Puerto Ricans in the Bronx, NY:

Sociocontextual influences on asthma - building and neighborhood type

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Session 3111.0:
Strategies to Reduce Asthma Disparities

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Conflict of Interest

None

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Today

- Overall Context
- NIEHS Study Methods
- Variables and Data Collection of Building and Proximal Neighborhood Characteristics
- Preliminary Findings

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Overall Context

- In 2001, ~20.3 million Americans had asthma (6.3 million children)
  (American Lung Association, 2003)
- Puerto Ricans (PRs) and Asthma:
  Highest asthma rate of any group in the U.S.
  - 1994 Bronx study (children): PRs: **18%**; Black non-Hispanic: 12%; and White non-Hispanic: 8% (Crain, 1994)
  - Puerto Rican children highest lifetime asthma prevalence: **26%**, non-Hispanic Black children: 16%, and non-Hispanic White children: 13% (Lara, 2006)
- Burden of disease not random
  - differentially experienced by age, race/ethnicity, culture, geography

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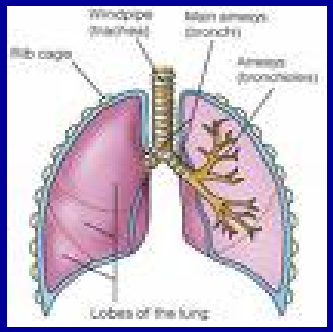
NIEHS Methodology



- NIEHS Puerto Rican Asthma Study (2003): sociocultural
- Original Sample: ~275 mothers recruited at NYC hospitals (postnatal)
  - newborns of Puerto Rican ethnicity (mothers do not have to be)
  - living in NYC at time of recruitment
  - mother has inhalant allergy
- Baseline data collected in 2003: survey follow-up every 6 months (address check every 3 months); blood sample at age 2 and 4
- Dust samples collected every 6 months; each time a participant travels to Puerto Rico, survey team collects samples from Puerto Rico

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Overall Study Aims

Aim 1: examine relationship between building and proximal neighborhood characteristics, and respiratory illness and allergy of child at age 1 and 2

Aim 2: examine whether some building and proximal neighborhood characteristics have more explanatory power in relation to respiratory illness and allergy compared to others

Aim 3: create a typology of buildings and neighborhoods in relationship to particular respiratory illness and allergy characteristics of children at ages 1 and 2

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Specific Background

- Puerto Ricans and asthma
- Previous studies: factors proximally close and physical to individuals
- Building characteristics related to respiratory illness and allergy
  (most work done outside U.S.: Canada, Brazil, Sweden)
- Most measures collected for studies (pest exposures, building dampness), not information already available (building age, zoning/use, % open space, % tree canopy)

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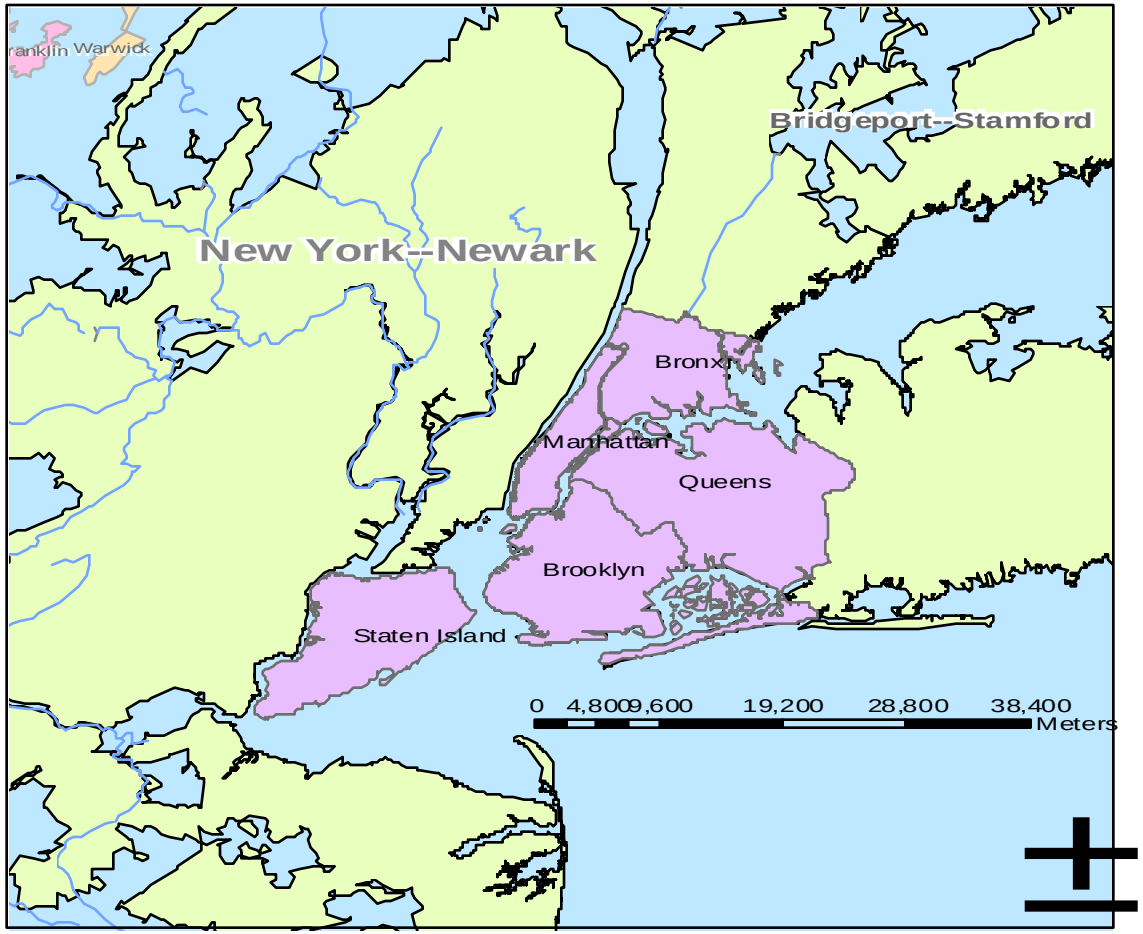

Projection: NAD83 UTM Zone 18N

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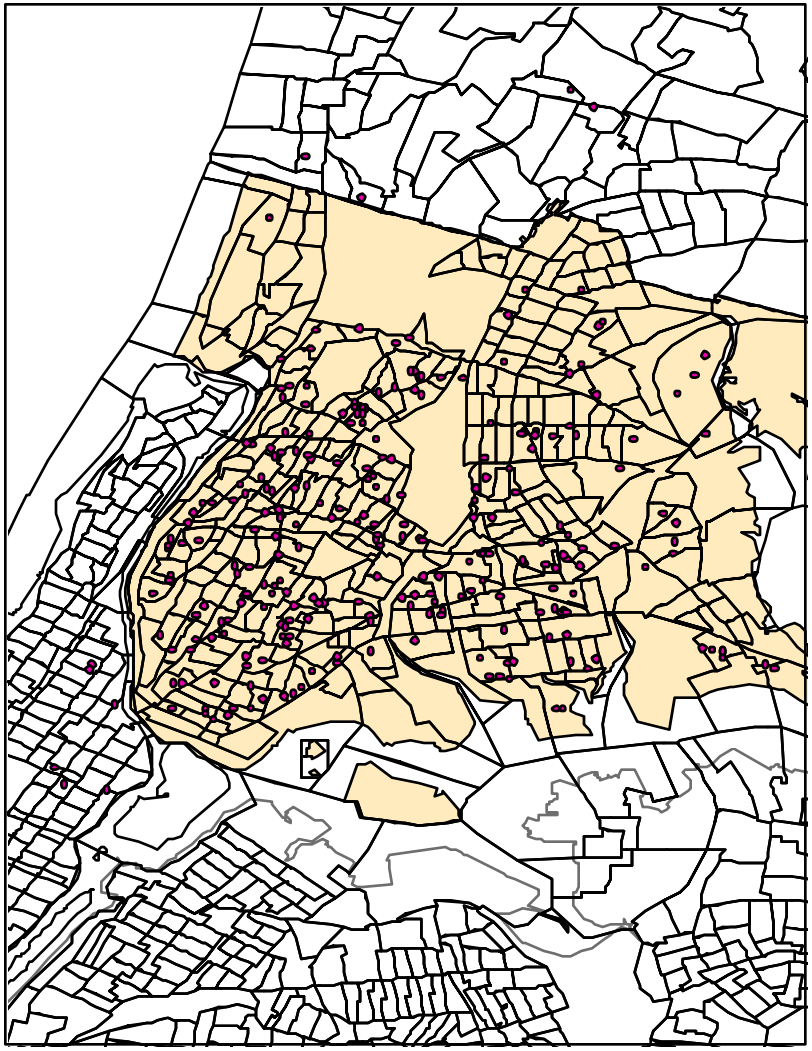

NIEHS PR Study Households at Baseline

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Building and Proximal Neighborhood Characteristics
(collected every 6 months for 2 years)

Exposures:

a) Public housing
b) Commercial/Residential housing
c) Roaches/Rodents
d) % Community District Open Space
e) # Gardens in Community District
f) Community District Open Space per 1000 people
g) Community District Asthma Hospitalization per 1000 kids
h) % People of Color in Community District
i) Building Age
j) Department of Building Violations
k) Environmental Control Board Violations
l) Total Violations
m) Distance to Major Road
n) Congestion (within 100, 200, 300, 400, & 500 meters)

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Respiratory Illness and Allergy Outcomes (Year 1 and 2)

In past 6 months:

a) Child has been sick or had health problems/symptoms
   - Respiratory system was affected

b) Saw doctor for respiratory infection/wheezing/breathing problem (RI/W/BP)

c) Was prescribed medication in past 6 months for RI/W/BP

d) Been to the ER because of RI/W/BP

e) Hospitalized because of RI/W/BP

f) Provider said child has asthma

g) Provider said child has allergies

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Data Collection

- PR Asthma Study (NIEHS)
  - Addresses
  - Roaches/Rodents
  - Outcomes
- OASIS
  - Public housing, Building Age, % Tree Canopy in District, etc.
- GIS
  - Geocoding
  - NYMTC (congestion, distance to major road)

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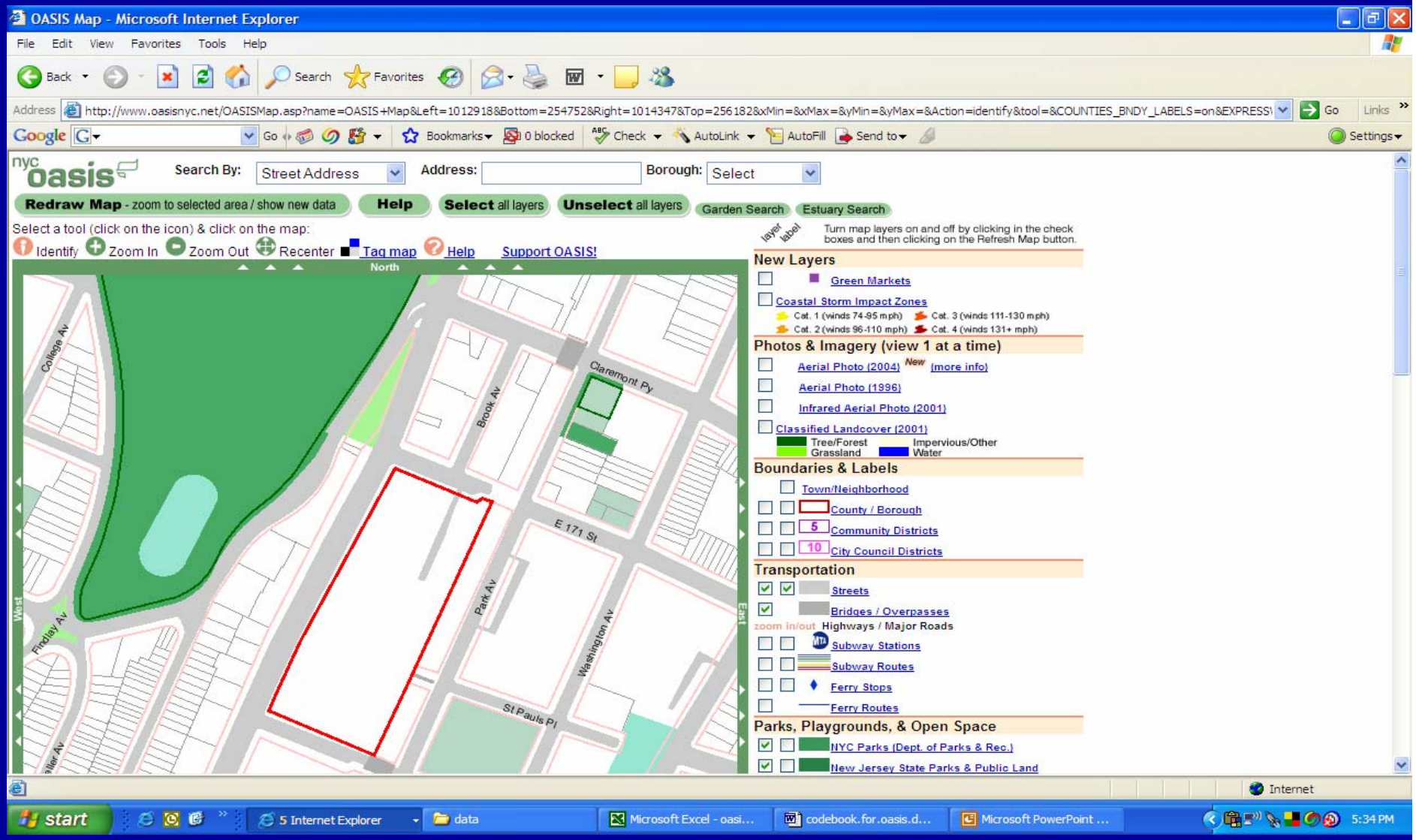

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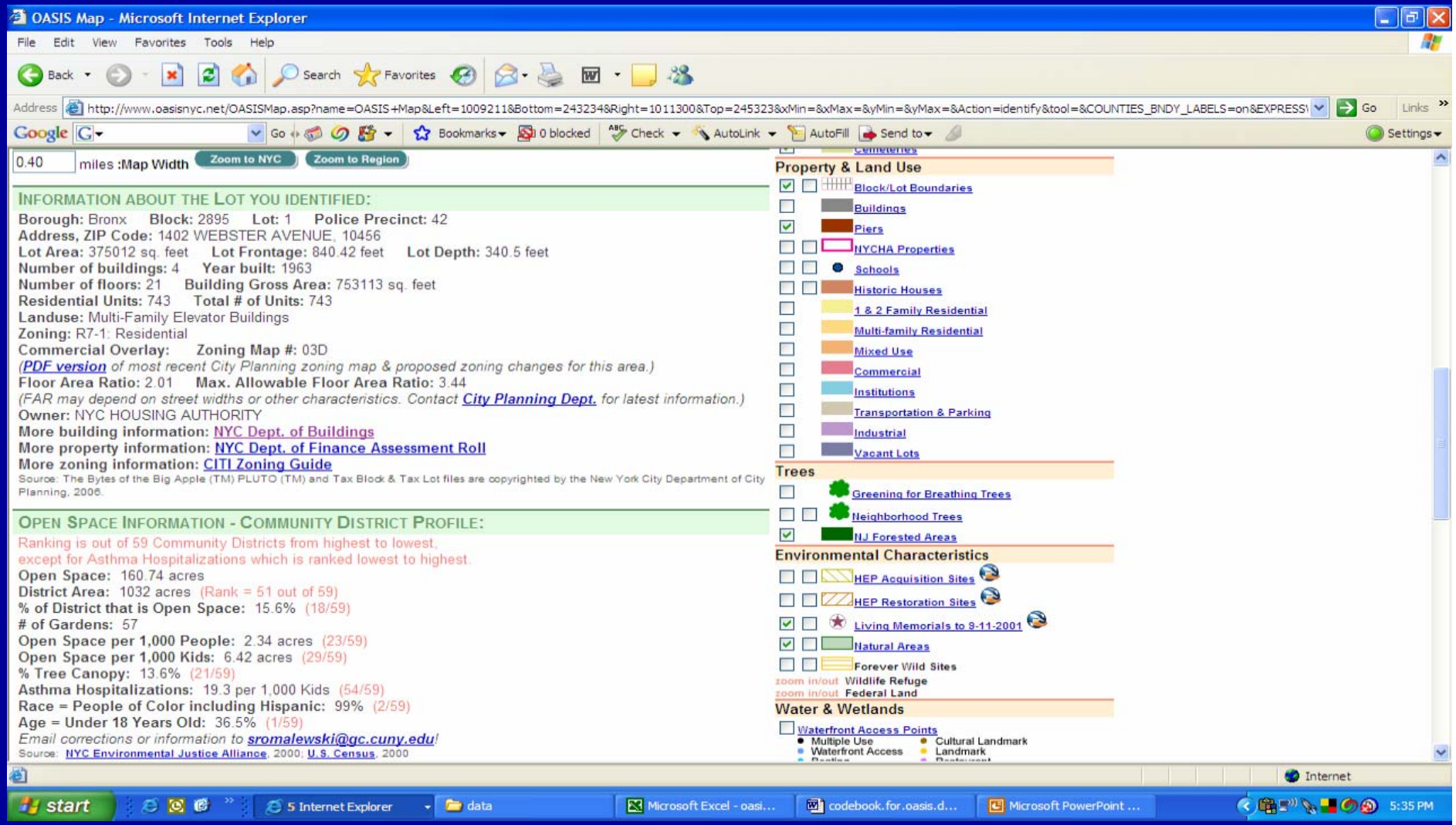

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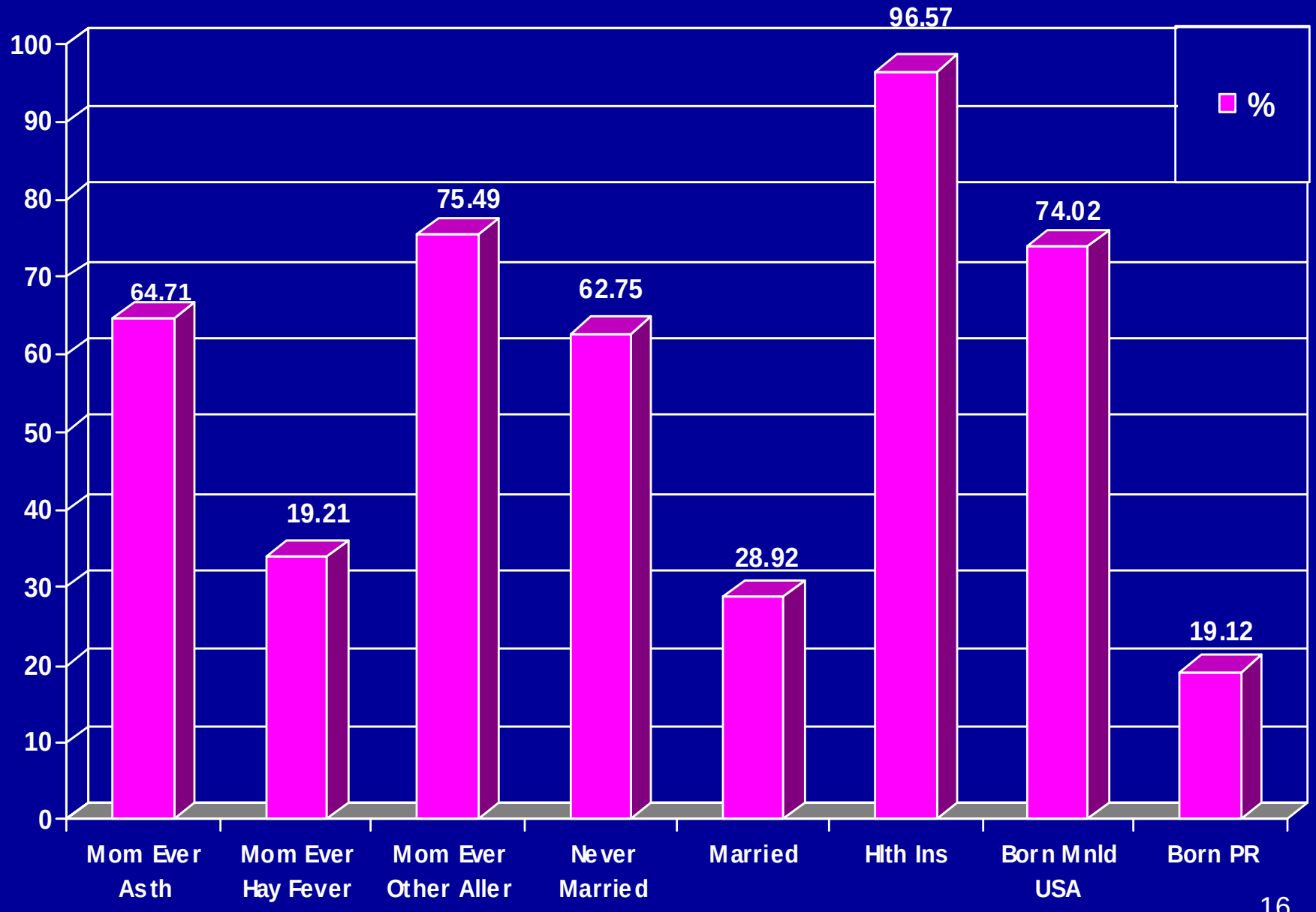
Demographics – Moms at Baseline (N=261)



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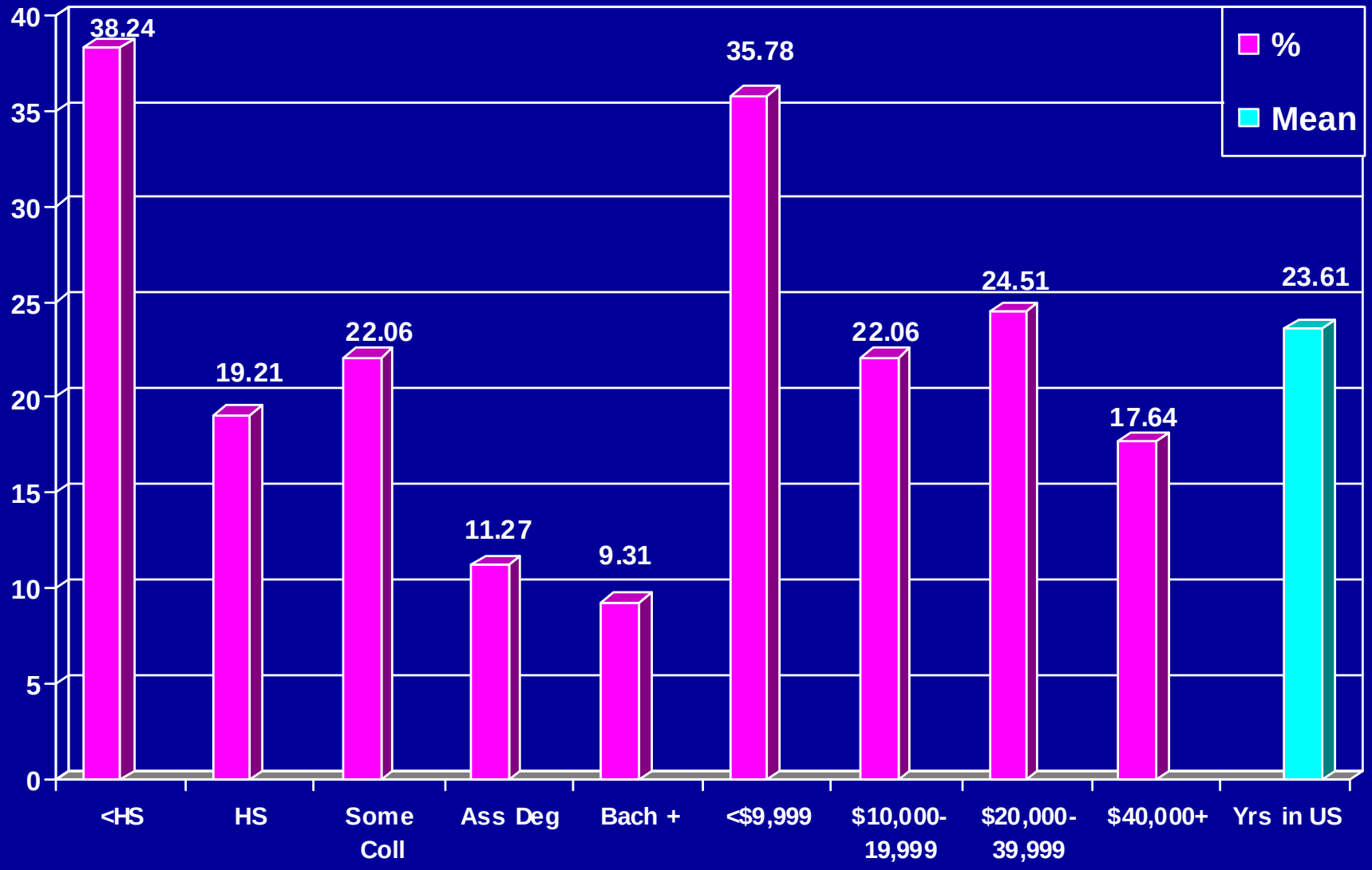
Demographics – Moms at Baseline (N=261)



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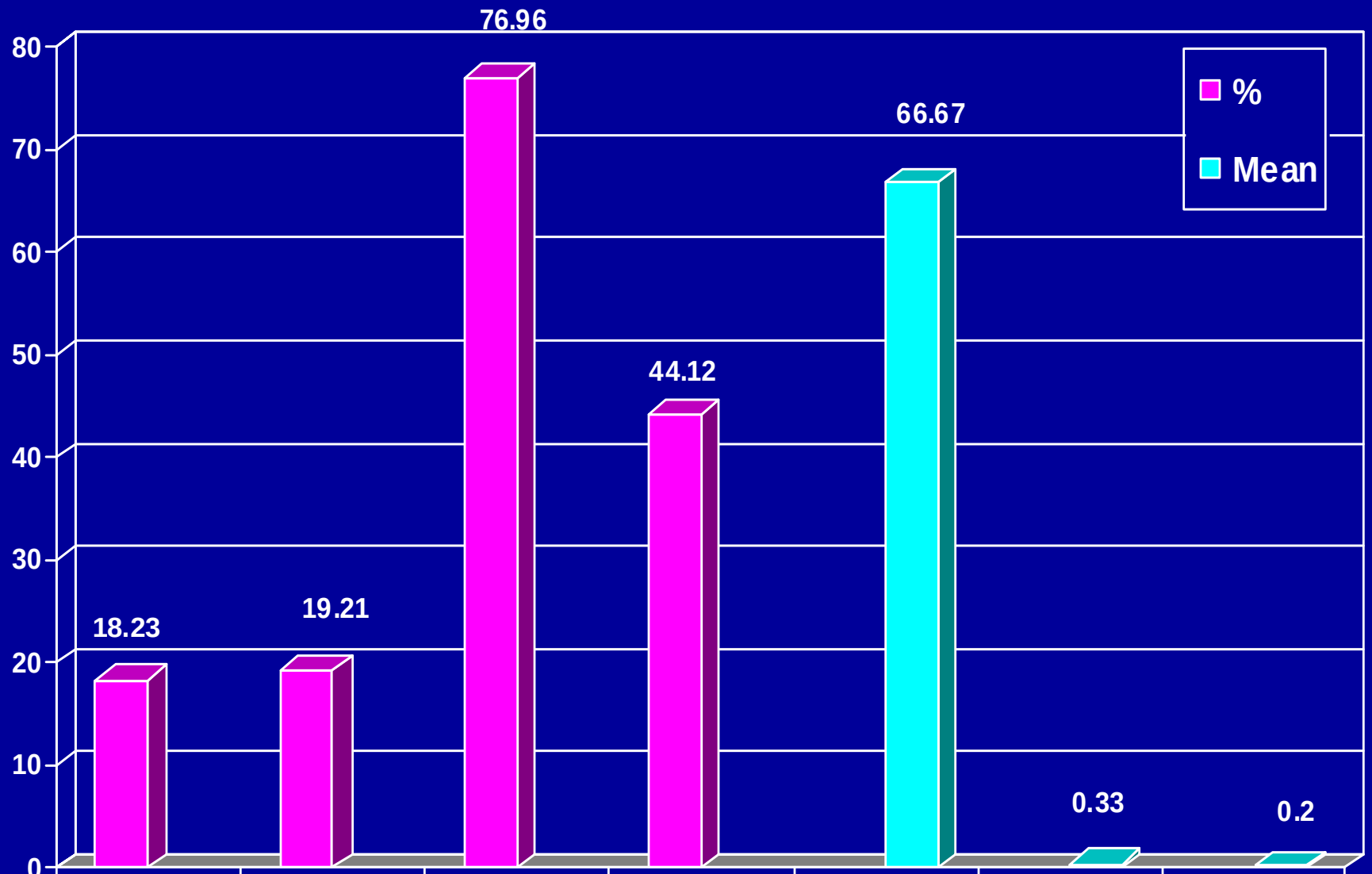
Building Characteristics (weighted) at Year 1

(N=204)



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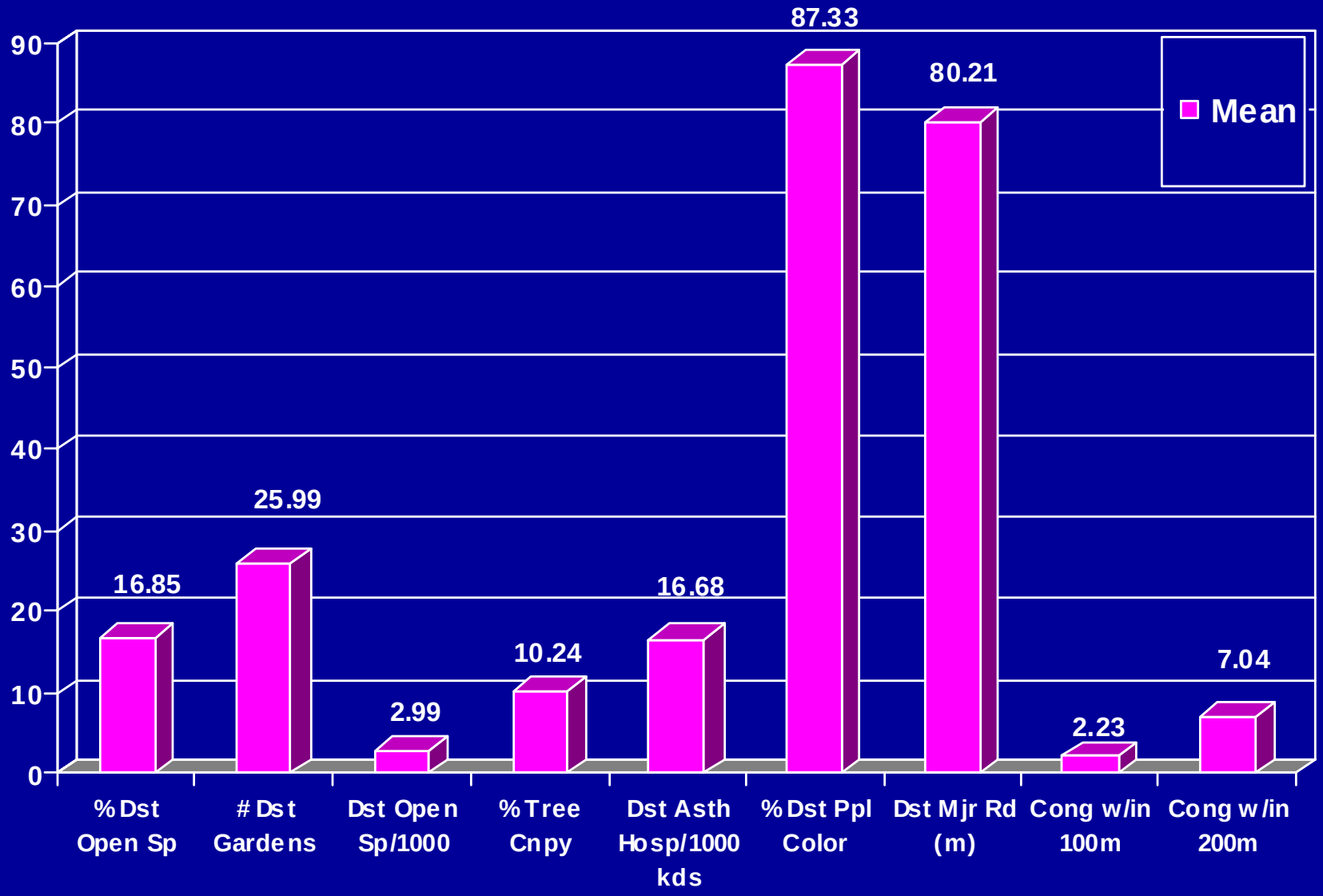
Proximal Neighborhood Characteristics (weighted) at Year 1 (N=204)



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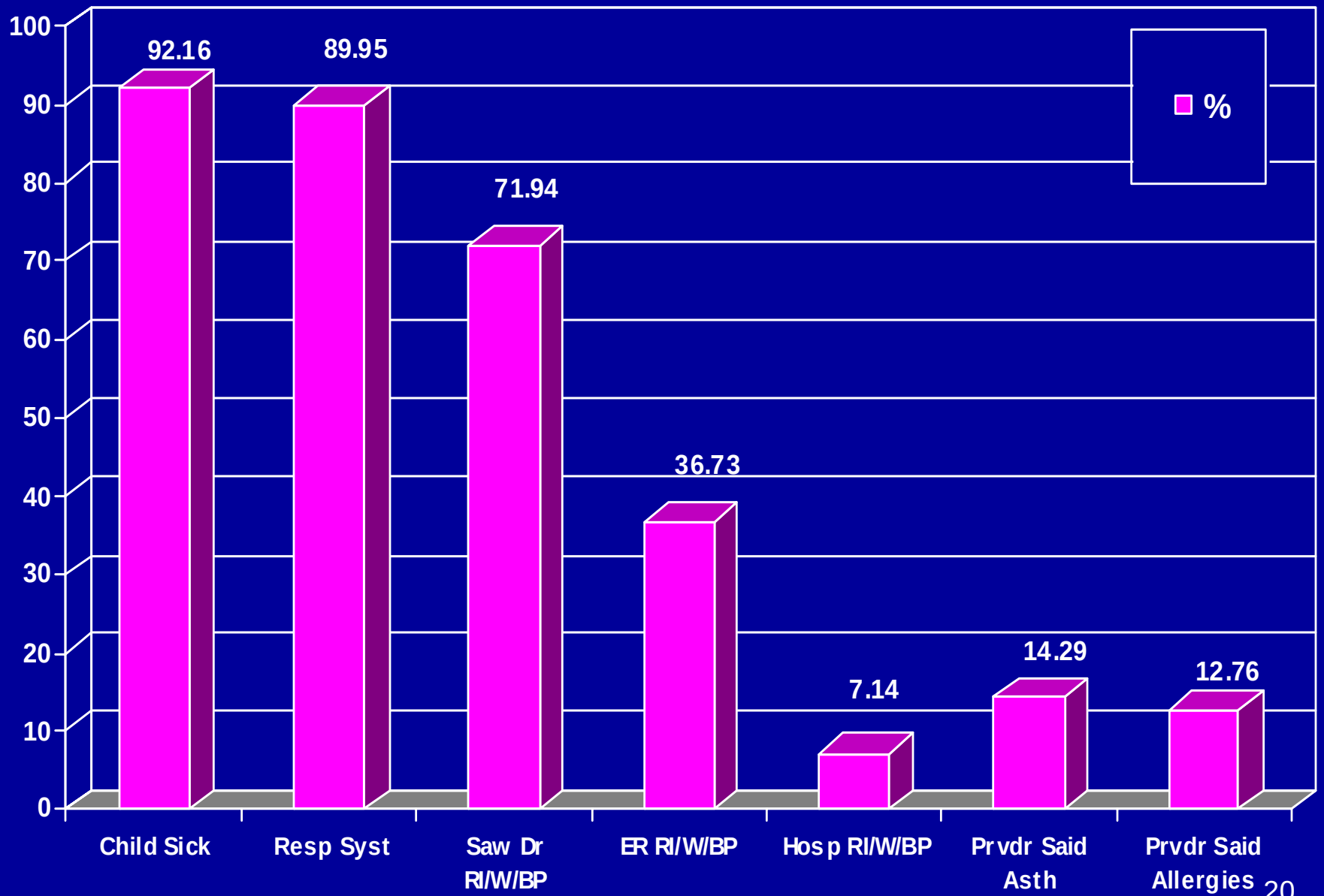
Outcomes at Year 1 (N=204)



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Implications

- Design of programs and policies
  - fines (landlords, developers)
  - tolls (traffic)
  - urban planning
  - licensing/continuing education for planners, architects, public health professionals
- Further research
  - uniform data collection across levels
  - more detailed/precise data collection of current and new
  - use of building characteristics definition
  - use of typologies
  - data collection for study involving multilevel modeling

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Acknowledgements

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Thank you!

Questions?

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