DRAFT

LAND USE DIVERSITY

NYC Department of City Planning Transportation Division

February 2022

NYC PLANNING

Data Source

- **MapPLUTO**
  - BBL
  - Census Tract 2020
  - Shape Area
  - Residential Area
  - Office Area
  - Retail Area
  - Garage Area
  - Storage Area
  - Factory Area
  - Other Area

} Total Building Area

Filter

- Total Building Area != 0
- Total Building Area / Shape Area <= 40

Built FAR

Max allowed FAR

Census Block Land Use Diversity Index

$$LUDI_{BK} = -(\sum_{i=1}^{n} P_i \times \ln(P_i)) \div \ln(n)$$

Where,

$LUDI_{BK}$ = the Census Block level Land Use Diversity Index with a range between 0 and 1; 0 represents homogeneous land use, and 1 indicates the building area is equally distributed across all land use types

P_i = the proportion of total building area for the i^{th} land use category found within half-mile walkshed of the Census Block being analyzed

n = the number of land use categories of interest

Source: https://www.jtlu.org/index.php/jtlu/article/view/1132/1106

Census Tract Land Use Diversity Index

$$LUDI_{CT} = (\sum_{i=1}^{n} LUDI_{BK}^{i} \times BA_{BK}^{i}) \div \sum_{i=1}^{n} BA_{BK}^{i}$$

Where,

$LUDI_{CT}$ = the Census Tract level Land Use Diversity Index with a range between 0 and 1; 0 represents homogeneous land use, and 1 indicates the building area is equally distributed across all land use types

$LUDI_{BK}^{i}$ = the Census Block level Land Use Diversity Index of Census Block i

BA_{BK}^{i} = the total building area within half-mile walkshed of the Census Block i

NTA Land Use Diversity Index

$$LUDI_{NTA} = (\sum_{i=1}^{n} LUDI_{BK}^{i} \times BA_{BK}^{i}) \div \sum_{i=1}^{n} BA_{BK}^{i}$$

Where,

$LUDI_{NTA}$ = the Neighborhood Tabulation (NTA) level Land Use Diversity Index with a range between 0 and 1; 0 represents homogeneous land use, and 1 indicates the building area is equally distributed across all land use types

$LUDI_{BK}^{i}$ = the Census Block level Land Use Diversity Index of Census Block i

BA_{BK}^{i} = the total building area within half-mile walkshed of the Census Block i

Cat3 LUDI Land Use Grouping and Expansion Factor

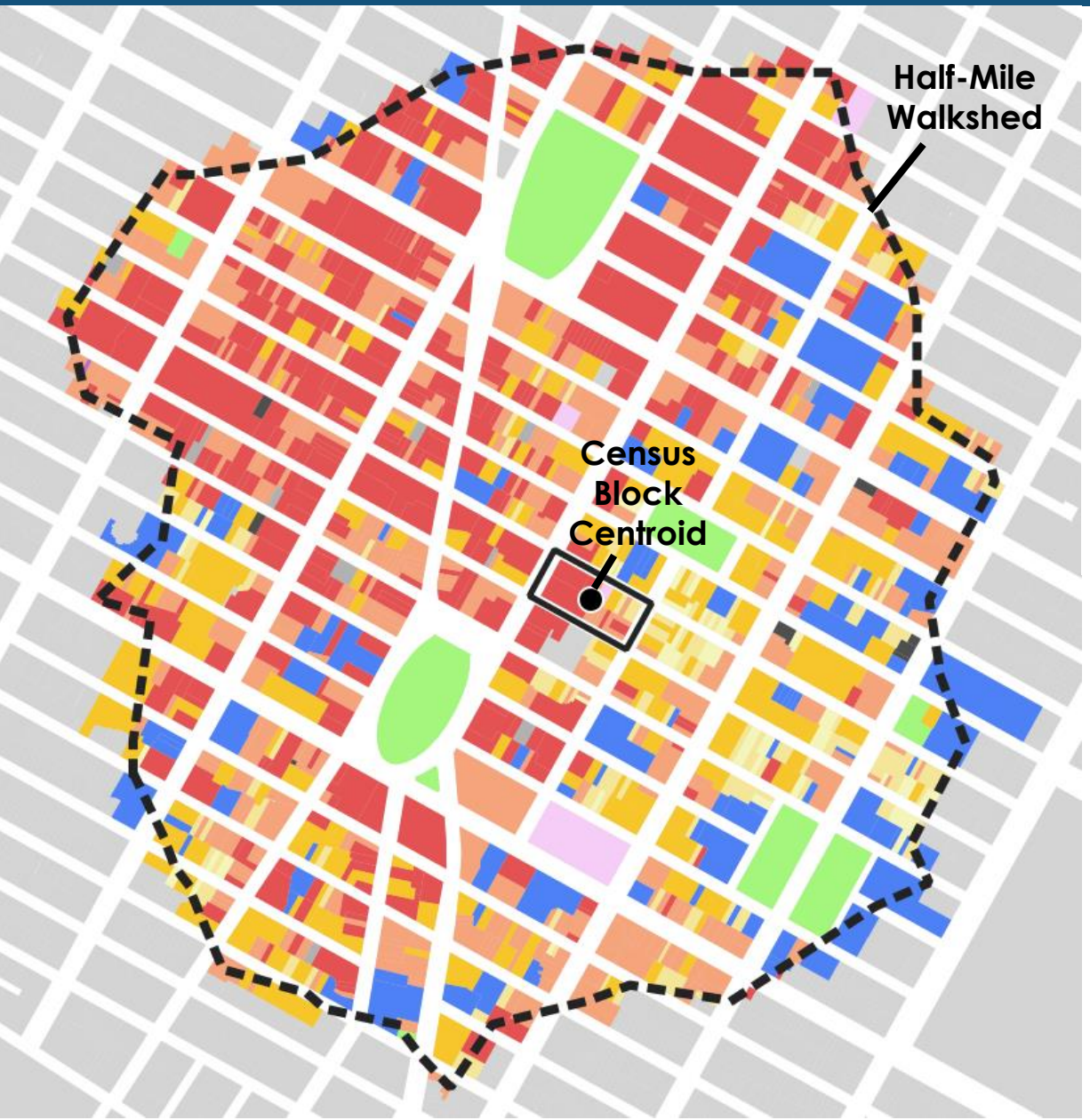
Cat5 LUDI Land Use Grouping and Expansion Factor

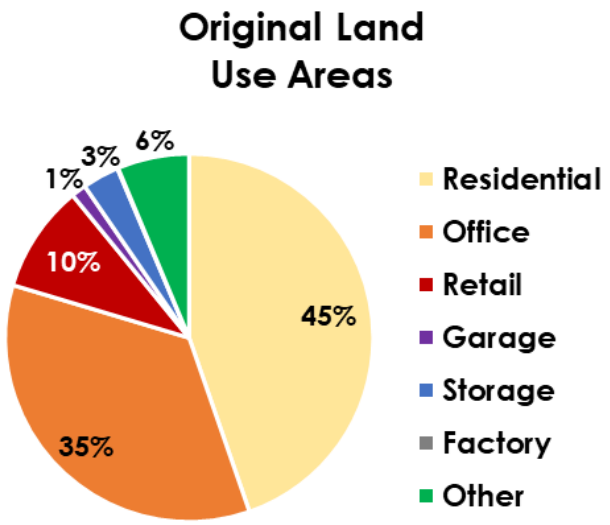
Residential Area	—	Residential Area × 1
Office Area	—	Office Area × 1
Retail Area	—	Retail Area × 1
Garage Area Storage Area Factory Area	>	Industrial Area × 1
Other Area	—	Other Area × 1

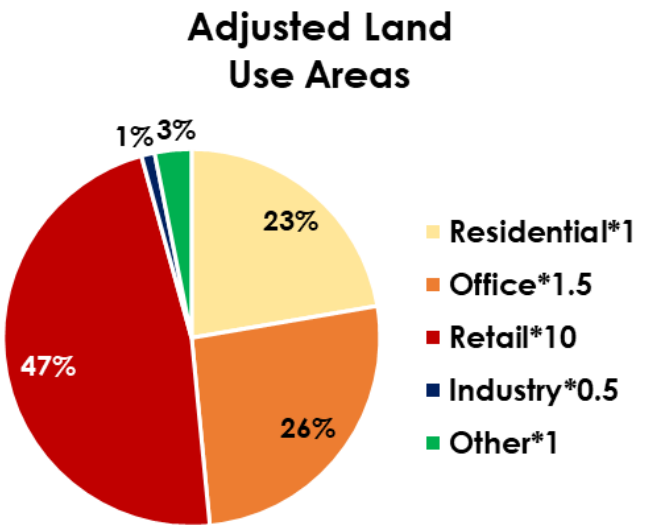
Cat5 Adjusted LUDI Land Use Grouping and Expansion Factor

Residential Area	—	Residential Area × 1
Office Area	—	Office Area × 1.5
Retail Area	—	Retail Area × 10
Garage Area Storage Area Factory Area	>	Industrial Area × 0.5
Other Area	—	Other Area × 1

Example







$$
\begin{aligned}
&LUDI_{BK} \\
&= -\left(P_{Res} \times \ln(P_{Res}) + P_{Off} \times \ln\left(P_{Off}\right) + P_{Ret} \times \ln(P_{Ret})\right. \\
&\left. + P_{Ind} \times \ln(P_{Ind}) + P_{Oth} \times \ln(P_{Oth})\right) \div \ln(5) \\
&= -(23\% \times \ln(23\%) + 26\% \times \ln(26\%) + 47\% \times \ln(47\%) \\
&+ 1\% \times \ln(1\%) + 3\% \times \ln(3\%)) \div \ln(5) \\
&= 0.75
\end{aligned}
$$