LUYUN SHAO

PORTFOLIO | SELECTED WORKS 2016 - 2018
URBAN PLANNING, DESIGN AND ANALYSIS

ACKNOWLEDGEMENT

I would like to thank my parents, Ms. Yanhua Duan and Mr. Bilin Shao, for their unyielding support all the way along. Those sincere suggestions and encouragement from Mr. Bojin Zhu is also greatly appreciated.

I would also like to thank Prof. Leah Meisterlin, Prof. Fan Yang, Prof. Chen Chen, Prof. Chun-Ming Hsieh, Prof. Bing Liu, Prof. Lan Wang, Prof. Huizhi Geng, Prof. Zhenwei Peng for their valuable instructions, and my friends Ms. Chenge Liu, Mr. Xuan Zhou, Ms. Danqing Li for their precious companion.

CONTENTS

A glimpse of Wujing on the shoreline from Huangpu River.
This photo has been reprocessed with artistic effects. Original photo courtsey to Getty Image China.

COMPREHENSIVE PLANNING OF WUJING SUB-DISTRICT

LOCATION: MINHANG DISTRICT, SHANGHAI CITY, CHINA
SITE AREA: 37.15 KM^2 (=14.34 MI^2)
DATE: AUG. 2016 - DEC. 2016
PROPERTY: GROUP WORK (13) + INDIVIDUAL WORK
COURSE: 7TH-SEMESTER CORE STUDIO
INSTRUCTORS: PENG Z., GENG H., CHEN C.
INSTITUTION: CAUP, TONGJI UNIVERSITY

PROJECT DESCRIPTION

This is a studio project in collaboration with Shanghai Urban Planning and Design Research Institute (SUPDRI). The timeline is shown as below.

Aug. 15 - Sept. 30: (Field investigation and analysis, personal work) Accomplished thorough field investigation of transportation, finished report and drawings of current spatial locations of resources, prepared and presented the analysis to government officials and planners in SUPDRI.
Oct. 08 - Nov. 11: (Priliminary planning, team work) The 13 students were divided into 3 smaller groups and accomplished preliminary comprehensive planning of Wujing Sub-district with a member of 5. Compared with those of other two teams, our plan was selected by instructors as final planning.
Nov. 15 - Dec. 31: (Specialized planning and finalization, personal work) Finished specialized planning in transportation, wrote design guidance and instruction, collected and finalized group report.

I accomplished transportation investigation, analysis and planning in this project. Therefore, I emphasized the parts accomplished by myself in this portfolio. Except "land use (contributed 20% in drawing)" and "land use plan(contributed 50% in idea)", all graphics were personally finished.

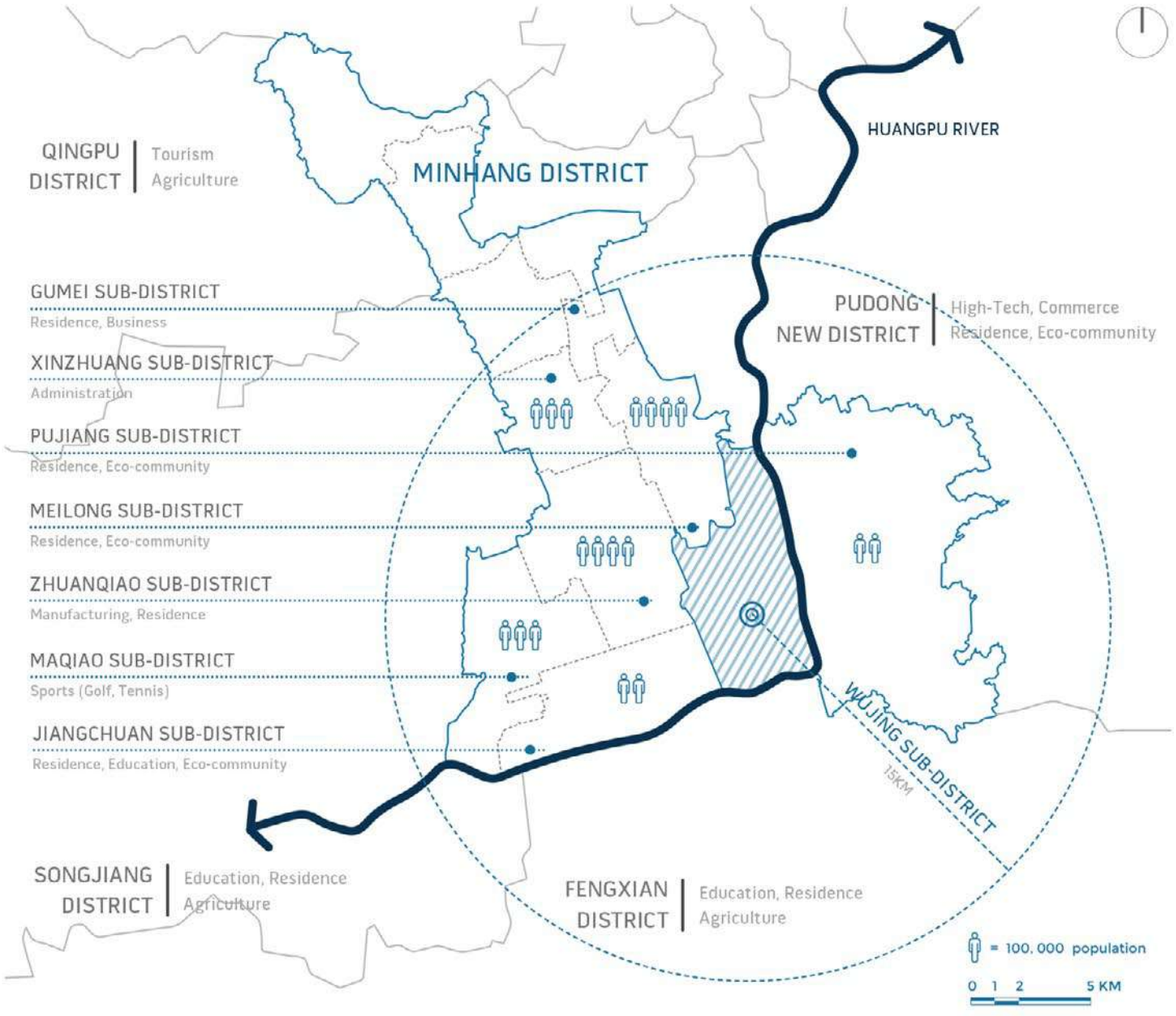
LOCATION ANALYSIS

China

Yangtze River Delta

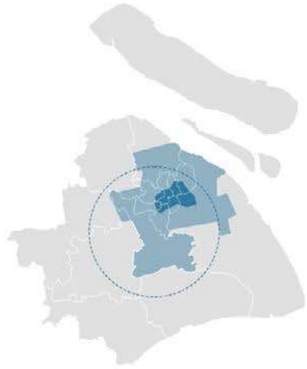
Shanghai

Wujing's location in Minhang District, Shanghai

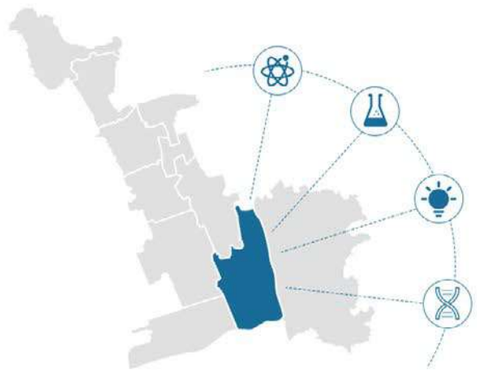


UPPER-LEVEL PLANNING

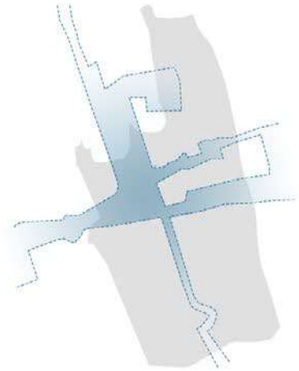
Part of Main Urban Area



High-Tech Industry as the Core



Planned Ecological Corridor



Minhang District, where Wujing Sub-District is located, has been officially recognized as a part of main urban area of Shanghai. This means the public service and infrastructure construction will be upgraded. According to the Comprehensive Planning of Minhang District, the priority of industrial development in Wujing is high-tech industry in computer and biological science. Wujing is also a significant area for ecological preservation because it should leave enough space for a planned eco-corridor to pass through.

DEVELOPMENT TIMELINE

Establishment as Industrial Base

In the first "five-year" period, Wujing is listed as one of the core industrial bases in Shanghai and is planned to develop heavy industry. However, the urbanization rate of Wujing was very low for many years due to the institution of planned economy and cultural revolution.

1956

Start of Economic Reform

The reform greatly accelerated the pace of urbanization and economic development by establishing socialist market economy in China.

1978

Initialization as Core Satellite Town

The State Countil approved the 1986 Comprehensive Planning of Shanghai and advised each city to construct central urban area, satellite city, town, and village center. Wujing is officially planned as a satellite city of Shanghai.

1986

Development of Traditional Industry

Wujing has been developing very quickly during this period with the support from heavy and traditional manufacturing industry.

1990s

Structural Transform of Industry

Ever since the mid-1990s, Shanghai has been carrying out the policy of structural transformation in industry, which is to relocate the second industry in central city to sub-urban area, and provide support for the tertiary industry. Besides the upgrading of Wujing to Sub-District, the ecological issue brought by heavy industry in Wujing is also pushing the structural transform forward.

2000

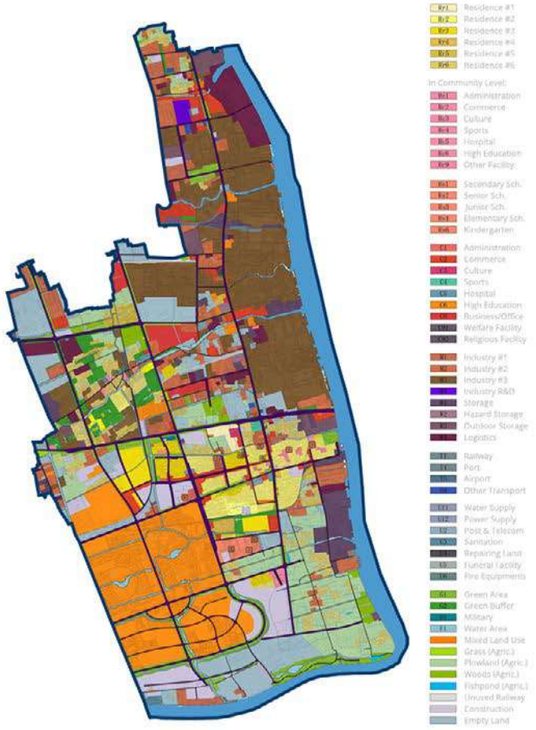
Development of High-Tech Industry

Fashion industry and high-tech industry are two priorities of Wujing. Currently, the Zizhu High-Tech Industrial Park has been approved to be a national-level base. These two industries are experiencing a steady increase in recent years.

2010

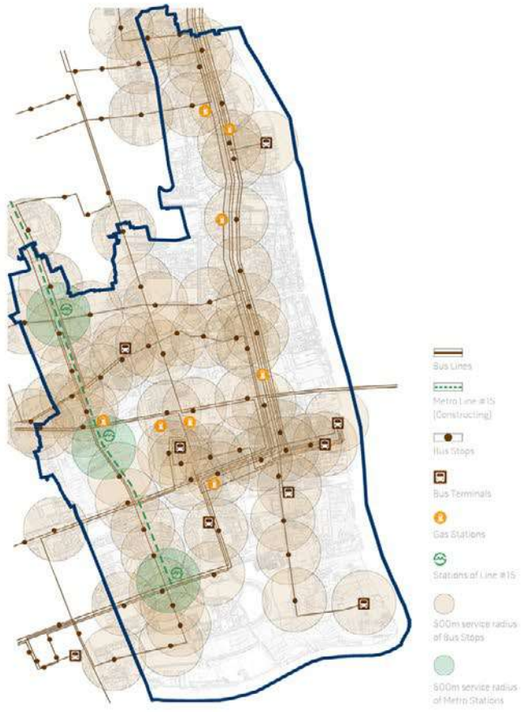
RESOURCE ANALYSIS

LAND USE

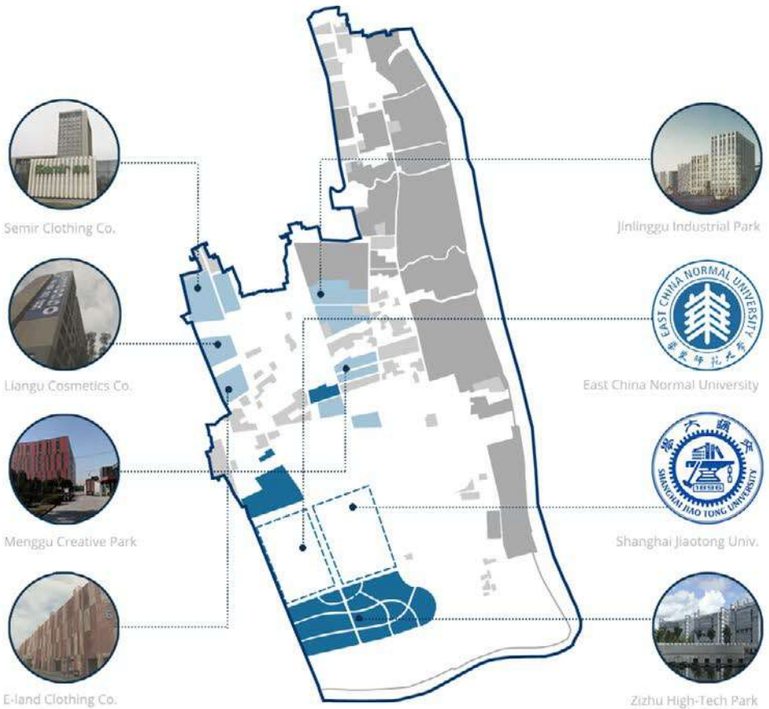


ROAD SYSTEM

PUBLIC TRANSPORTATION



INDUSTRIAL DEVELOPMENT



Heavy Industry

Heavy Factories are located in the shoreline of Huangpu River. They are posing ecological risk with a considerable amount of waste.

Traditional Industry

Traditional industry mainly include manufacturing of clothes and industrial materials. These factories are distributed in the north and middle of Wujing.

Fashion Industry

A relatively new type of industry characterizes Wujing with clothing and cosmetics factories of famous brands.

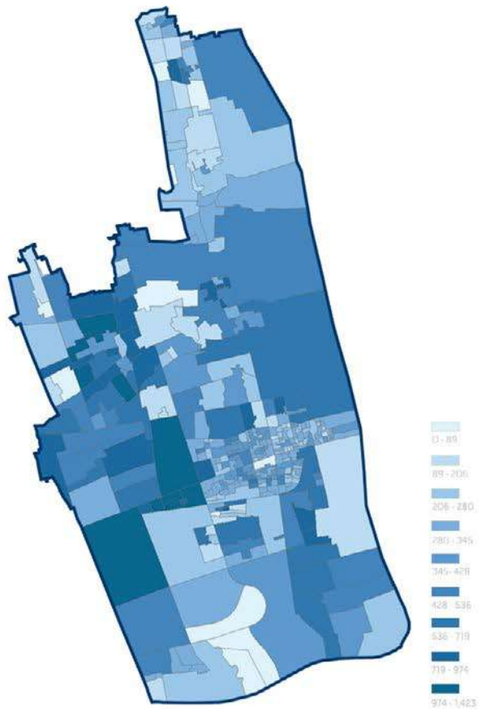
High-Tech Industry

Led by Zizhu High-Tech Industrial Park, the High-Tech industry is clustered at the south of Wujing and will continue to expand.

University Campus

Two universities are located near Zizhu and will support the reserach by cooperation with enterprises.

POPULATION DISTRIBUTION



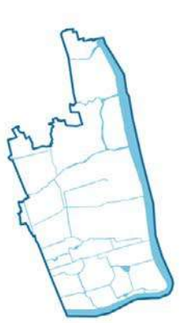
PLANNING STRUCTURE

The tertiaty industry, ecology, and residence characterize the future Wujing. First, this sub-district will continue to prioritze and expand fashion industry and high-tech industry based on their original locations. Second, an ecological shoreline will be constructed by relocating heavy factories near the Huangpu River. The core living area will be at the center of Wujing, providing necessary infrastructures and public services to its residents.

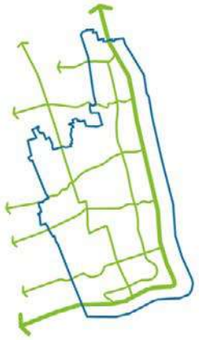
COMPREHENSIVE PLANNING (2016-2040)

The orientation of Wujing is set as a sub-district developing high-tech and fashion industry with a proper amount of housing. The planning is based on the projection of population in 2040, which is estimated to be 250,000 using different methods. The main strategy is to retain important zones (university, high-tech park) an relocate heavy industry along waterside. The road network and different systems were designed.

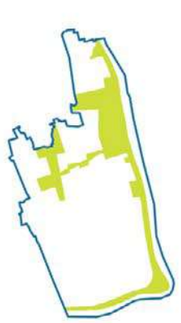
ECOLOGY



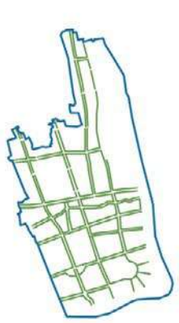
river system



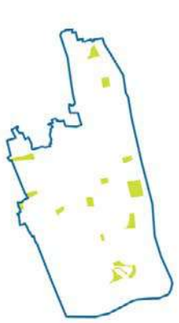
green structure



eco-reservation



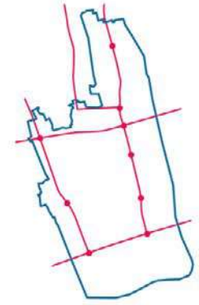
street greening



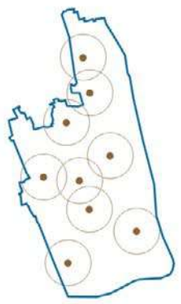
pocket parks

INFRASTRUCTURES

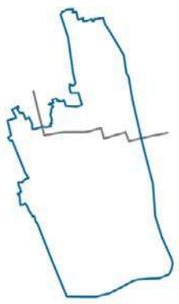
artery roads



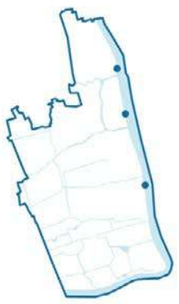
metro lines



gas stations



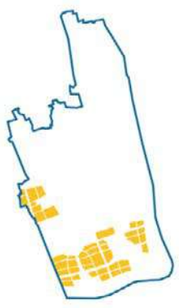
high-voltage line



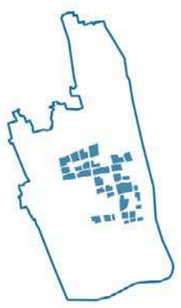
ferry

PROGRAMS

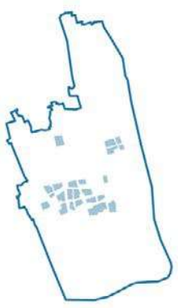
fashion industry



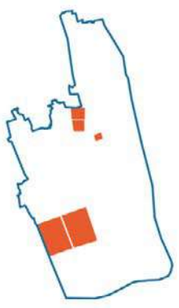
high-tech industry



commercial housing

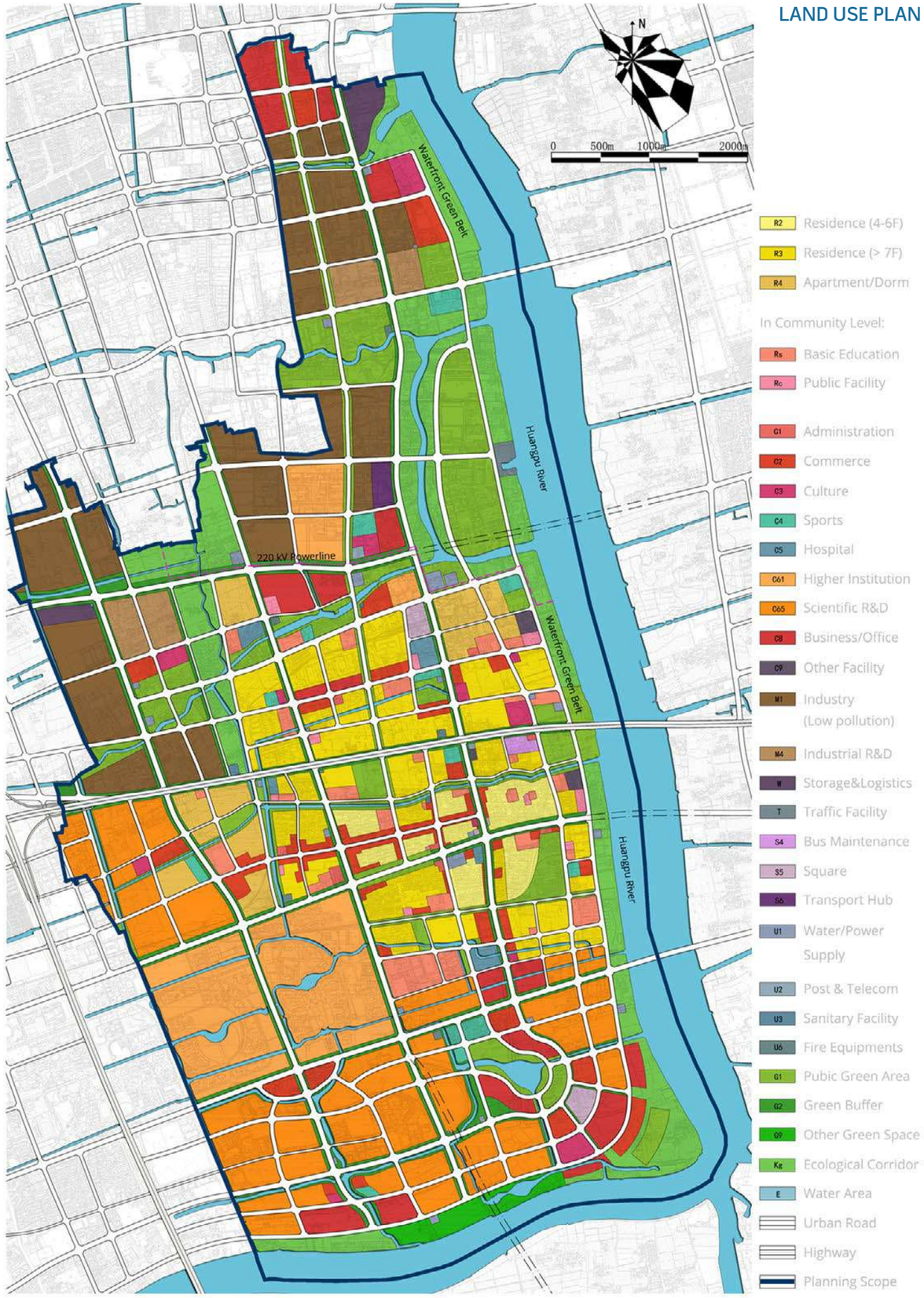


affordable housing



tertiary institutions

LAND USE PLAN



SPECIALIZED PLANNING: TRANSPORTATION

This specialized planning includes following spatial arrangements:
1. external traffic (highway, long-distance terminal, water transport);
2. road system (road network, road grading system; road sections);
3. public transport (metro lines and stations, bus lines and stations, taxi, shared cabs);
4. freight traffic (cargo operation, cargo transport corridors);
5. transport infrastructure (transport hub, gas station, public parking lot, charging stations for electric bus and taxi, maintenance station);
6. slow traffic (slow traffic corridors, rest stations).
Traffic Oriented Development (TOD) strategies are also adopted.

TOD DESIGN

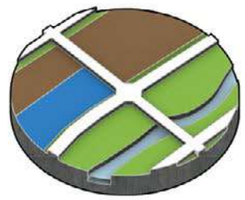

Site 1

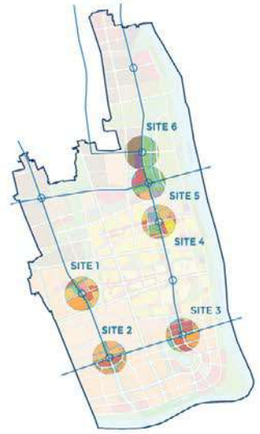

Site 2


Site 3

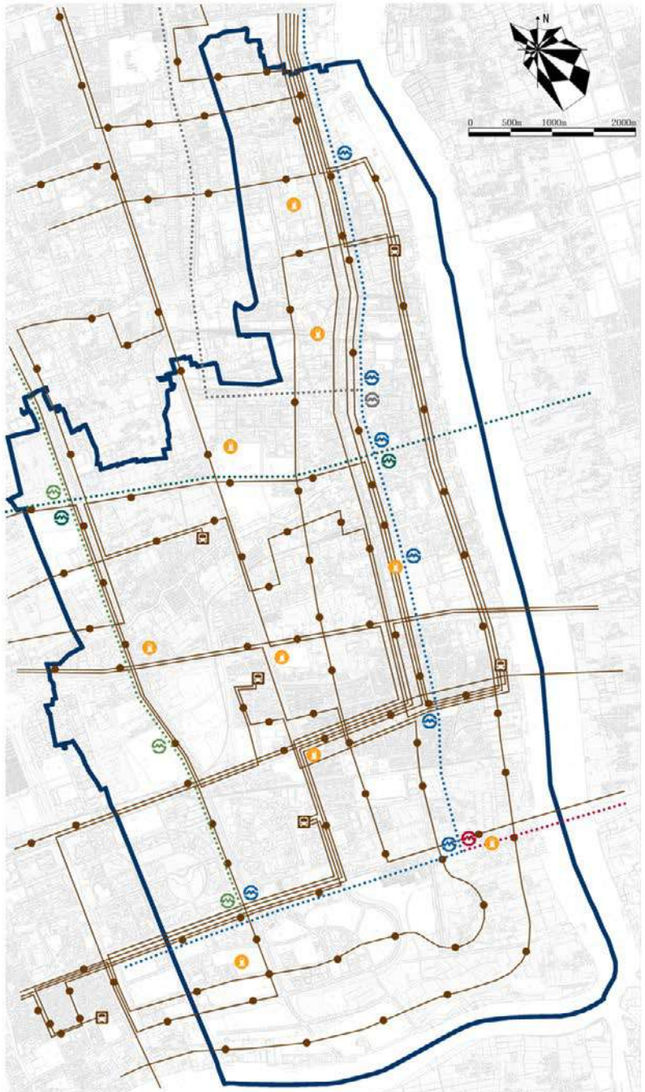

Site 4


Site 5

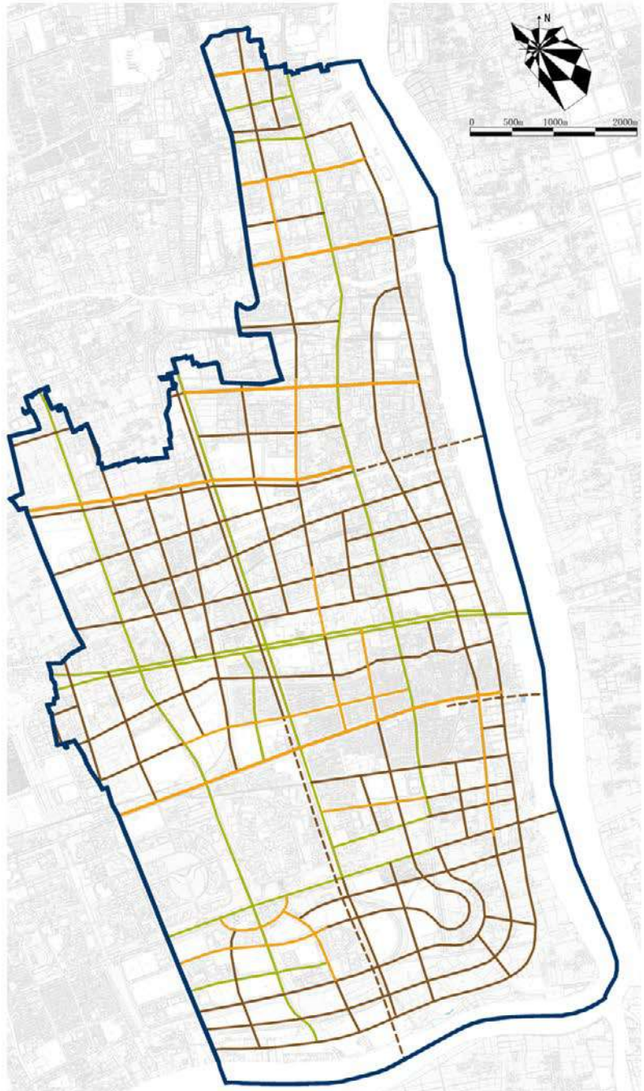

Site 6



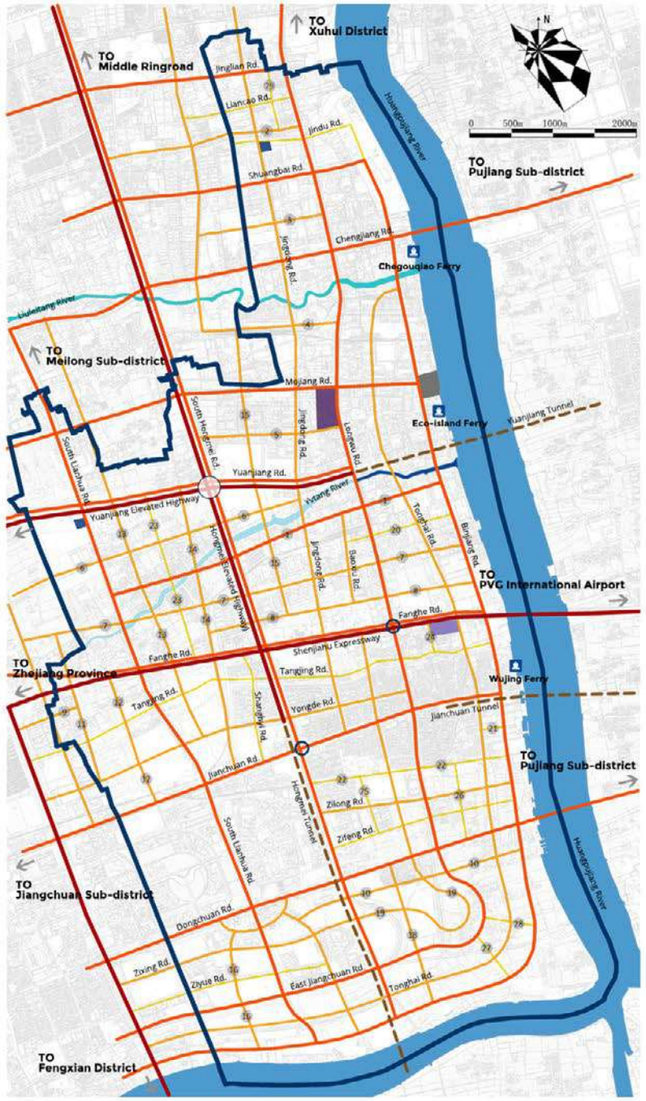
PUBLIC TRANSPORTATION PLANNING



ROAD SYSTEM PLANNING



ROAD CONSTRUCTION PLANNING



RESTITCHING: URBAN DESIGN OF AREA AROUND EAST BEIJING ROAD

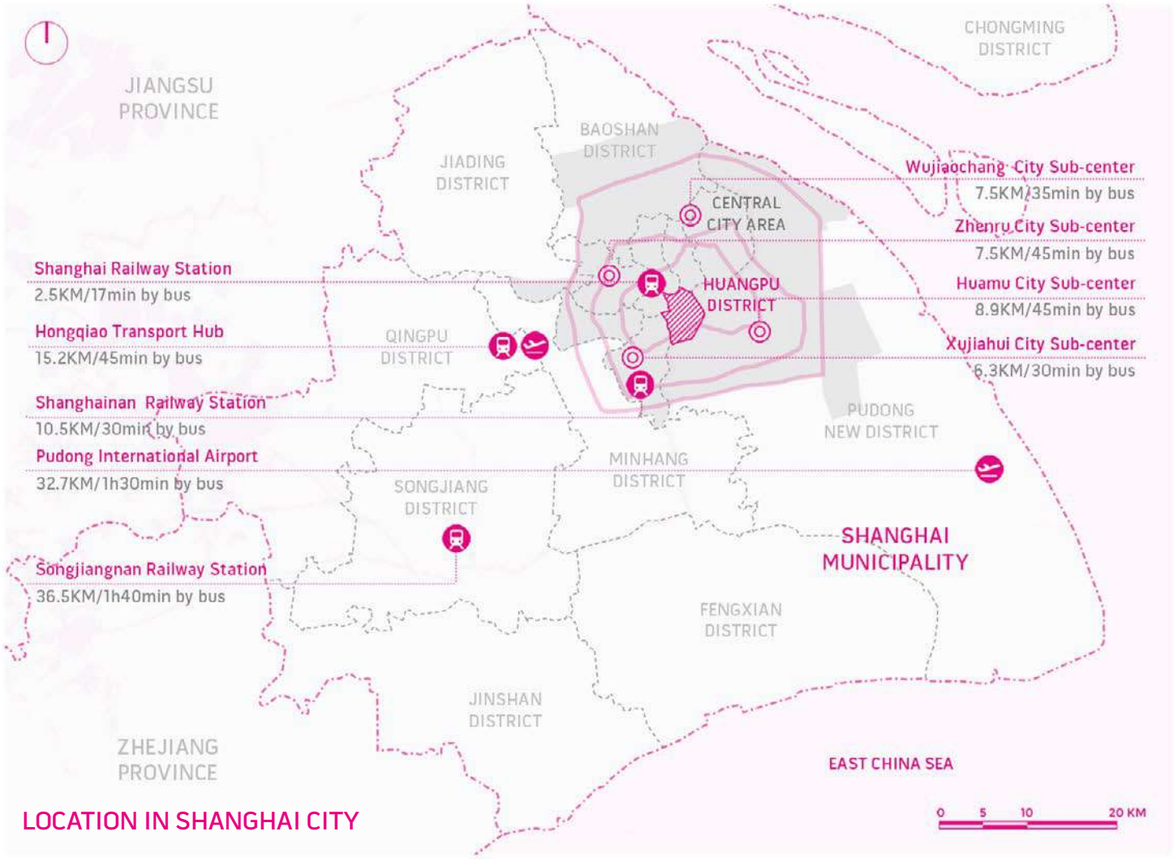
LOCATION: HUANGPU DISTRICT, SHANGHAI CITY, CHINA
SITE AREA: 9.45 HA (=23.35 ACRES)
DATE: OCT. 2017 - DEC. 2017
PROPERTY: INDIVIDUAL WORK
COURSE: 9TH-SEMESTER CORE STUDIO
INSTRUCTOR: LIU B.
INSTITUTION: CAUP, TONGJI UNIVERSITY

PROJECT DESCRIPTION

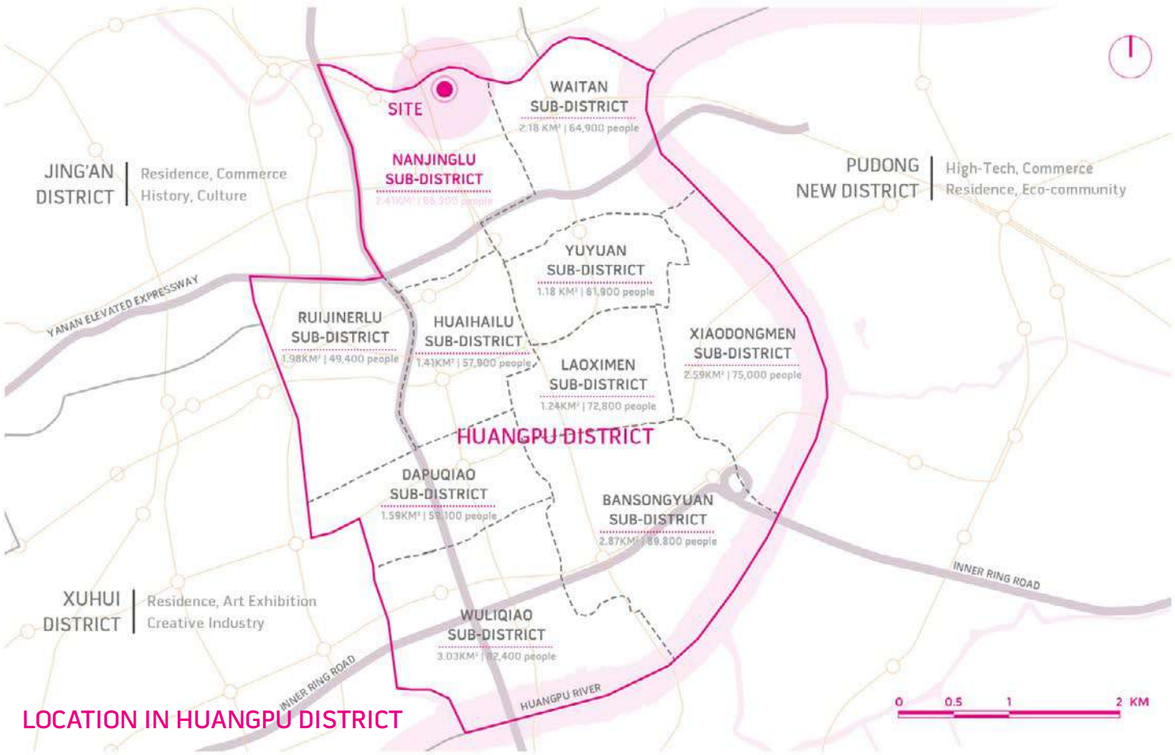
The site of this project is located in Huangpu District, the heart of Shanghai City where the foreign concessions were situated. However, it demonstrates a very fragmented manner spatially due to many factors including complicated land ownership, unclear land boundaries and lack of planning. This aging community is clustered with Lilong residence of different time period, but nearly half of them are of very low qualities. Hardware and mechanical parts are the majority type of commodities in this area which could be dated to the boom of industrial development at the last century. However, the business is in a slump because Shanghai is implementing the policy on structural adjustment of industry. Overall, this fragmented site lacks diversity and vitality.

This urban design project identifies existing elements and tries to reconnect these functions by spatial design. The structure of Lilong housing is reshaped and applied to the design, in order to accommodate new functions with new spaces but also retain some characteristics of Lilong.

Perspective of the design from Suzhou River.
Drawn by the author.



LOCATION IN SHANGHAI CITY



LOCATION IN HUANGPU DISTRICT

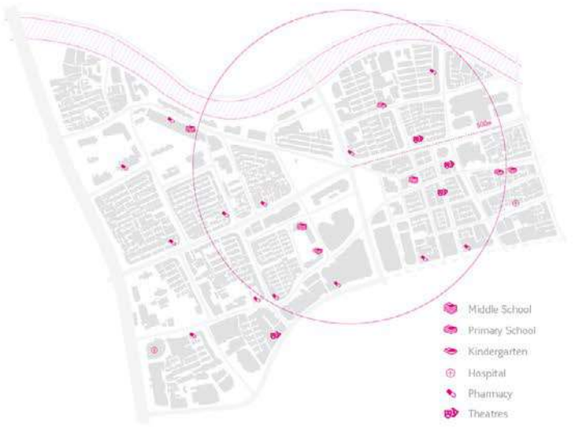
RESOURCES WITHIN WALKING DISTANCE

RESOURCE ANALYSIS

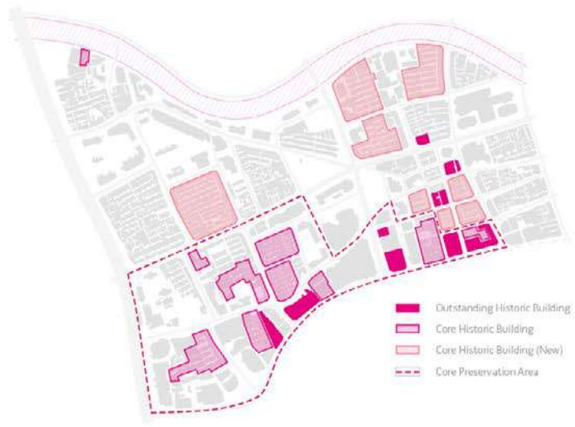
ROAD SYSTEM

PUBLIC TRANSPORTATION

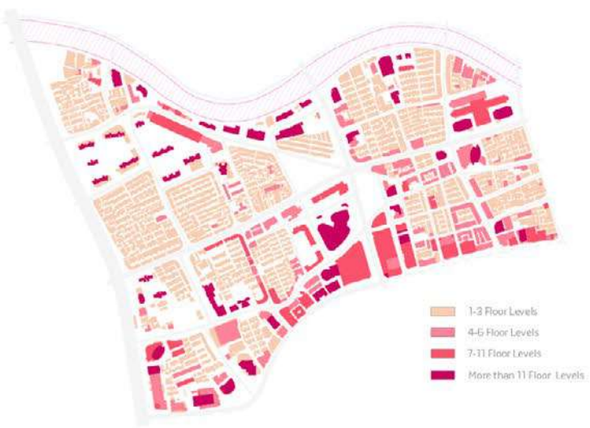
URBAN INFRASTRUCTURES



HISTORIC PRESERVATION STATUS

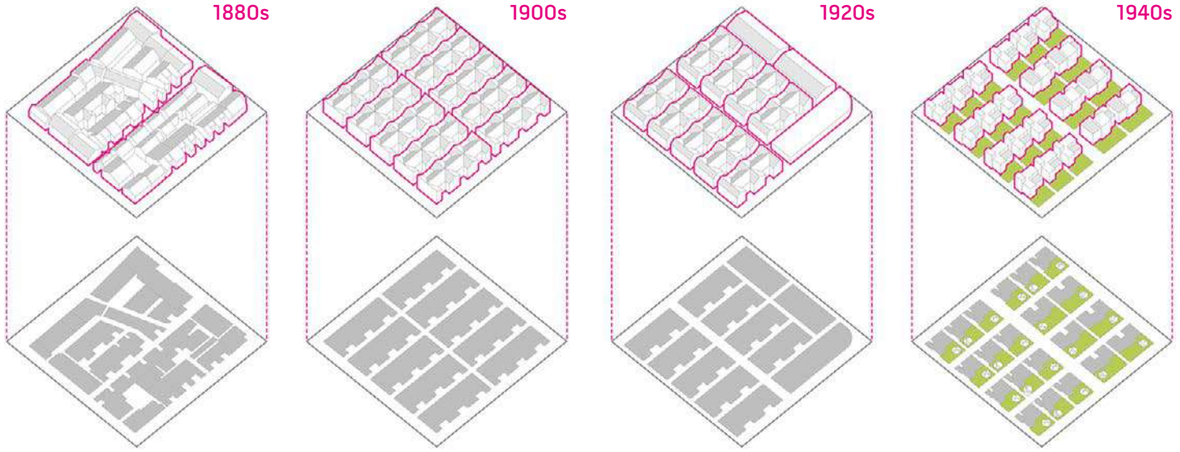


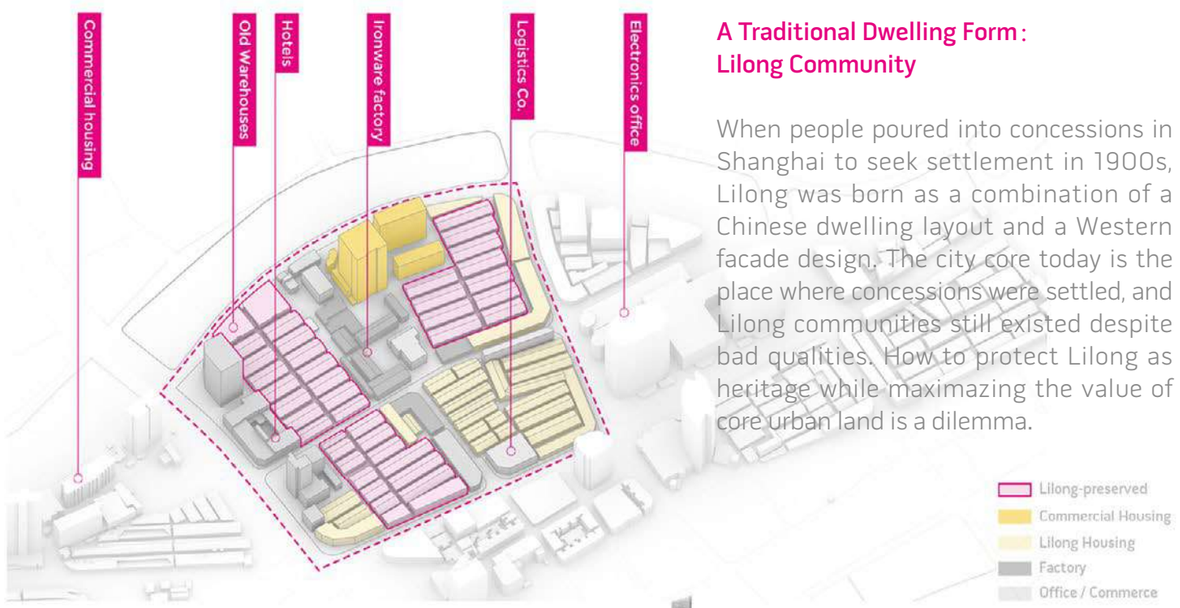
BUILDING HEIGHT



ARCHITECTURAL QUALITY

LILONG TYPOLOGY

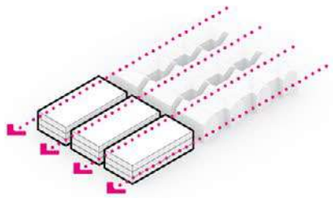




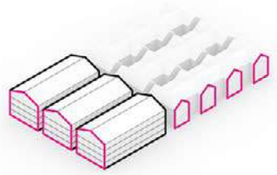
A Traditional Dwelling Form : Lilong Community

When people poured into concessions in Shanghai to seek settlement in 1900s, Lilong was born as a combination of a Chinese dwelling layout and a Western facade design. The city core today is the place where concessions were settled, and Lilong communities still existed despite bad qualities. How to protect Lilong as heritage while maximazing the value of core urban land is a dilemma.

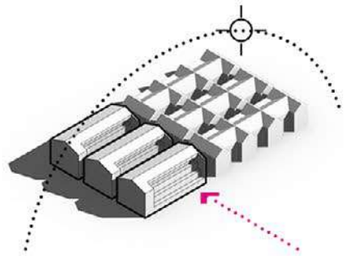
EXTEND THE CONTEXT



Maintain original scale

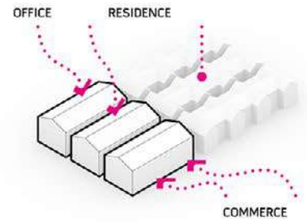


Design a gable

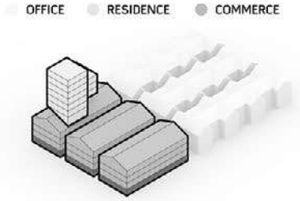


Set back for sunshine

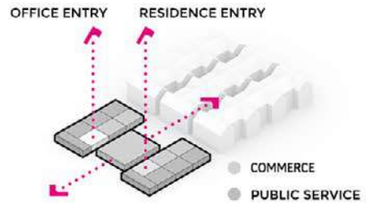
MIX FUNCTIONS



Insert functions needed

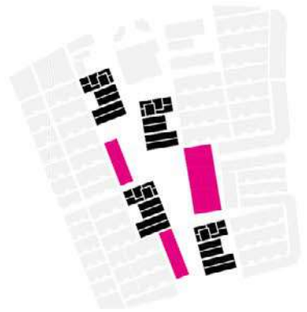


Vertical mixture

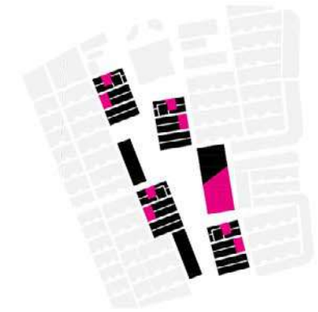


Planar mixture

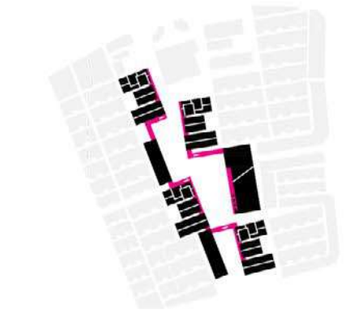
CREATE PUBLIC SPACES



Set public programs

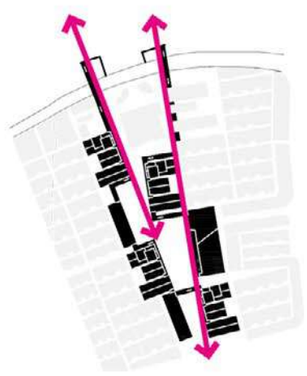


Roof gardens & yards

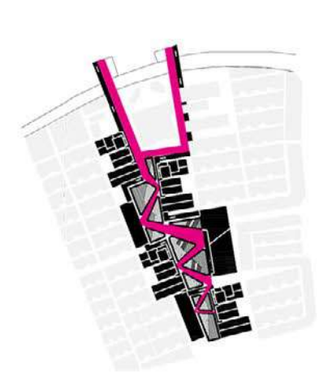


Corridor linkage

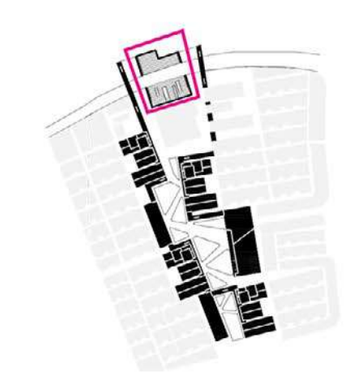
DESIGN LANDSCAPE



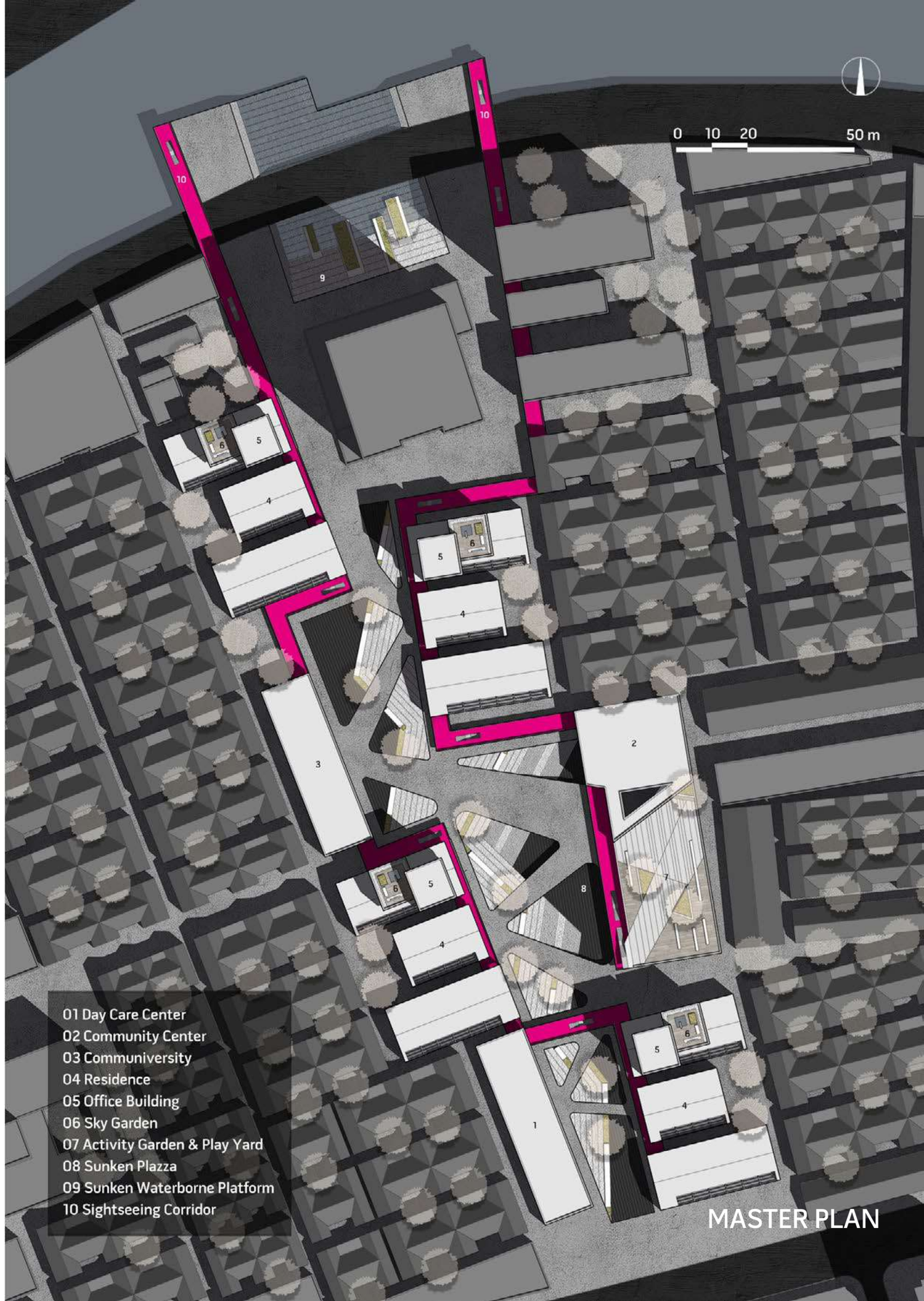
Connect with waterfront



Curve the inner aisle



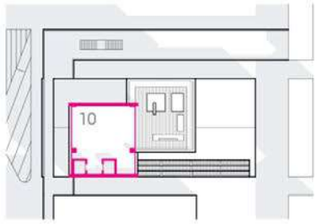
Set waterfront stairs



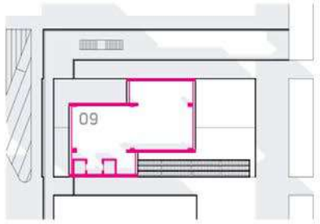
MASTER PLAN

PLANS (1:500)

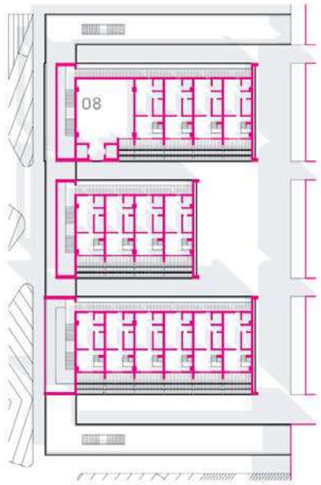
01 Store
02 Public Service
03 Community Canteen
04 Office Lobby
05 Reisdence Lobby
06 Outdoor garden
07 Management Office
08 Office Layout Type A
04 Office Layout Type B
05 Office Layout Type C



8-10F Plan



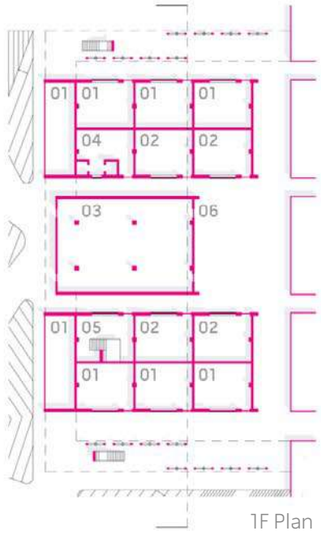
5-7F Plan



4F Plan

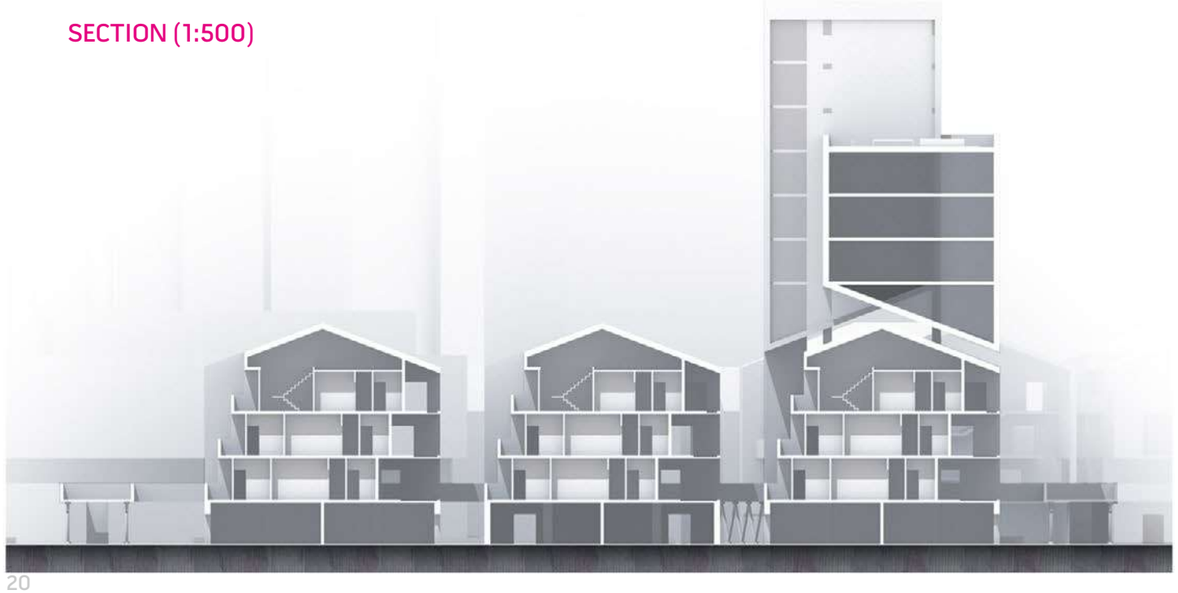
3F Plan

2F Plan

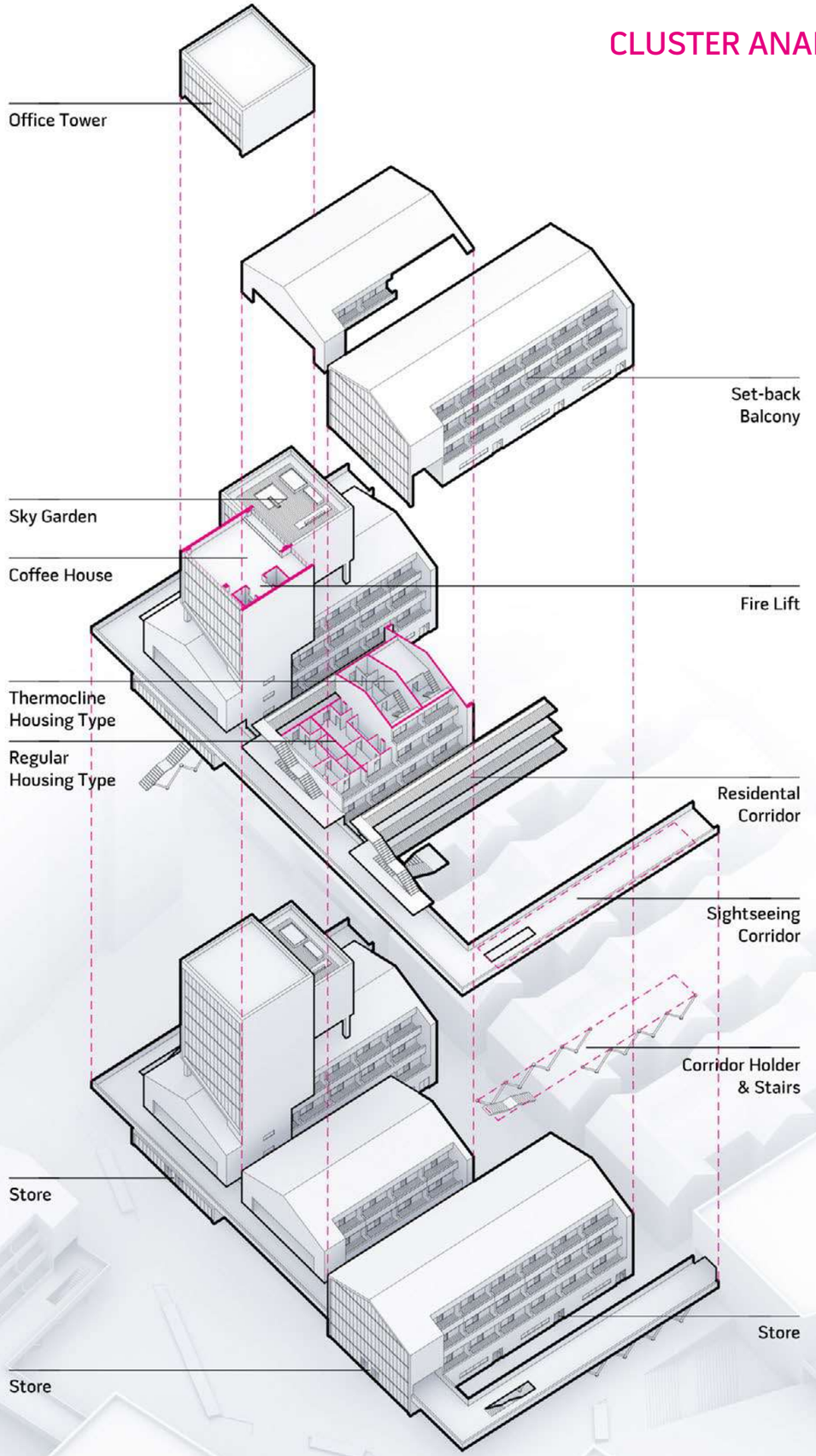


1F Plan

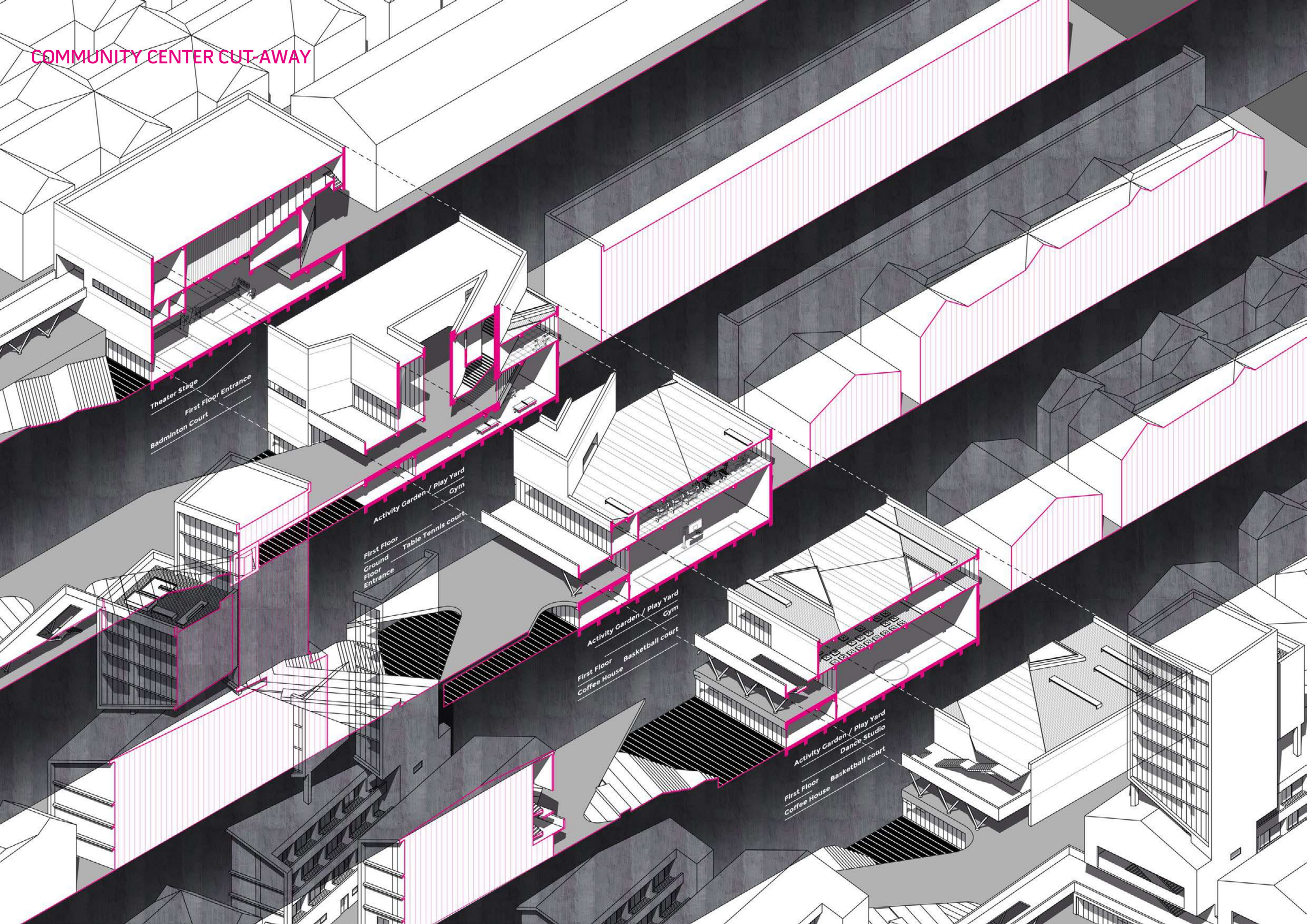
SECTION (1:500)

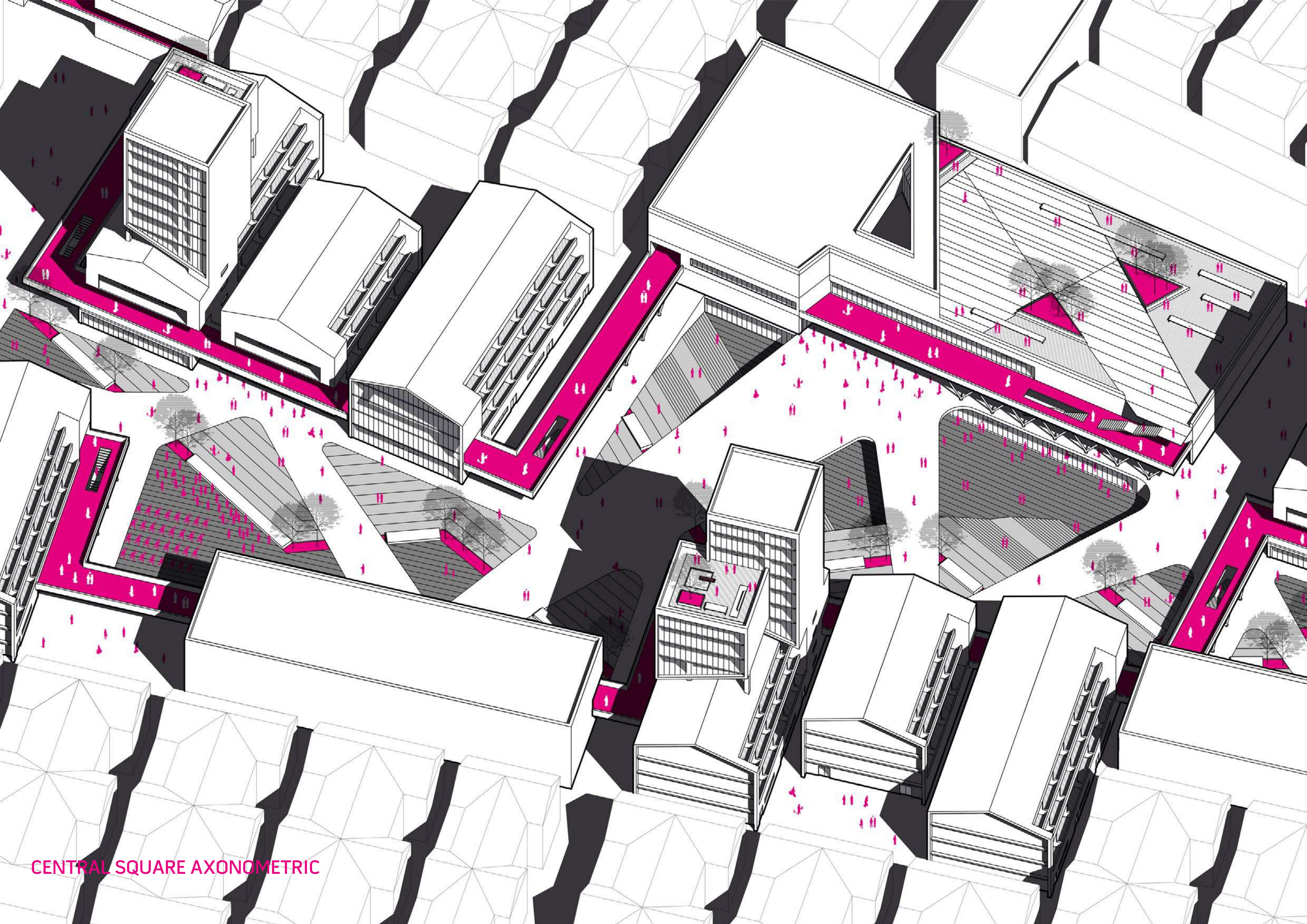


CLUSTER ANALYSIS



COMMUNITY CENTER CUT-AWAY





CENTRAL SQUARE AXONOMETRIC

Birdview of the design.
Drawn by the author.

URBAN COURTYARDS: RESIDENTIAL PLANNING IN RUIHONG AREA

LOCATION: HONGKOU DISTRICT, SHANGHAI CITY, CHINA
SITE AREA: 10.30 HA (=25.45 ACRE)
DATE: MAR. 2016 - JUN. 2016
PROPERTY: INDIVIDUAL WORK
COURSE: 6TH-SEMESTER CORE STUDIO
INSTRUCTOR: YANG F.
INSTITUTION: CAUP, TONGJI UNIVERSITY

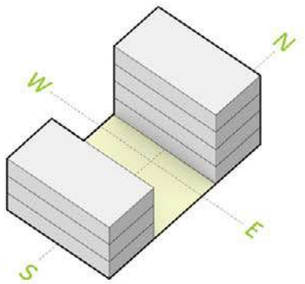
PROJECT DESCRIPTION

The site of this project is located in Hongkou District, an area with relatively larger amount of Lilong housing, a traditional type of residence dating back to the last century. There are many opportunities surrounding the site, with the Peace Park on the north, Ruihong residence on the west and a middle school on the south. Originally, Lilong communities flourished here, but most of them have been demolished as new commerical residence will be constructed on the site according to the plan.

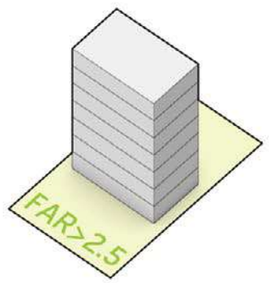
The studio requires students to plan a residence on this site, considering both the design principles and the real-world policies and regulations on such planning.

To keep the sense of neighborhood, this urban design project identifies and extracts the typical spatial form from previous Lilong community as a new prototype. Through the combination and transformation of those prototypes, new residential clusters are created and collectively become a larger urban courtyard.

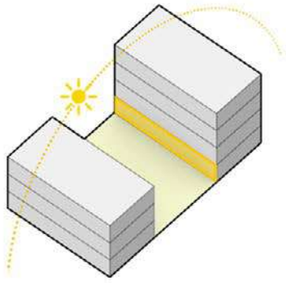
CORE REGULATION OF RESIDENTIAL PLANNING



The residential unit should adopt the south-north orientation in order to better receive the sunlight. Normally, bedrooms and balconies are supposed to face the south.



Requirements of Floor Area Ratio (FAR) varies in different projects. In this studio, FAR should be no less than 2.5 to guarantee its feasibility in reality.



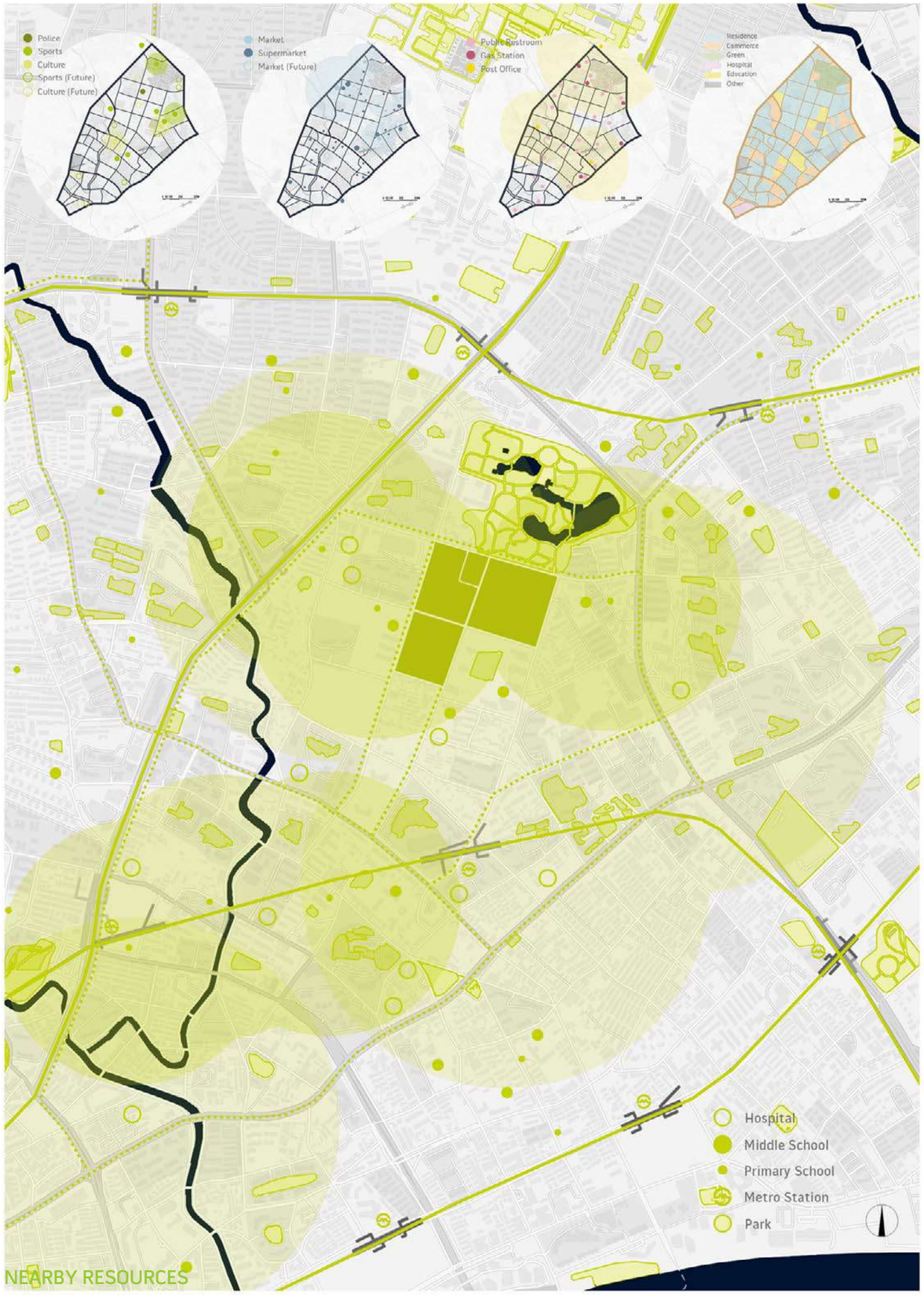
To ensure the equity of residents, residential planning should pass the sunlight analysis that the first-floor rooms could be in sunlight for more than 1 hour on winter solstice.

LOCATION ANALYSIS

LOCATION IN CHINA

LOCATION IN SHANGHAI CITY

LOCATION IN HONGKOU DISTRICT

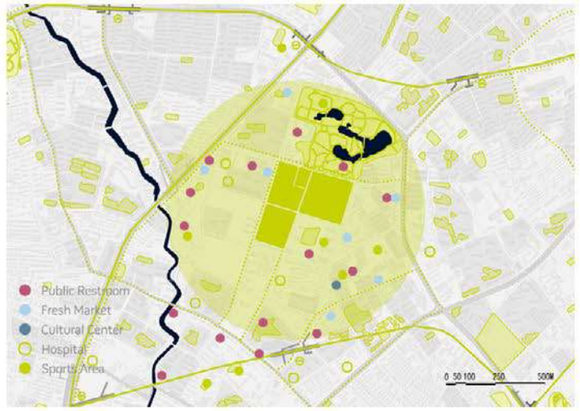


NEARBY RESOURCES

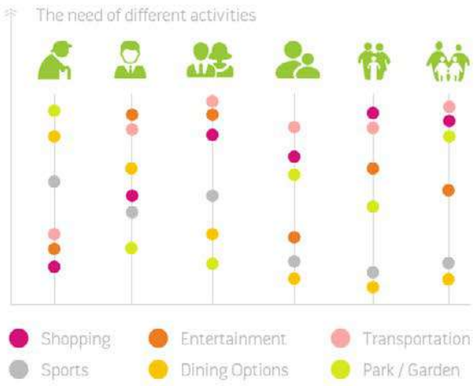
SITE OPPORTUNITIES

15-MIN LIVING CIRCLE OF THE YOUNG

15-MIN LIVING CIRCLE OF THE OLD



PROSPECTIVE RESIDENTS



ACTIVITIES IN PUBLIC SPACES ON THE SITE

Parking between buildings

Spaces at entrances

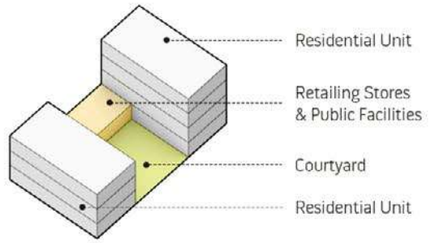
Public Events between buildings

Small retailing at lanes

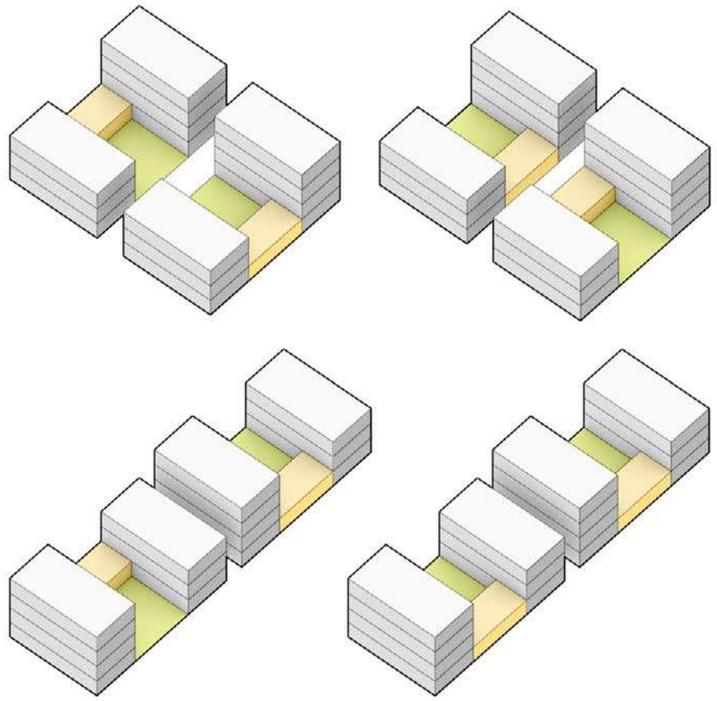
Daily activities in lanes

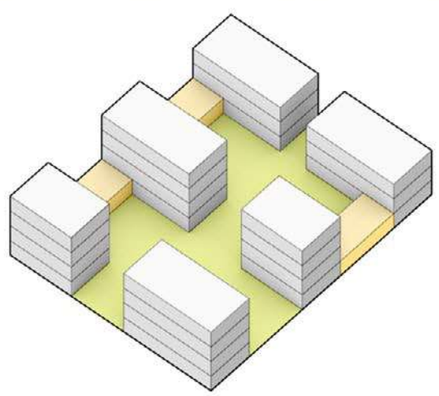
DESIGN IDEA AND PROCESS

PROTOTYPING



To create the courtyard surrounded by residential unit while taking the regulation of residential planning into consideration, buildings facing south and north are designed as residential units, and connectors facing east and west are filled with functions including retail, public or community service. Combinations of two prototypes could produce more spatial forms as shown below.



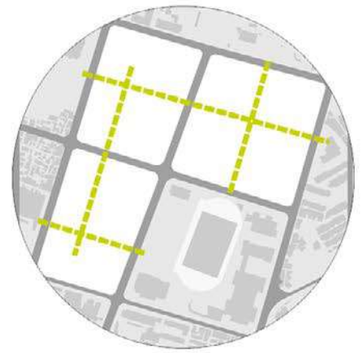


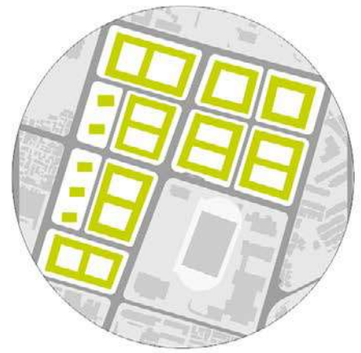
More than two prototypes could be combined and produce a more enriching and complicated cluster.

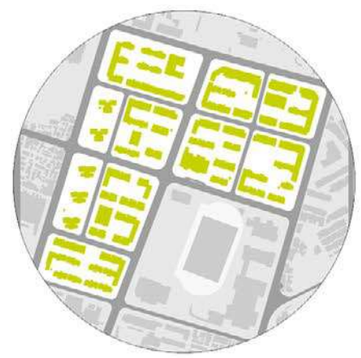
To link the different courtyards and make them more attractive in terms of spatial forms, we could lengthen or shorten the longer side of the residential unit. Meanwhile, the distance between residential units could be changed accoding to their heights. The location of retail and community service could also be changed.

Therefore, there will be are more possibilities to shape the courtyard.

FORM GENERATION

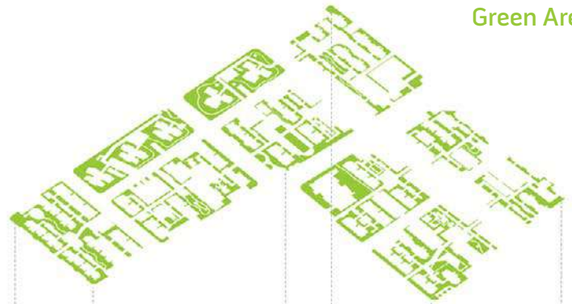




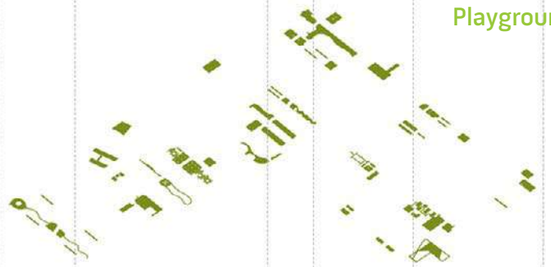


MASTER PLAN

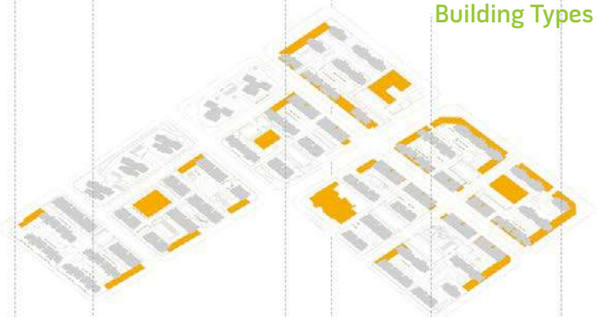
Green Area



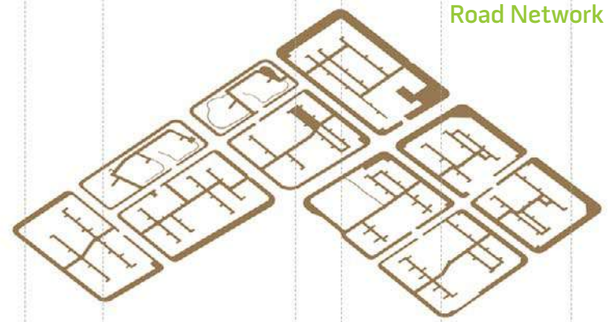
Playground



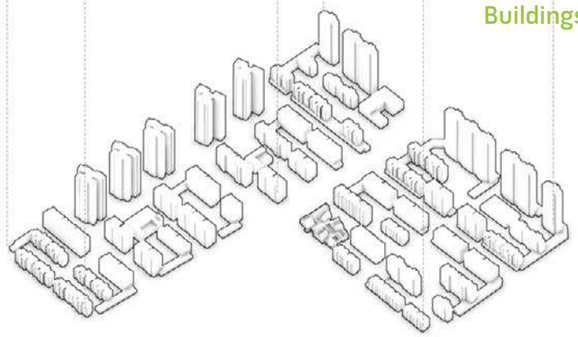
Building Types



Road Network



Buildings



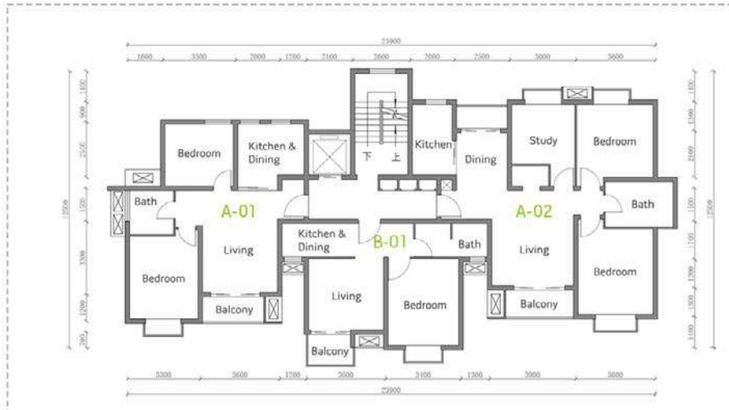
HOUSING TYPES

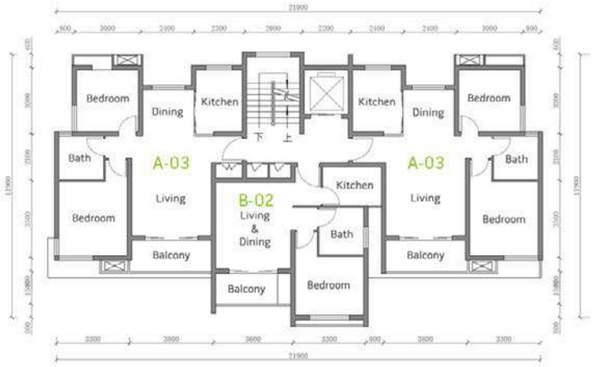
TYPE A (for the double)
The size of the kitchen and dining room is relatively small, but other main spaces are very comfortable.
A-01: 2B1B, 72 m^2 / 63 m^2
A-02: 3B1B, 99 m^2 / 87 m^2
A-03: 2B1B, 71 m^2 / 62 m^2

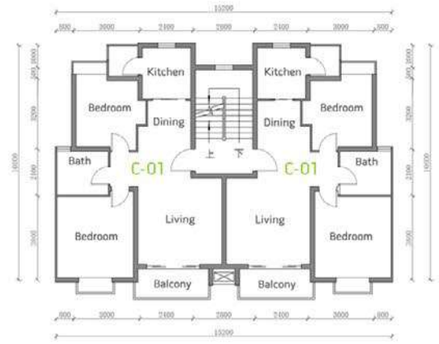
TYPE B (for the single)
Dining is combined to the kitchen to keep the size of main spaces.
B-01: 1B1B, 52 m^2 / 45 m^2
B-02: 1B1B, 52 m^2 / 45 m^2

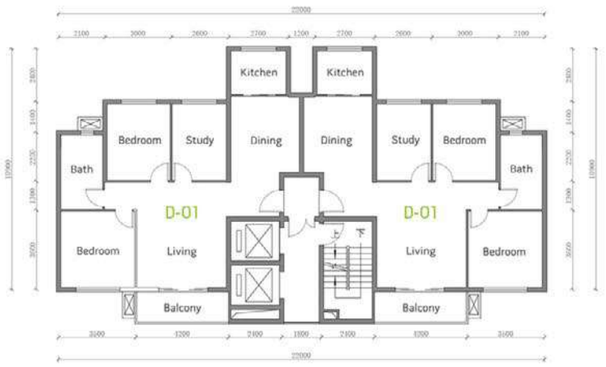
TYPE C (for the multiple)
Futile area is minimized and size of rooms are well-balanced.
C-01: 2B1B, 72 m^2 / 66 m^2
C-02: 3B2B, 99 m^2 / 87 m^2
C-03: 3B1B, 85 m^2 / 72 m^2

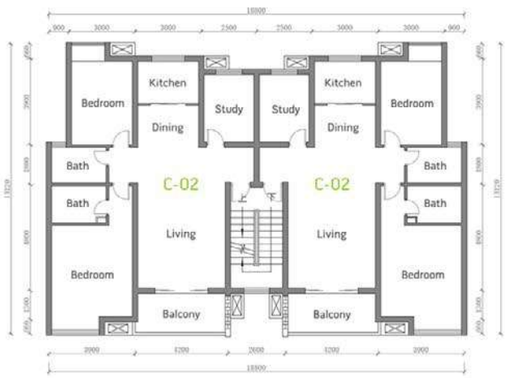
TYPE D (for the multiple)
D-01: 3B1B, 94 m^2 / 78 m^2

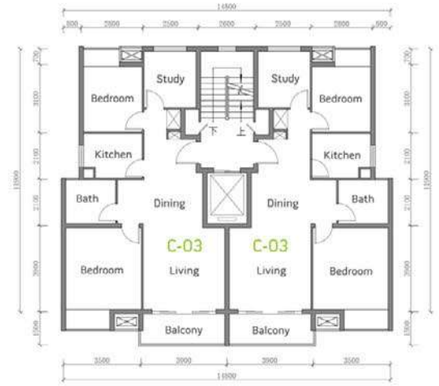








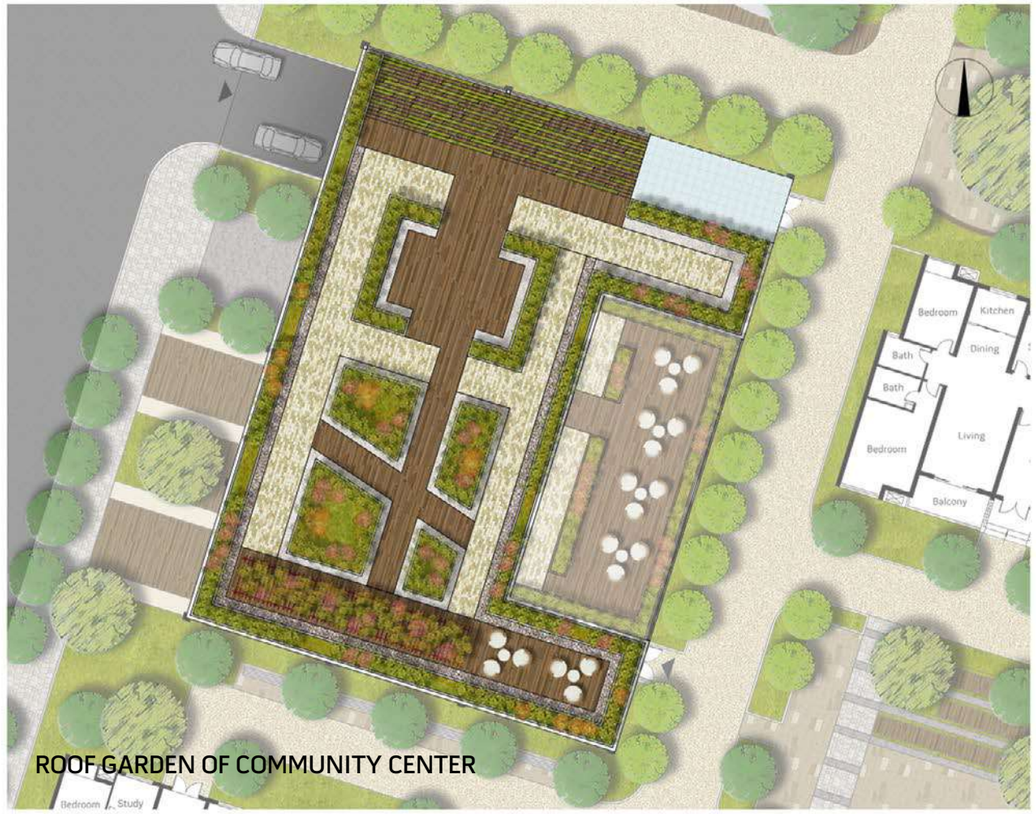




ELEVATION

CLUSTER: GROUND FLOOR PLAN

ROOF GARDEN OF FRESH MARKET



ROOF GARDEN OF COMMUNITY CENTER

The square near the community center

Courtyards between residential unit at noon

The night garden

CLUSTER: SECTION

TOWARDS A HEALTHIER NEW YORK CITY: ASSESSING FARMERS MARKETS

LOCATION: NEW YORK CITY, THE UNITED STATES
DATE: NOV. 2018 - DEC. 2018
PROPERTY: INDIVIDUAL WORK
INSTRUCTOR: MEISTERLIN L.
COURSE: GEOGRAPHIC INFORMATION SYSTEMS
INSTITUTION: GSAPP, COLUMBIA UNIVERSITY

PROJECT DESCRIPTION

This is the final assignment of the course Geographic Information Systems (GIS), which requires students to design, research and complete a small project. It is a three-week, self-directed research the skills learned through the semester to a topic and the according questions.

Besides this written and graphic report, I have also finished the topic proposals with data sources, as well as a presentation before a panel of invited guests.

A typical farmers market in Europe.
This photo has been reprocessed. Original photo courtsey to Cruise Insider.

INTRODUCTION

Limited access to sources of health, fresh and affordable food may impede the ability of people to have a healthy diet (USDA, 2017). A wide body of social and scientific research has linked lack of nutritious, affordable, fresh food to higher rates of diet-related diseases, including heart disease, diabetes, and obesity. In the meantime, these findings have been validated by the New York City Department of Health and Mental Hygiene through studies of New York City neighborhoods (AECOM, 2010).

Farmers market, as a supplement to traditional supermarkets and grocery stores, provides healthy fresh food for its surrounding residents. In 2013, farmers markets in United States grown to 8,144 from 1,755 in 1993 (Bell, 2013).

However, factors including income, age, distance, commuting and even family structure may impact food access for certain people. Promoting people's access to the farmers market is never just a matter of the count; the location greatly influences the number of benefits that people can actually enjoy. Therefore, it is meaningful to understand the demographics of surrounding communities of the farmers market, and worth investigating whether there are communities without ready access to a convenient farmers market.

Therefore, two research questions are posed.

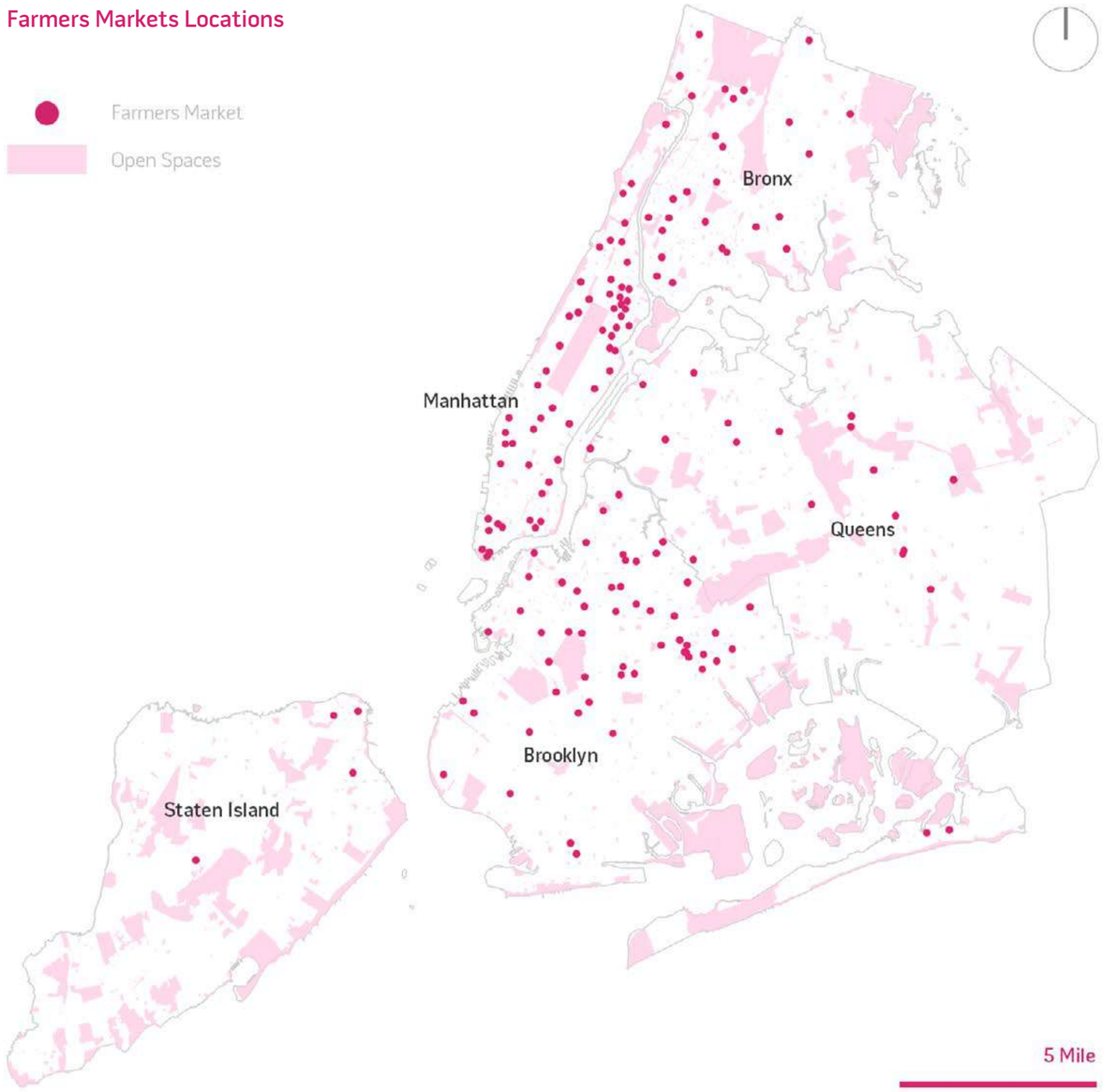
First, What are the racial and economic demographics surrounding the farmers markets in New York City?

Second, considering the current distribution of farmers markets, density of housing units, population targeted and the cost to operate such market, where might a new farmers market be sited in New York City?

This study investigates all farmers markets located in New York City that have been developed before May 2018. While the demographic characteristics will be examined within the network service areas of each farmers market, the site suitability selection of a new farmers market will be performed for all the five boroughs of New York City.

RESEARCH QUESTION 1

What are the racial and economic demographics surrounding the farmers markets in New York City?



METHODOLOGY

Data

ACS 5-Year Estimates, Table S0601 [table]
Farmers Market in New York City [table]
Lion Street Polyline [shapefile]
NYC Census Tract Boundary [shapefile]
NYC MapPluto [shapefile]

Steps

First, table join is performed. ACS tables are downloaded from American Factfinder with information of all census tracts in New York City. Some demographics relevant to the research question, including the percentage of different races, percentage of population in poverty status, percentage of population with different educational levels, have been isolated and saved as a new table. By adding the census tract to ArcGIS, table join could be performed.

Second, network service areas are generated with lion street polylines and locations of farmers market. Considering that people normally walk to the market and carry heavy stuff, this study sets the intervals as quarter miles, half miles, and three-quarter miles. Locators are set with farmers markets, and the output polygons are generated with both "merge" and "no-merge" ways of dealing with service areas with similar range. In this way, multiple network service areas are generated.

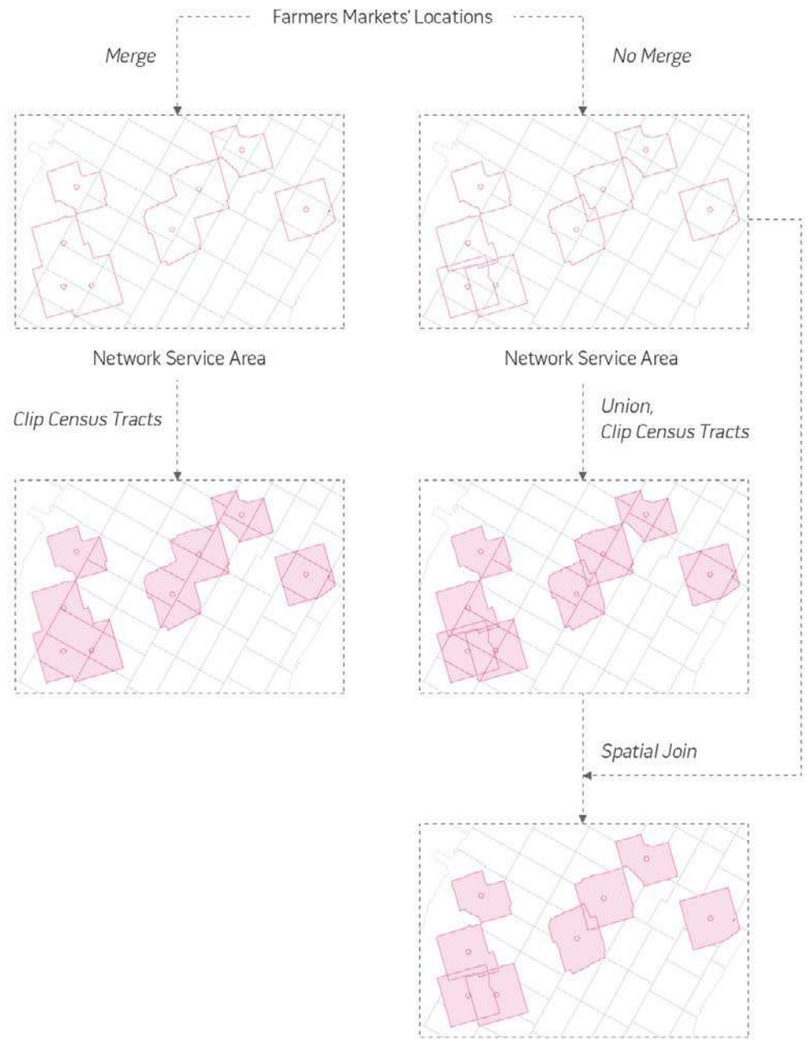
Finally, this study adopts the method of dasymetric estimation to approach the numbers of people in the study area, through several times of spatial join. MAUP appears when analysis of demographics is conducted here. Normally, after ACS data is joined to census tracts and service area is created, proportions can be calculated based on the size of the study area that is located within the census tract. However, considering the fact that ACS data was collected based on residents, this study instead calculates proportions based on the number of residential units located in the study area. It seems like a much reasonable approach compared with the normal proportional split.

Proportional Split

Dasymetric Estimation

The diagram at left demonstrates the difference between proportional split and dasymetric estimation. The latter is performed through several times of spatial join.

Two types of network service area could be generated in ArcGIS, one with merged polygons and another with overlapped polygons (no-merge type). We could safely estimate the number and density of each group of the population with the former, as they do not overlap with each other. However, it is better using the latter to examine the aggregated data surrounding farmers markets by calculating people more than once, as residents living in areas served by multiple farmers markets may approach any one of them in their daily life.



Unique Estimation
in Network Service Area
(Merge)

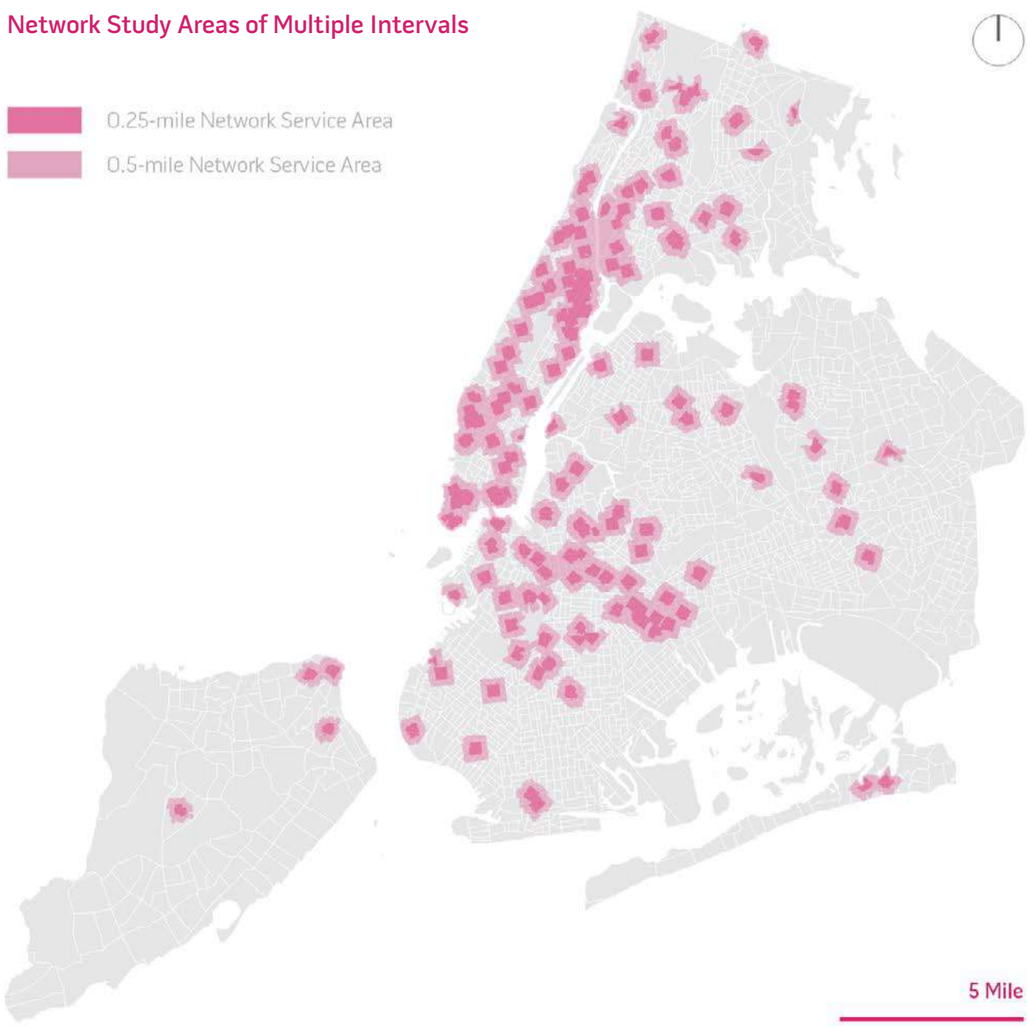
Aggregated Estimation
in Network Service Area
(No-Merge)

FINDINGS - NETWORK SERVICE AREA

The network service areas generated with 0.25 mile and 0.5 mile as intervals are shown below. Compared with Manhattan and Brooklyn, the size of service areas of farmers markets in Staten Island, Queens and North Bronx is relatively small, especially the former two. In the meantime, most of Manhattan and northeast Brooklyn has been covered by 0.5-mile service areas.

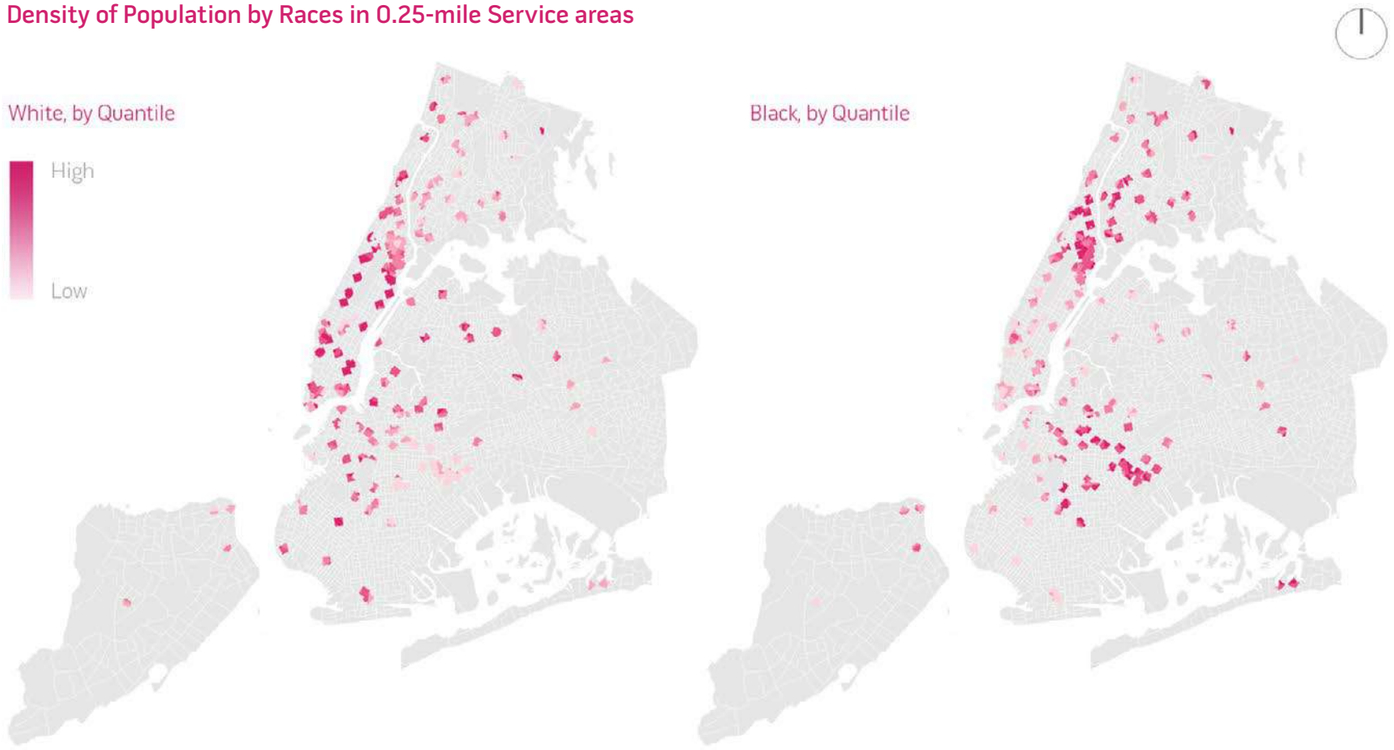
Maps at right compare the density of population by races in service areas with different ranges. They could help us better understand both the spatial concentrations of populated farmers markets and the group of people being served. Spatially, farmers markets located in Upper Manhattan, South Bronx and South Brooklyn are surrounded by a higher density of the Black and African American, while the ones in Midtown, Lower Manhattan and Northwest Brooklyn are more populated with the White. These spatial characteristics are demonstrated in both sets of maps with 0.25-mile and 0.5-mile as the range of network service area. Compared with others, farmers markets in Staten Island and the middle of Queens are not very populated with those two groups of the population.

Network Study Areas of Multiple Intervals

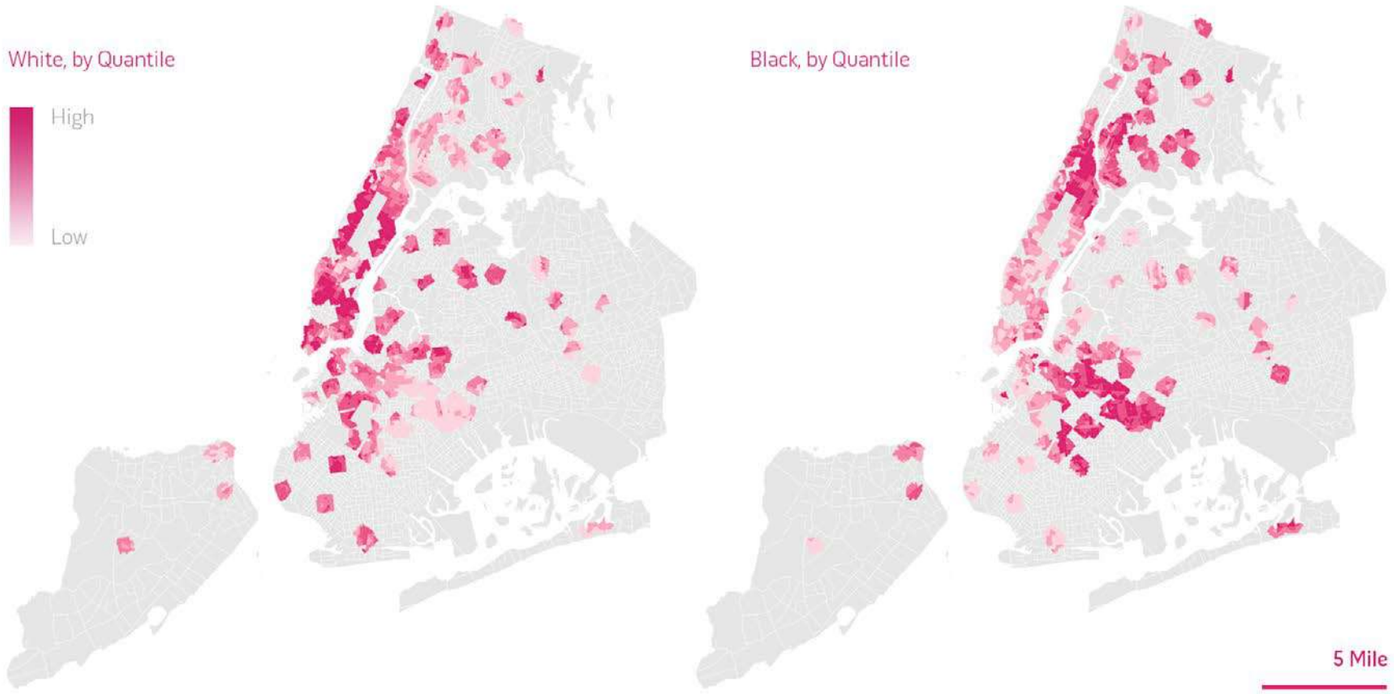


FINDINGS - RACIAL DEMOGRAPHICS

Density of Population by Races in 0.25-mile Service areas

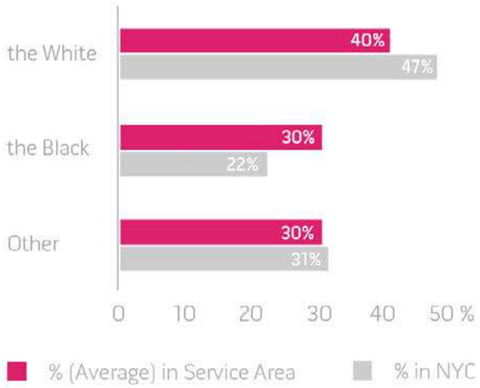


Density of Population by Races in 0.5-mile Service areas

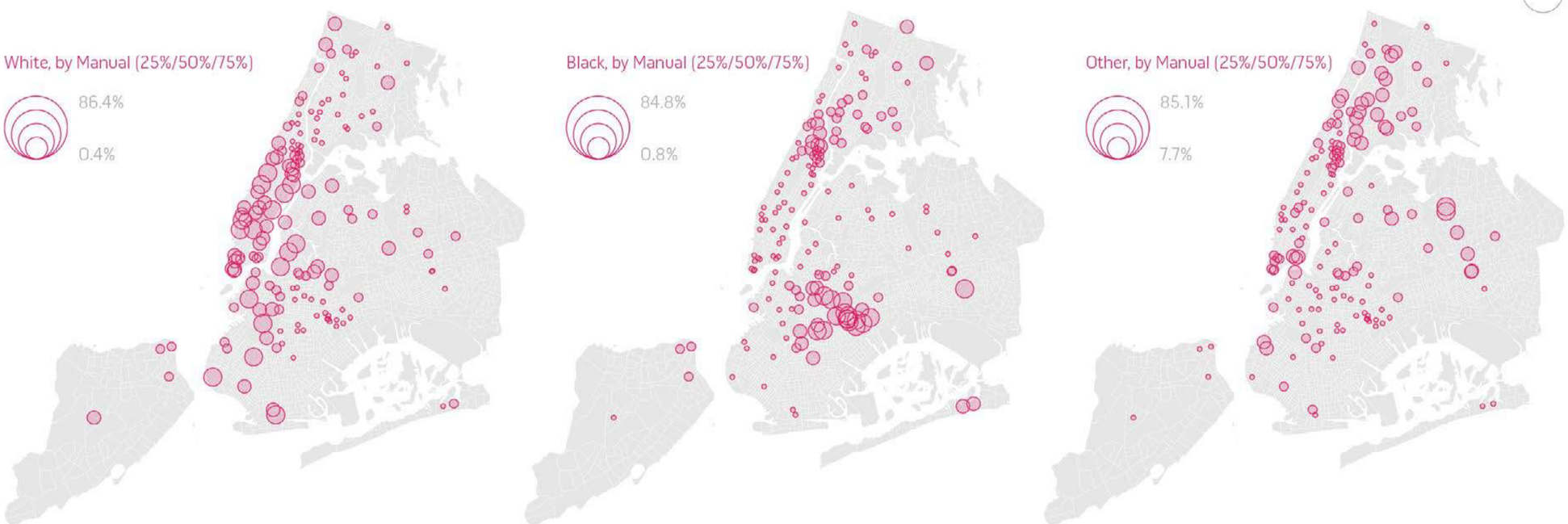


FINDINGS - RACIAL DEMOGRAPHICS

Comparison of Demographics in 0.5-mile Service Area and that of New York City

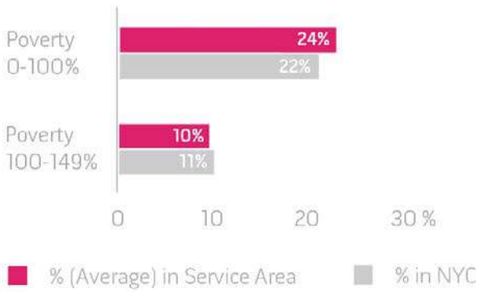


Percentage of People by Races in 0.5-mile Service Area

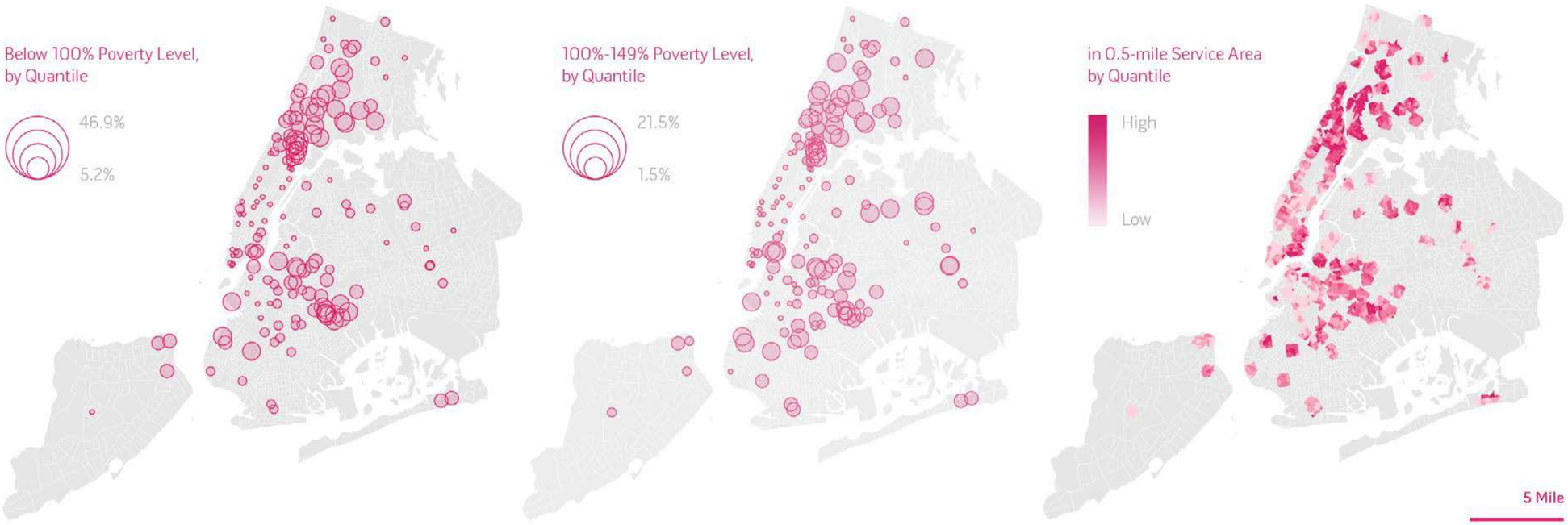


FINDINGS - ECONOMIC DEMOGRAPHICS

Comparison of Demographics in 0.5-mile Service Area and that of New York City



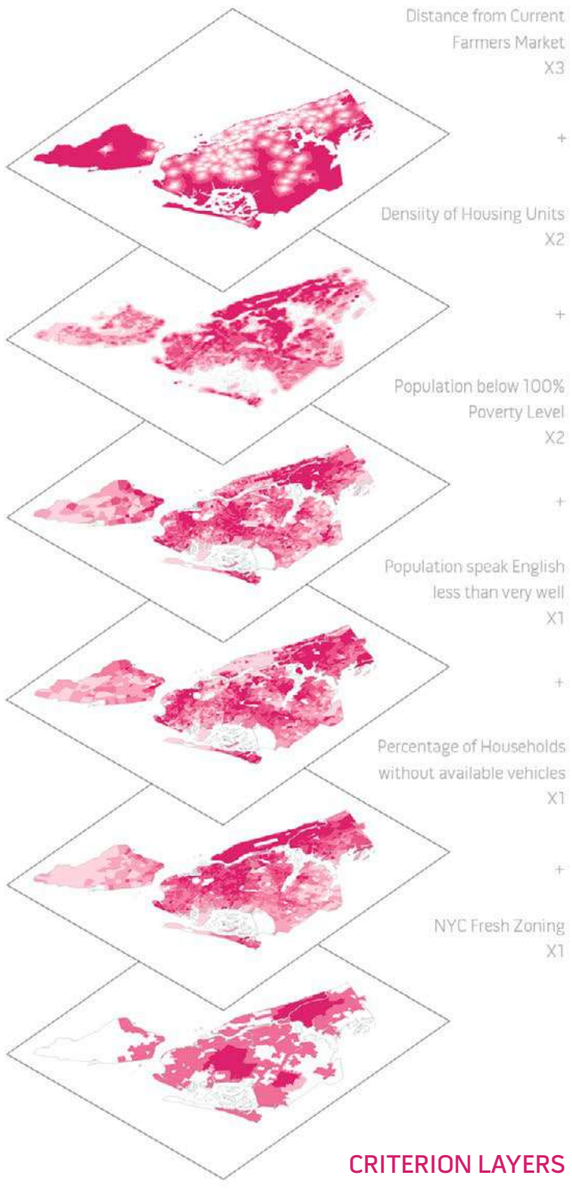
Percentage of People in Poverty in 0.5-mile Service Area



Density of Population below 100% Poverty Level

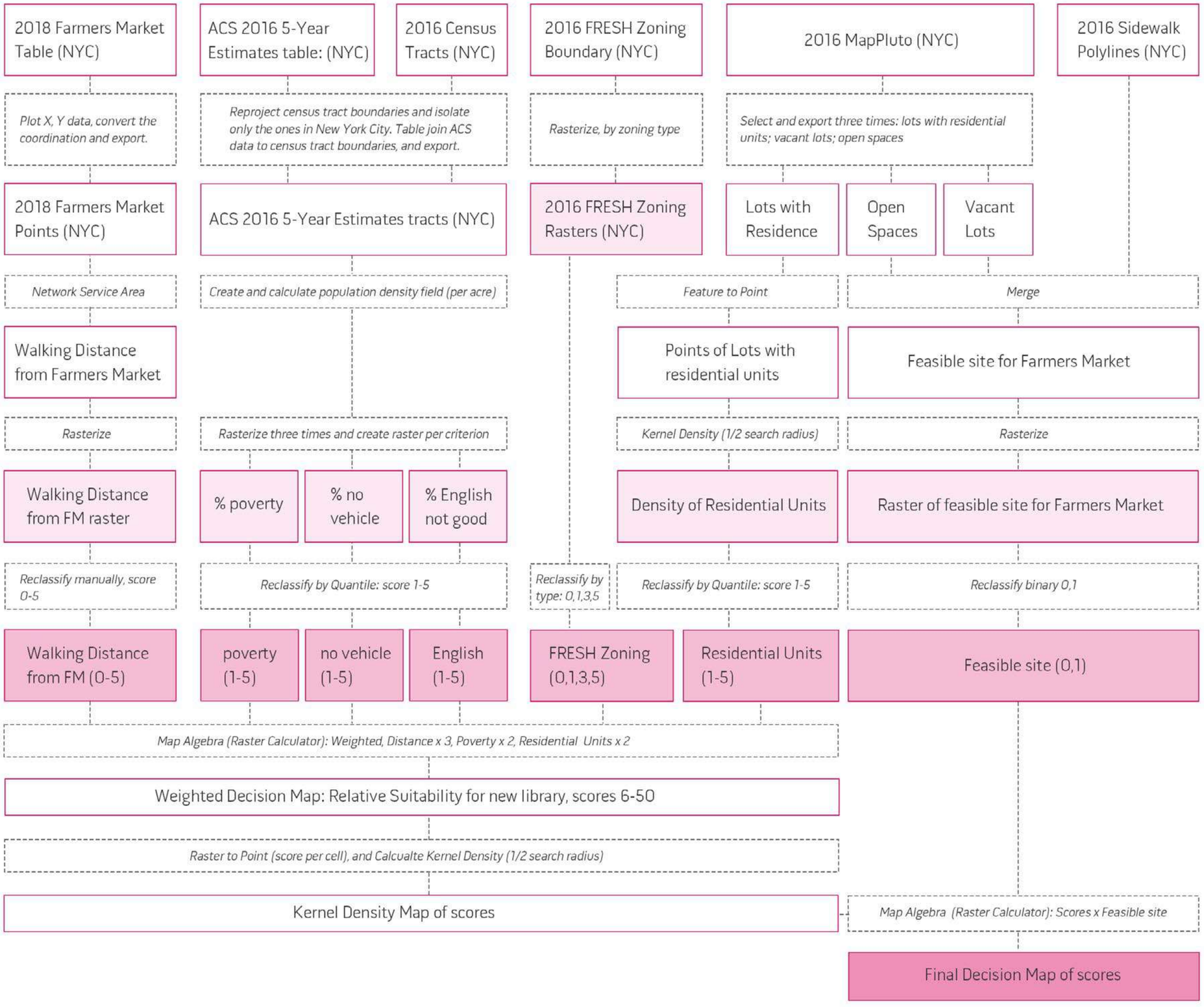
RESEARCH QUESTION 2

Considering the current distribution of farmers markets, density of housing units, population targeted and the cost to operate such market, where might a new farmers market be sited in New York City?



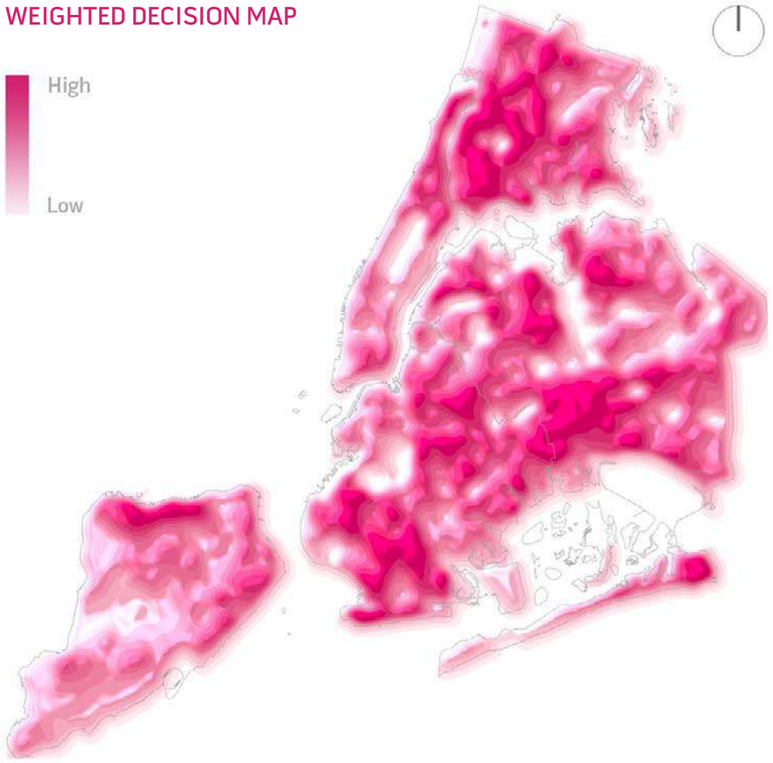
CRITERION LAYERS

METHODOLOGY

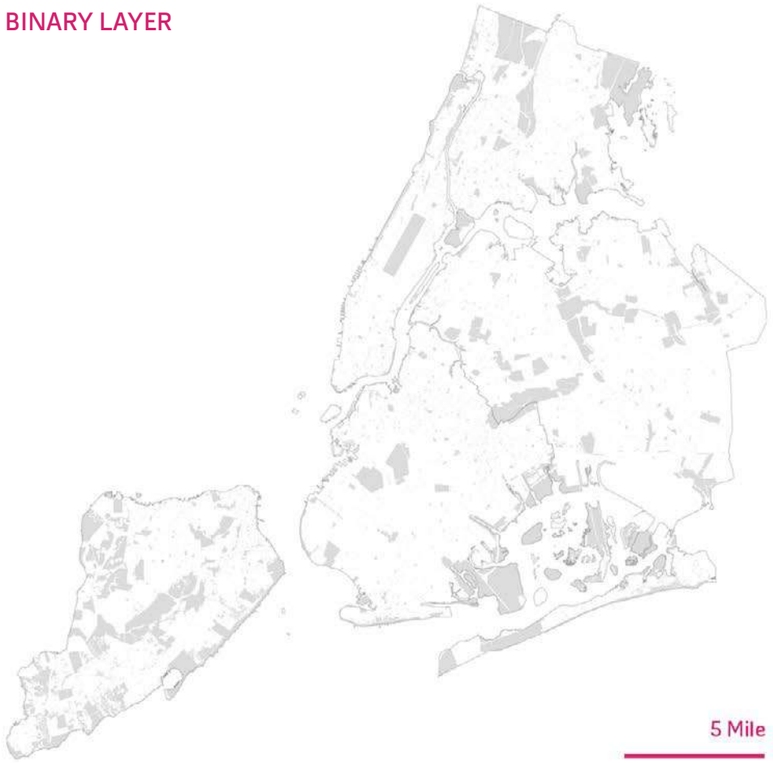


FINDINGS - CLUSTER OF HIGH SCORES

WEIGHTED DECISION MAP



BINARY LAYER



FINAL WEIGHTED DECISION MAP

With criterion layers generated from previous steps, a raster decision map is created by raster calculator, with the maximum score of 50 and the minimum score of 6.

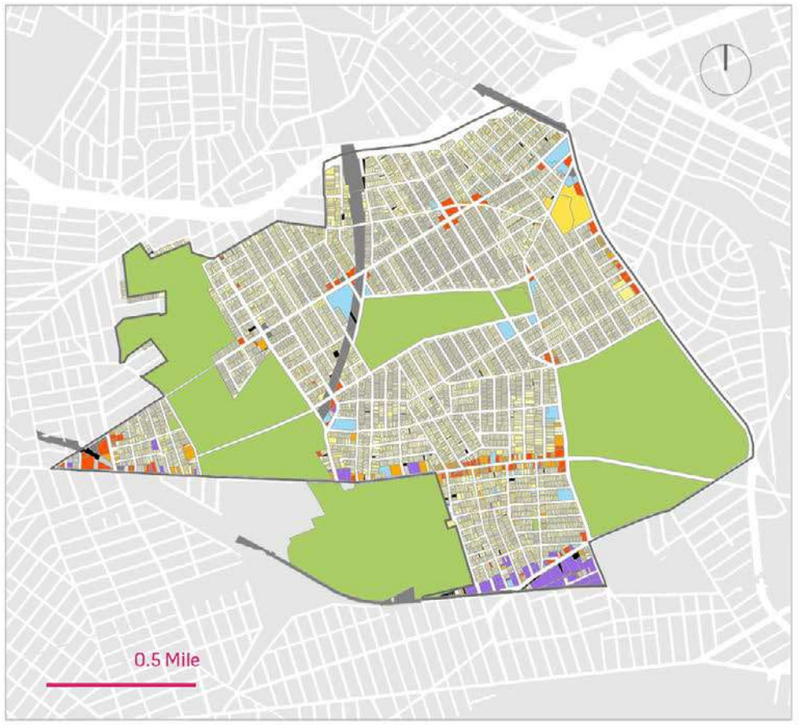
The final step of summarizing scores in each cell is tricky because farmers market can be located at nearly any indoor or outdoor open space, and the size of which varies significantly from large squares to narrow sidewalks. In this way, summarizing scores with mean values on each lot is not feasible. Therefore, this study converts the raster with the score in each cell to points, and examines the density of scores in those points using kernel density. By overlapping this map with binary layer consists of vacant lots, sidewalks and open spaces, a final weighed decision map is created and the spatial distribution pattern could be detected.

FINDINGS - SUITABLE NEIGHBORHOODS

East Bronx lacks farmers markets at present, and this neighborhood serves as a sound place for a new one. It is located in fresh zoning allowing tax incentives, benefiting the developer with lower operating cost. Also, farmers market here is capable of providing service to a diverse range of people both in this neighborhood and the East Bronx as a whole. It could be sited along the main commercial street.

Schuylerville-Throgs Neck-Edgewater Park

Location: Bronx Borough
Area (Acre): 82164.6
Total Poulation: 46,703
Population Density: 0.6
Race: the White (55.2%), the Black/African American (12.6%)
People below 100% Poverty Level: 11.9%
People without High-school Diploma: 17.6%
Fresh Zoning: Discretionary tax incentives are available



Middle Village is another place with a concentration of higher scores. It situates near the boundary of Queens and Brooklyn. Although the percentage of people in poverty is smaller compared with others, the density of residence indicates that farmers market located here could provide better service for nearby communities.

Milddle Village

Location: Queens Borough
Area (Acre): 53,591.2
Total Poulation: 39,705
Population Density: 0.7
Race: the White (80.2%), the Black/African American (1.2%)
People below 100% Poverty Level: 7.6%
People without High-school Diploma: 12.6%
Fresh Zoning: No incentives available

Currently, there is no farmers market in South Ozone Park, and it is also the most populated neighborhood among the selected ones. High scores concentrated in the southwest part. Considering the percentage of people without a higher level of education, as well as that of people in poverty, situating a farmers market here could serve the public well.

South Ozone Park

Location: Queens Borough
Area (Acre): 76,609.4
Total Poulation: 85,112
Population Density: 1.1
Race: the White (14.1%), the Black/African American (22.9%)
People below 100% Poverty Level: 12.1%
People without High-school Diploma: 26.9%
Fresh Zoning: Discretionary tax incentives are available

LIMITATIONS AND CONCLUSION

Limitations in research scope

To properly select a location for farmers market, one has to consider numerous factors, and the number of which surely exceeds the criteria listed in this research. Meanwhile, some cultural and political factors being considered for site selection in the real world are unmeasurable. For the purpose of exercise in a GIS course, this study only selected limited factors to conduct the analysis.

For different communities with diverse contexts, different strategies and factors may be considered in the site selection process. Due to limited time for this project and the wide research geographic area covering all the five boroughs of New York City, this study will not introduce weight in decision map.

Limitations in dataset

Racial and economic demographic data gathered from ACS is projected data. Though available at the census-tract level which is convenient for GIS-based analysis, it is less precise.

The importance of keeping the consistency of data-created time has been recognized. However, in this study, farmers market data was created in 2018, while LION single line street datasets, MapPLUTO, NYC commercial overlay districts and demographic data date to 2016. Considering the archived version of farmers market is not available, this study will just tolerate this two-year falling apart of the scenario.

There are more stores including supermarkets, supercenters and grocery stores that sell a wide variety of healthy foods at affordable prices (USDA, 2009). Including these data into analysis will have higher possibilities to generate much more meaningful conclusions in terms of demographic analysis. However, a Nielsen directory of TDLinx covering all three types of stores is not publicly open data. Therefore, this study only takes farmers market into consideration.

Conclusion

The investigation of demographics surrounding different network service areas provided us with the knowledge of the locations, numbers and groups of people that are served by farmers markets in New York City. People in East Bronx, South Brooklyn, a large part of Queens and most of Staten Island are less accessible to farmers markets.

Meanwhile, main targeting groups vary significantly in different regions. For example, farmers markets in lower Manhattan and northwest Brooklyn are more populated with the White consumers, while those in upper Manhattan, South Bronx, and east Brooklyn are surrounded by the Black and African American. By comparing the aggregated data of demographics in each service area, the same conclusion of the above spatial distribution could be arrived at. If we further take the percentage of different groups in New York into consideration, it seems that compared with the White, the Black and African American are taking more advantages on farmers markets. In future research, educational level, income distribution, and the locations of supermarkets and other grocery stores could be included, to generate much more meaningful results.

Based on the above findings, this study conducts site suitability analysis by adding up criterion layers relevant to distance, density of residence, poverty and language levels of residents. Finally, we recommend three neighborhoods located in East Bronx and Queens as the projected area for locating a new farmers market. However, a detailed analysis could be conducted when more critical layers are included.

DATA SOURCES AND REFERENCES

Data Sources

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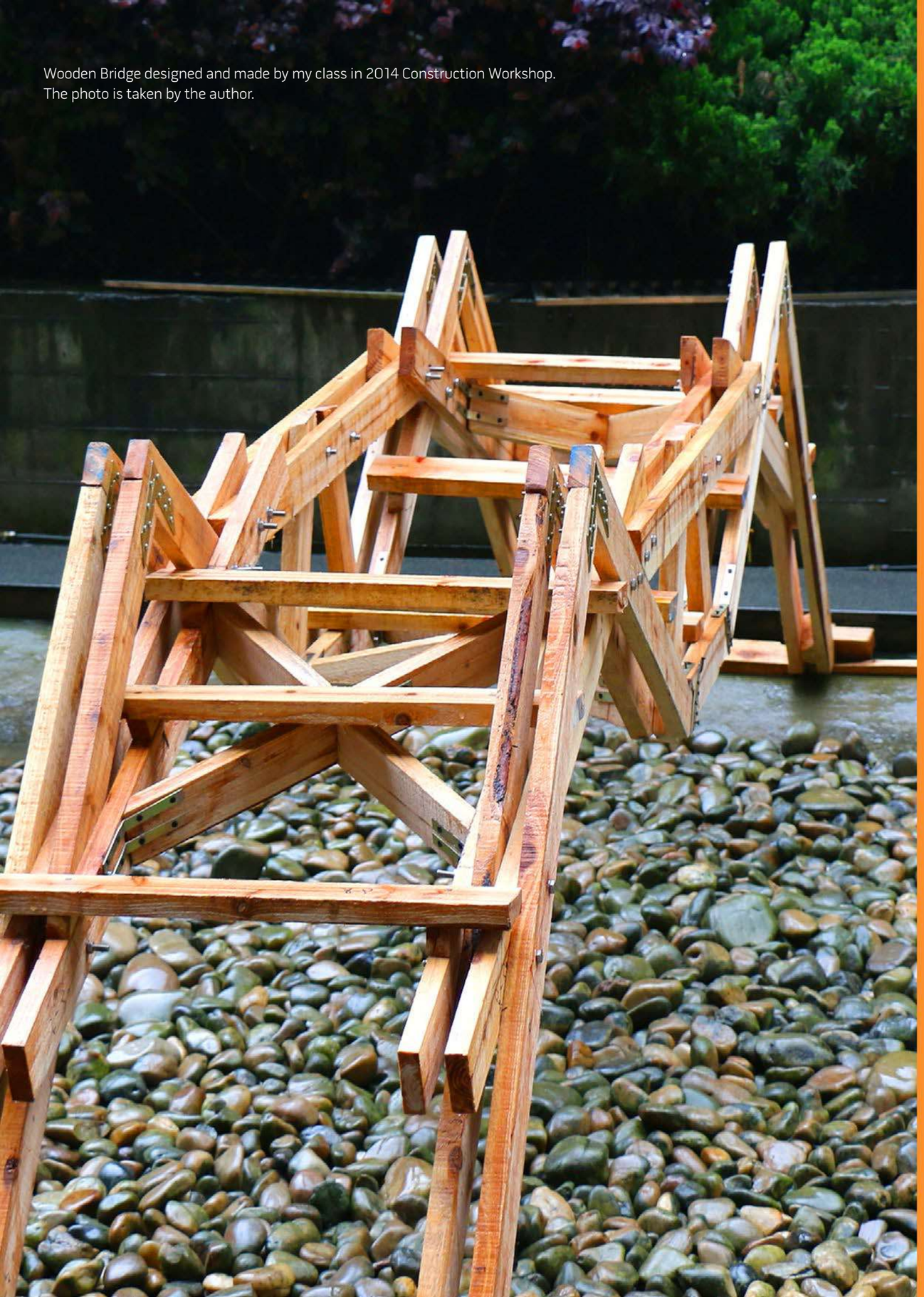


Wooden Bridge designed and made by my class in 2014 Construction Workshop.
The photo is taken by the author.

OTHER WORKS

URBAN PLANNING AND DESIGN

Studio is the core course for every semester during my undergraduate study. In the first and the second years, studios cover topics ranging from graphic design to architectural design in order to foster our aesthetics and the sense of spatial scale and atmosphere. From the third year, I am trained with planning topics in different scales.

URBAN SPATIAL ANALYSIS

Urban spatial analysis is becoming increasingly significant for urban planning. During the internship at the Urban Climate Lab at Tongji University, I accomplished the ventilation corridor analysis of Wanhua in Taipei, Taiwan with the guidance of my lab instructor. I am digging deeper in GIS and its applications, machine learning in the coming semesters.

ART WORKS

Pen drawings, caligraphy and photography are all important dialogues between me and the world. Being fully sensitive to both the outer environment and inner side is the core for an excellent planner and designer.

During the undergraduate study, I have also taken the class of sculpture, trained with graphic and three-dimensional design theory, and joined the construction competition of wooden bridge and corrugated paper house.

URBAN PLANNING AND DESIGN

VILLAGE PLANNING

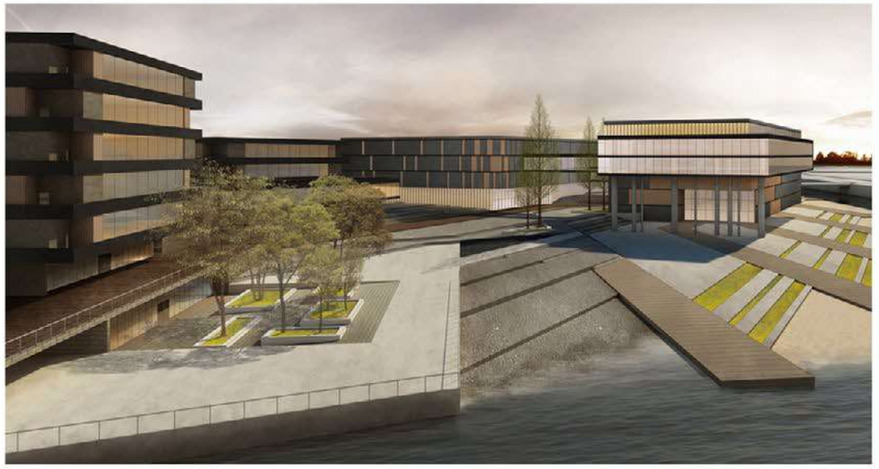
Date: Nov. 2016
Location: Zhongfeng Village, Jinshan District, Shanghai, China
Property: Team Work (3)

This project planned the land use and industry, and won the first place among all the village design of our grade.

ZIZHU URBAN DESIGN

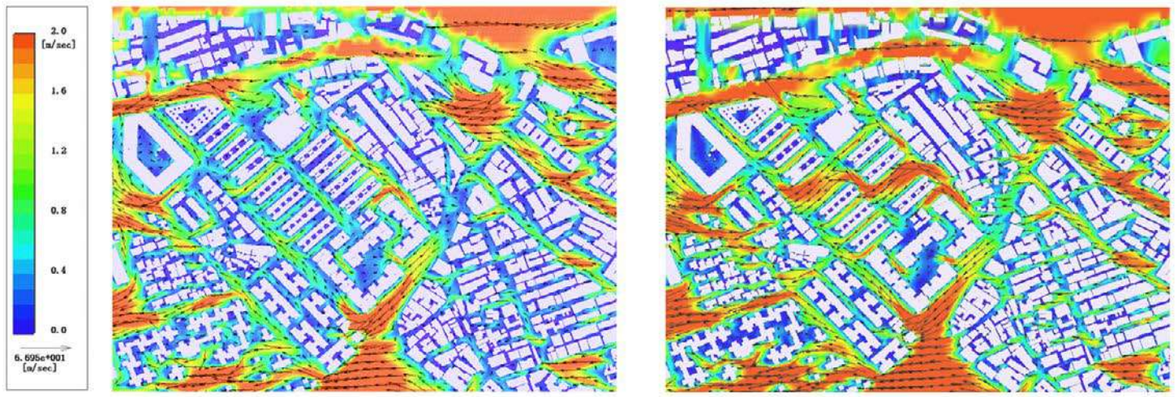
Date: Feb. 2017
Location: Minhang District, Shanghai, China
Property: Team Work (2)

This project is a concept design of a commercial cluster for Zizhu High-Tech Indust-rial Park. It won the second-place in the student competition of Shanghai.

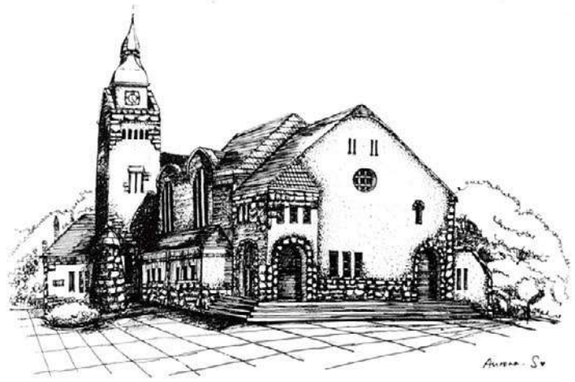


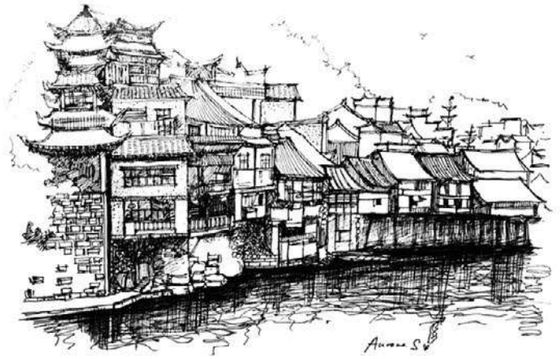
URBAN SPATIAL ANALYSIS

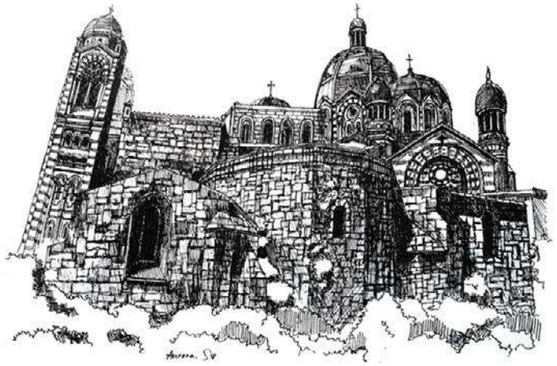
VENTILATION ANALYSIS OF WANHUA DISTRICT IN TAIPEI CITY, TAIWAN



ART WORKS







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