

# LAND USE DIVERSITY

NYC Department of City Planning Transportation Division

December 2021



- **MapPLUTO**

- BBL
- Census Tract 2010
- Shape Area
- Residential Area
- Office Area
- Retail Area
- Garage Area
- Storage Area
- Factory Area
- Other Area

Total Building Area

- ↑  
Max allowed FAR



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

Where,

$LUDI_{BK}$  = the Census Block level Land Use Diversity Index with a range between 0 and 1; 0 represents homogenous 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



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

Where,

$LUDI_{CT}$  = the Census Tract level Land Use Diversity Index with a range between 0 and 1; 0 represents homogenous 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  $i$



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

Where,

$LUDI_{NTA}$  = the Neighborhood Tabulation (NTA) level Land Use Diversity Index with a range between 0 and 1; 0 represents homogenous 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  $i$



Residential Area — Residential Area × 1

Office Area  
Retail Area > Office & Retail Area × 1

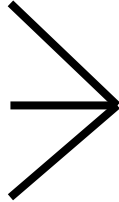
Garage Area  
Storage Area  
Factory Area  
Other Area > Other Area × 1



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





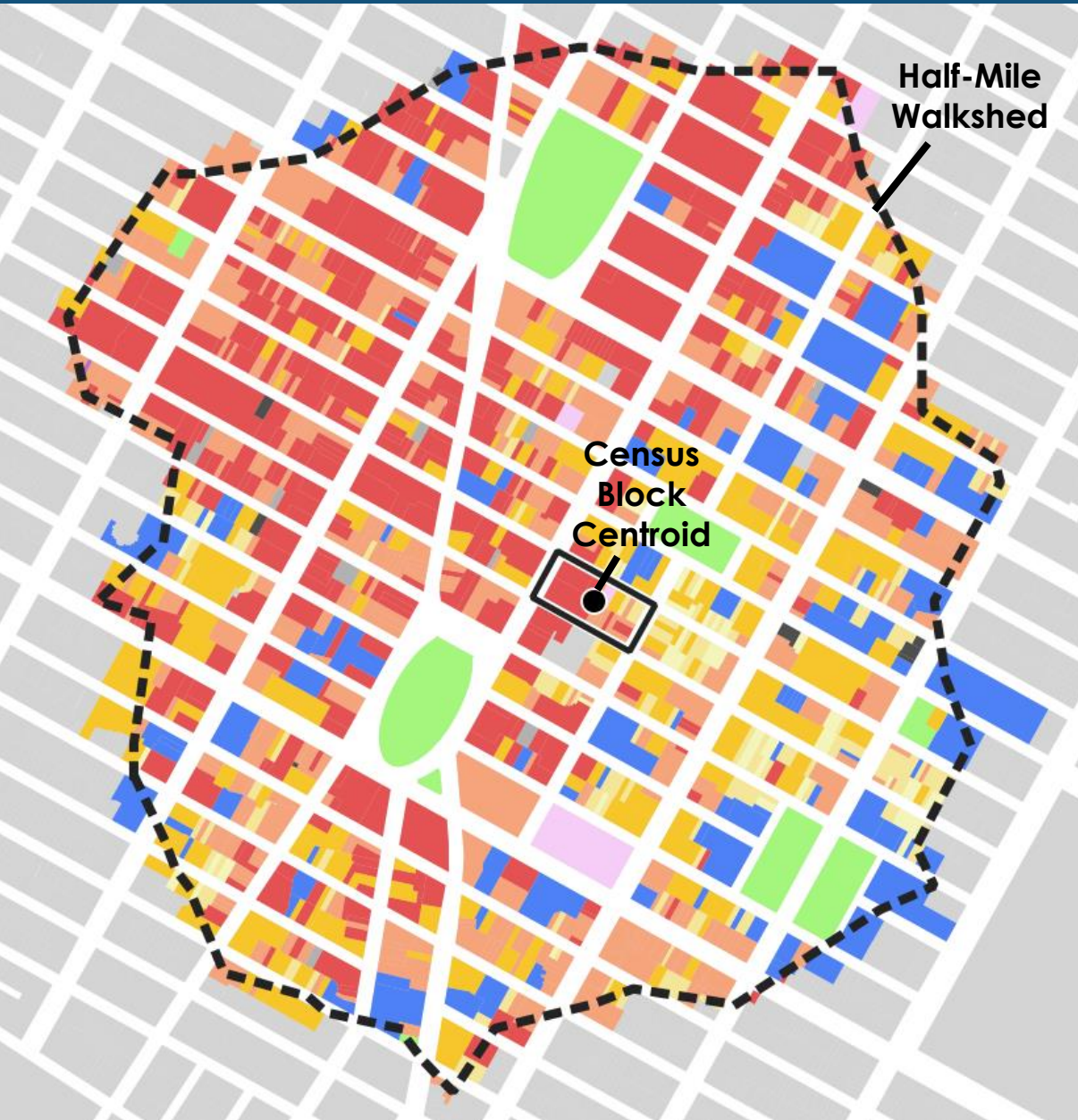
Residential Area — Residential Area  $\times 1$

Office Area — Office Area  $\times 1.5$

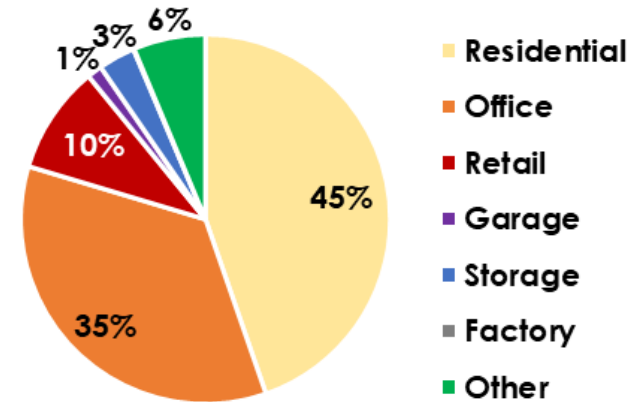
Retail Area — Retail Area  $\times 10$

Garage Area  
Storage Area  
Factory Area  $\Rightarrow$  Industrial Area  $\times 0.5$

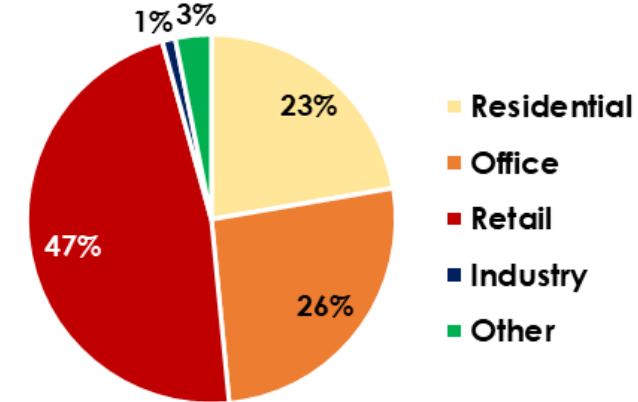
Other Area — Other Area  $\times 1$



Original Land Use Areas



Adjusted Land Use Areas



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