00	\$64.00
Household/Family (two adults w/ children under 18 or dependents residing at the same address)	\$66.00	\$110.00
Senior Adult (65+ years) [no enrollment fee]	\$26.00	\$55.00
Senior Couple (two adults, one 65+, residing at the same address) [no enrollment fee]	\$52.00	\$88.00

Table 2.5-5 Meridian Pilates pricing (per person) (Meridian Pilates, n.d.)

Private	Duet	Trio
1 Session: \$75.00	1 Session: \$55.00	1 Session: \$45.00
5 Sessions: \$350.00	5 Sessions: \$250.00	5 Sessions: \$200.00

Table 2.5-6 Worcester Fitness pricing (Worcester Fitness, n.d.)

Service	Monthly Fee
Fitness Membership	\$89.00
HD Membership	\$139.00
Young Adult Membership (24 or younger)	\$45.00
Personal Training	\$169.00

Table 2.5-7 Worcester Jewish Community Center membership fees (Worcester JCC, n.d.)

Age	Monthly Fee
Family (Two adults & dependent children under 26 years)	\$109.00
Single Parent Family (1 adult never married/divorced/widowed & dependents under 26 years)	\$85.00
Couple (2 adults (27-64 years) living in same address)	\$100.00
Individual (27-64 years)	\$70.00
Young Adult (23-26 years)	\$46.00
Teenage (13-17 years) [no enrollment fee]	\$25.00
College (18-22 years) [no enrollment fee]	\$35.00
Senior Adult Individual (65+ years)	\$57.00
Senior Adult Couple (Two adults, one 65+, residing at the same address)	\$90.00

2.5.2.4 Arts and Entertainment

Figure 2.5-7d shows the number of arts and entertainment facilities in Worcester. Different cultures place greater emphasis on certain cultural facilities because of their cultural values. Comparing the number of arts facilities to that of sports facilities shows that Worcester places more value on athletics and physical activity. The team will have to take Hangzhou’s cultural values into consideration when researching the current offerings for cultural facilities. Ignoring the cultural values of a city can prove problematic for new facilities since they may fall into disuse depending on the cultural emphasis of the location.

2.5.3 Conclusion

An efficient city layout is necessary to ensure access to cultural facilities for everyone. Analyzing both cities provides the team with a broad sense of common pitfalls and possible

improvements in the distribution of cultural facilities. Achieving a good city layout positively affects the lives of many people. These people directly affected by the cultural infrastructure are stakeholders in this project.

2.6 Stakeholders

Any individuals, groups, or entities involved with cultural infrastructure are stakeholders in the project. The state of Hangzhou's cultural infrastructure may affect countless people in indirect, subtle ways, but itemizing and analyzing these groups completely is impossible. However, if the group reduces this list to only the parties with a very direct role in the project, the task becomes not only possible but advantageous to the team. Understanding the different perspectives, assets, and concerns of each stakeholder allows for a more complete and accurate analysis. The following sections introduce each key stakeholder and the role each plays in the project.

2.6.1 Hangzhou Citizens

The citizens of Hangzhou are the primary stakeholders of the project. Their happiness and general wellbeing correlate with the availability of quality leisure activities (Wei et al., 2015), which in turn is almost entirely determined by the state of cultural infrastructure throughout the city. Because the ultimate goal of the project is to raise the quality of life in Hangzhou, the team is concerned primarily with this group.

The citizens of Hangzhou are more than just a group in need of assistance, however. The team will gather data on the cultural infrastructure of Hangzhou by surveying the populace,

since the population which uses the cultural infrastructure has the best perspective from which to evaluate it. This feedback will be a key asset for the team, and will directly determine the investigation's findings.

2.6.2 Hangzhou Government

The *de facto* implementation of additional cultural facilities, or even the planning of specific facilities, is out of scope for this project. As a result, the Hangzhou government has few assets to offer the team besides statistics. These are still valuable for comparing Hangzhou against other cities, but information and guidance on zoning laws or other regulations would only be useful for future, follow-up projects. As a result, the team has no plans to actively communicate with the city government. However, the government still has an interest in the success of the research as data on the state of cultural infrastructure may assist future city planning efforts. Provided that higher-level administration sees the value in developing cultural infrastructure on a local level, the products of this research would be a valuable asset to urban planners in Hangzhou.

2.6.3 Tourists to Hangzhou

Hangzhou is already an alluring destination for tourists due to the city's natural beauty and dynamic character (Zhou, Brown, Xin, Di, & Sun, 2017), but additional attractions can further increase the city's appeal to prospective travelers. Many of these attractions, such as museums, fall under the umbrella of cultural infrastructure. There is evidence that signage and accessibility concerns have prevented tourists from visiting museums in Hangzhou (Sheng &

Lo, 2010), and a detailed investigation of these issues may result in a better experience for tourists in Hangzhou. However, increasing the traffic through all of Hangzhou's museums might be detrimental for the local residents who already frequent them (Wu & Wall, 2017). Different methods assess the perspective of tourists in depth, and because the permanent residents of Hangzhou are the project's primary focus, any data gathered would be of secondary importance to the research. As a result, the project does not concentrate on Hangzhou's tourists. However, they still hold an interest in the health of Hangzhou's cultural infrastructure, and are common paying patrons of certain facilities. It would be unwise to ignore their role in the functioning of Hangzhou's cultural infrastructure.

2.6.4 Conclusion

Each stakeholder group brings different interests, perspectives, and assets to the project. While some groups may be more central to the investigation than others, it is always important to keep the big picture in mind and consider how the project's conclusions will impact all groups involved. By remaining cognizant of every stakeholder, especially while making decisions that affect the direction the project takes, it is possible to deliver the best possible results for all involved.

3 Methodology

In order to improve Hangzhou’s cultural infrastructure, the project will analyze the current facilities in the city, as well as the citizens’ needs. We are investigating Worcester as a preliminary step, to gain an understanding of public cultural facilities and determine a baseline for the distribution of these facilities throughout the city. The goal of this project is to raise the quality of life in Hangzhou by identifying the strengths and weaknesses of its cultural infrastructure, to and determine how to improve this infrastructure in the future. To this end, the team established the following three objectives:

1. Assess the public cultural and sports facilities in Worcester and Hangzhou.
2. Analyze the public usage and perception of these facilities in Worcester and Hangzhou.
3. Identify points of strength and areas of improvement in Hangzhou’s cultural infrastructure.

3.1 Assessing Public Cultural and Sports Facilities

This project compares Worcester’s cultural infrastructure to Hangzhou’s in order to evaluate the facilities available in Hangzhou and determine what is best to implement in order to benefit citizens in the future. To accurately gather data and assess the current situation in both cities, the team will conduct research in Worcester and then gather citizen feedback data after arriving in Hangzhou.

3.1.1 Preliminary Research

By researching which cultural facilities are currently available in Worcester and Hangzhou, it is possible to roughly determine the state of cultural infrastructure in each. The team examined libraries, museums, theatres, sports facilities, and parks in both cities. Since there is a drastic population difference between these two cities, population density is important to take into account when analyzing these facilities. In order to calculate a “per capita” metric, the team will take the quantity of each type of facility in each city and divide it by the city’s population. This provides an accurate way of gauging the lack or surplus of facilities, since Hangzhou has more than 40 times the population of Worcester. The group utilized Google Maps to mark specific cultural infrastructure locations in Worcester. This allowed the group to analyze the cultural facilities’ geographic distribution as well.

Professor Wang provided the team with the survey given to Chongqing residents by the HDU student team. This survey provided insight into how sports and cultural facilities may differ in China versus the United States. For example, the Chongqing survey asked about Youth Palaces, government-run locations which provide physical activities and social events for young people (Baidu Encyclopedia, 2018). The team modeled the Hangzhou survey (see Appendix A) after the Chongqing survey, as it provides a balanced array of questions which are already in line with the goals of the project’s sponsor. The team set aside two weeks to conduct a survey in Hangzhou. During this time, the team intends to obtain enough surveys for a representative sample. The survey will be electronic, minimizing the chance of lost responses and skips the

lengthy step of data entry. This also allows the team to distribute the survey online through WeChat as well as administer it in person with tablets from HDU.

3.1.2 Surveying Hangzhou's Citizens and Tourists

Once in Hangzhou, the survey will provide insight into how many and what types of cultural and sports facilities are found in each district. Certain survey questions will give the team an overview of which types of facilities are in surplus, and which are lacking, in the different districts of Hangzhou. The data will also reveal what types of facilities each district wants or needs. The team will analyze the survey results using the built in data organizational tools from the online survey location. Utilizing these results, the group will be able to propose specific improvements to Hangzhou's cultural infrastructure with both the locality and the exact type of facility specified. The group will conduct the survey in high-traffic areas likely to attract all residents equally, such as supermarkets, as well as city-wide attractions which draw a variety of people from farther away. Identifying multiple high traffic areas in each district of interest will help vary the sample population, allowing the group to obtain data that represents the general population accurately. The team will organize the districts into low, medium, or high population density, which allows the group to obtain a wide distribution of responses from each district.

3.2 Analyzing Public Usage and Perception

A vital piece of the project is uncovering how people feel about the infrastructure available to them. The survey will achieve this by collecting feedback from citizens, tourists,

and people working in Hangzhou. Utilizing this technique, the group is able to connect directly with the project stakeholders. This method will not only garner valuable, meaningful data, but also immerse the group in Hangzhou's culture.

Specific survey questions (Appendix A) cover this aspect of investigation and hone in on the usage of the facilities. These questions make use of a five-point Likert scale to explore people's satisfaction with current offerings, their desires, and what they feel is lacking. Questions 10 and 11 include charts where people can identify what public facilities are in their area, and question five asks which facilities they frequent most. Together, the responses to these questions will give the group a better understanding of the state of the cultural infrastructure to provide recommendations.

3.3 Identifying Strengths and Weaknesses

Based on the results from the previous two objectives, the team will identify the strong points and areas for improvement in Hangzhou's cultural infrastructure. Distributing the survey (see Appendix A) to Hangzhou's various districts enables the group to focus on different areas in order to enhance each district's cultural facilities individually. The survey will first pose questions that identify the general areas of strengths and weaknesses such as by asking the participants what facilities of which they are aware. The survey then poses questions to address what specific cultural facilities citizens and tourists desire, or which they are already happy with. By synthesizing the information acquired across both of these categories, and integrating demographics information from the survey as well, the team will provide a comprehensive list of recommendations to our sponsor addressing the areas of improvements and what the city

can do to repair the places we identify of opportunities areas in Hangzhou’s cultural infrastructure.

3.4 Data Management and Translation

This section addresses some logistical concerns related to the investigation. Because the team plans to collect a sufficient number of surveys to obtain a representative sample, keeping the data organized will be highly important—especially for statistical analysis. The group will conduct the surveys on the street with an HDU student as a translator to overcome the language barrier. Additionally, the survey will be bilingual, with all questions and answers written in both English and Mandarin. The group will work with the HDU students to accurately translate the survey. From the results, the team will analyze the availability of the various types of cultural facilities in multiple districts. This data will enable the team to see where there is a lack and surplus of facilities are in several districts. The group will be able to determine improvements for current cultural facilities by combining the satisfaction data with the surplus information. A strengths, weaknesses, opportunities, and threats (SWOT) analysis will allow the team to create a list of strengths and weaknesses for cultural infrastructure in several districts and use this list to recommend improvements.

3.5 Gantt Chart

This chart illustrates the approximate timeline of the project once the team arrives in Hangzhou.

Table 3.5-1: Gantt chart

ID	Task Title	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
1	Meet with HDU Delegation								
2	Edit Survey								
3	Conduct Survey								
4	Survey Data Analysis								
5	Write Project								
6	Edit Project								

4 Conclusion

Cultural facilities provide a source of physical activity and cultural enrichment for the surrounding citizens which has been shown to greatly raise overall quality of life. This investigation will help improve the quality of life for Hangzhou's citizens through developing cultural facilities. The team will combine data from Worcester and Chongqing to comprehensively understand the role of cultural infrastructure in the urban setting. Analysis of citizen and tourist surveys will provide insight into the perception of Hangzhou's cultural infrastructure. By the conclusion of the project, the team will produce meaningful recommendations for Hangzhou's cultural infrastructure, grounded in the needs of the populace.

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Appendix A: Cultural Facilities Survey

Questionnaire on Cultural Facilities in Hangzhou, China

杭州市文化设施问卷调查

Hangzhou Citizens,

In order to improve urban cultural infrastructure in your area and raise the quality of life, this survey is made specifically to inquire about the needs for public cultural facilities. Please fill out this survey to the best of your ability. All information provided is used only for research and study, and your answers will be kept confidential. Thank you for taking the time to fill in this survey!

— Worcester Polytechnic Institute and Hangzhou Dianzi University Survey Team
gr-hculture-b18@wpi.edu

杭州市民您好，

为了改善您所在地区的文化基础设施，提高生活质量，我们设计了此次调查。本调查专门用于调查公共文化设施的需求。请您尽最大努力填写此调查表。您所提供的信息仅会被用于研究和学习，您的答案将保密。感谢您抽出宝贵时间填写此调查！

— 伍斯特理工学院和杭州电子科技大学调查组

1. Which best describes you?

以下哪个选项最能描述您？

- a. Hangzhou Citizen
杭州市民
- b. Student living in Hangzhou
住在杭州的学生
- c. Tourist
游客

- d. Working in Hangzhou
在杭州工作

2. How long have you lived in Hangzhou?

您在杭州居住了多久?

- a. Less than a month
不到一个月
- b. Less than a year
不到一年
- c. 1 - 5 years
1 - 5 年
- d. More than 5 years
五年以上
- e. I do not live in Hangzhou
不居住在杭州

3. In which district/county do you live?

您居住在杭州哪个地区?

- a. Shangcheng
上城区
- b. Xiacheng
下城区
- c. Jianggan
江干区
- d. Gongshu
拱墅区
- e. Xihu
西湖区

- f. Binjiang
滨江区
- g. Xiaoshan
萧山区
- h. Yuhang
余杭区
- i. Fuyang
富阳区
- j. Tonglu
桐庐县
- k. Chun'an
淳安县
- l. Jiande
建德市
- m. Lin'an
临安区

4. **When do you have the most free time?**

您什么时候有空闲时间

- a. Early Morning 05:00 - 09:00
清晨 5-6点
- b. Late Morning 09:00 - 12:00
上午 9-12点
- c. Afternoon 12:00 - 15:00
下午 12-3点
- d. Late Afternoon 15:00 - 18:00
下午晚些时候 3-6点

- e. Evening 18:00 - 22:00
晚间 6-10点
- f. Late night 22:00 - 05:00
深夜 10-5点

5. Which type of cultural facility do you visit most frequently?

您最经常访问哪种文化设施?

- a. Performance venues (concert halls, opera houses, cinemas, theatres, etc.)
表演场地 (音乐厅, 歌剧院, 电影院, 剧院等)
- b. City square and parks
城市广场和公园
- c. Recreation or sport facilities
户外运动及健身地点
- d. Cultural exhibitions (museums, art galleries, memorial houses, celebrity homes, etc.)
文化展览 (博物馆, 美术馆, 纪念馆, 名人院等)
- e. Educational facilities (bookstores, libraries, audiovisual stores, reading rooms, etc.)
教育设施 (书店, 图书馆, 视听店, 阅览室等)
- f. Other: _____
其他: _____

6. Are you satisfied with current cultural facilities in Hangzhou?

您对杭州目前的文化设施满意吗?

- a. Very satisfied
很满意
- b. Satisfied
满意
- c. Neither satisfied or dissatisfied
没有明显倾向

- d. Dissatisfied
不满意
- e. Very dissatisfied
非常不满

7. Which cultural facilities would you like to increase within walking distance (15 minutes)? Please check all that apply.

您希望在步行距离（十五分钟）内增加哪些文化设施。请在所有适用选项上打钩。

- a. Performance venues (concert halls, opera houses, cinemas, theatres, etc.)
表演场地（音乐厅，歌剧院，电影院，剧院等）
- b. City square and parks
城市广场和公园
- c. Recreation or sport facilities
户外运动及健身地点
- d. Cultural exhibitions (museums, art galleries, memorial houses, celebrity homes, etc.)
文化展览（博物馆，美术馆，纪念馆，名人院等）
- e. Educational facilities (bookstores, libraries, audiovisual stores, reading rooms, etc.)
教育设施（书店，图书馆，视听店，阅览室等）
- f. Other: _____
其他: _____

8. What age groups do you think are underserved by the current cultural facilities in your district? Please check all that apply.

您认为所在地区目前的文化设施服务在哪些年龄段还有不足？请在所有适用选项上打钩。

- a. Under 18
18岁以下
- b. 18-28
- c. 29-49

d. 50-64

e. 65+

9. What sports facilities do you have in your district and how satisfied are you with the facilities?

您所在城区有哪些体育设施？您对目前设施满意么？

Public Sports Facility 公共体育设施	Please check (✓) if you have the facility. Leave blank if not available. 如果您有设施，请检查(✓)。如果没有，请留空。	Degree of satisfaction (check ✓ in corresponding column) 满意度 (检查相应栏目中的✓)				
		Very Satisfied 很满意	Satisfied 满意	Neither Satisfied nor dissatisfied 既不满意也不满意	Dissatisfied 不满意	Very dissatisfied 非常不满
Ping Pong Room 乒乓室						
Gym 健身房						
Dance Studio 舞蹈室						
Outdoor exercise equipment 户外运动器材						

Youth Palace 少年宫						
Swimming Pool 游泳池						
Sports field (Basketball court, football field, etc.) 运动场 (篮 球场, 足球 场等)						

10. What sports facilities would you like to be available in your district?

您还希望您的城区拥有哪些体育设施？

Public Sports Facility 公共体育设施	Which would you like in your district? (Leave blank if not interested) 您想在您所在的地区购买哪种产品？ (如果不感兴趣，请留空)
Ping Pong Room 乒乓室	
Gym 健身房	
Dance Studio 舞蹈室	

Outdoor exercise equipment 户外运动器材	
Youth Palace 少年宫	
Swimming Pool 游泳池	
Sports field (Basketball court, football field, etc.) 运动场 (篮球场 , 足球场等)	

11. How much would you be willing to pay per month for access to these types of sports facilities?

您每月愿意为这些体育设施支付多少钱？

- a. 30- 49 RMB
30-49元人民币
- b. 50 - 69 RMB
50-69 元人民币
- c. 70 - 89 RMB
70 - 89 元人民币
- d. 90 - 109 RMB
90 - 109 元人民币
- e. 110+ RMB
110+ 元人民币
- f. I would not be willing to pay for these facilities
我不愿意为这些设施买单

12. What is your gender?

您的性别是什么?

a. Male

男

b. Female

女

13. How old are you?

您的年龄段是?

a. Under 18

岁以下

b. 18 – 28

c. 29 – 49

d. 50 – 64

e. 65 +