

EXPLORING OCCUPATIONAL SEGREGATION

*Discovering Trends in the Allocation
of Labor within the New York City
Government Workforce*

EEPC Research Unit

- Primary functions
 - Manage data and develop analytics tools
 - Explore data trends
 - Communicate results
 - Provide data-driven recommendations

Current Research

- Occupational segregation (OS) is an issue of equal employment opportunity
- Objectives:
 - Inform agencies of OS using City of New York workforce statistics
 - Encourage discussions about succession planning, risk management, and recruitment practices
 - Identify potential risks by posing strategic **research questions** formulated with consideration for EEPC auditing standards

Methodology

- Data sources
 - Citywide Equal Employment Database System (CEEDS) reports by agency
 - Workforce composition, Personnel actions, Utilization, Civil service status
 - CEEDS excludes DOE, NYCHHC, and SCA data, not included in analyses
 - NYCERS
 - Title specifications
 - Court decisions
 - DCAS Workforce Profile Report
 - American Community Survey Public Use Microdata Sample (PUMS)
- Analyses
 - Workforce headcount analysis
 - Dissimilarity Index

Dissimilarity Index (DI)

- Measures distribution of two groups (e.g., men/women, White/Hispanic) across a defined set of categories (e.g., titles, job groups)
- Sum of all title/job group imbalances in a workforce
- Compares proportion of each group (as a dyad) within the same job title/group
- Ranges from zero (perfect integration) to 1.0 (total segregation) or 0% to 100%
- A higher number means more employees would have to acquire different occupations from the ones they hold now to reach employment parity

Dissimilarity Index

- 60-person organization
- 40 men and 20 women (gender dyad)
- Two jobs: painter and carpenter

- 16 women and 8 men were carpenters
 - 80% (.80) of all women were carpenters
 - 20% (.20) of all men were carpenters

- 4 women and 32 men were painters
 - 20% (.20) of all women were painters
 - 80% (.80) of all men were painters

$$\frac{1}{2} \sum_{i=1}^N \left| \frac{m_i}{M} - \frac{f_i}{F} \right| =$$

Calculation

$$(|.20 - .80| + |.80 - .20|) / 2 =$$

$$(.60 + .60) / 2 =$$

$$1.20 / 2 =$$

$$\underline{.60, \text{ or } 60\%}$$

Results

DI = 0.60 or 60% → *Moderate-high occupational segregation*

Citywide DI 2018

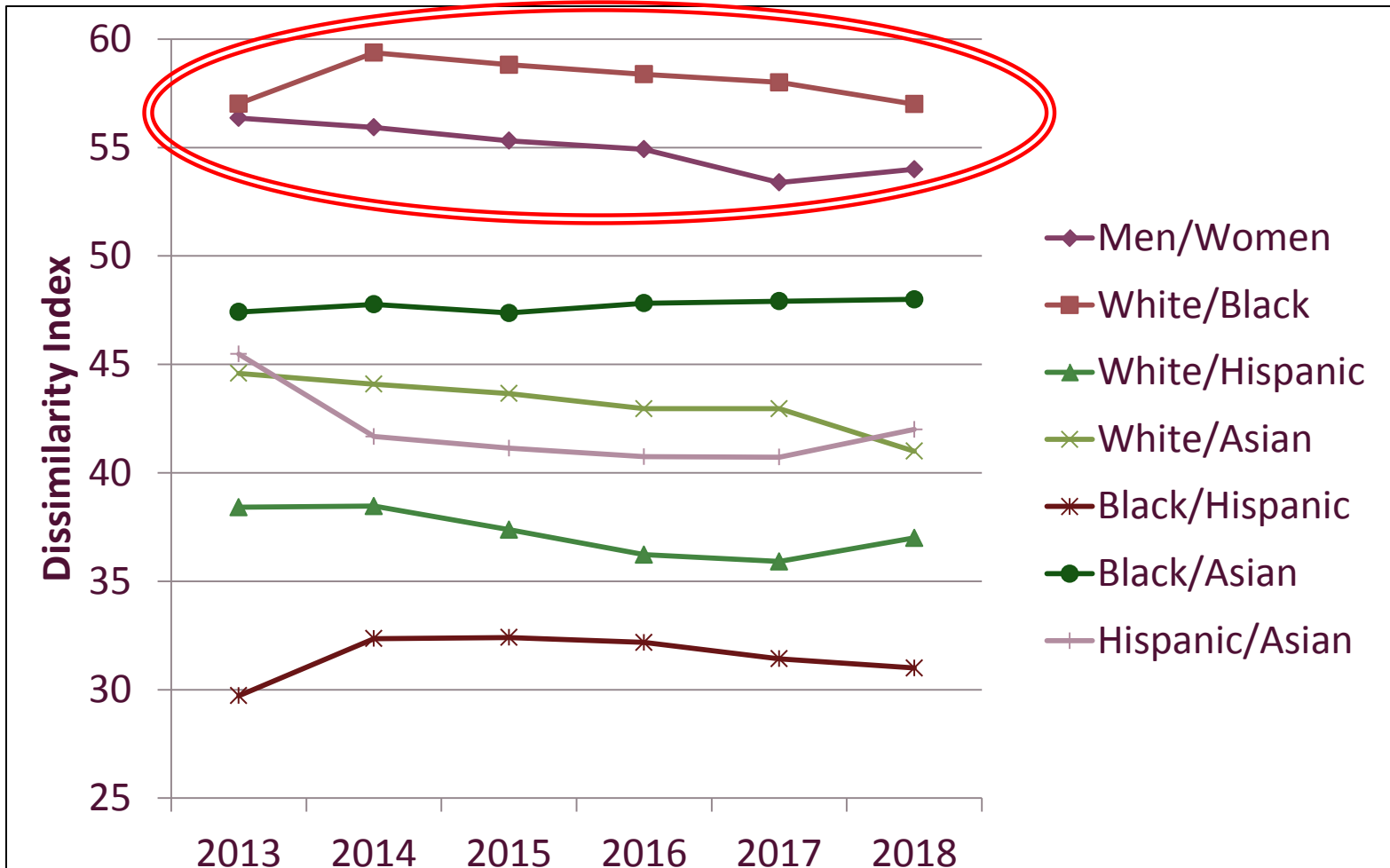
Demographic Category	Comparison Dyad	Title	Job Group
Gender	Male/Female	54%	45%
Race	White/Black	57%	39%
Race	White/Hispanic	37%	31%
Race	White/Asian	41%	26%
Race	Black/Hispanic	31%	20%
Race	Black/Asian	48%	31%
Race	Hispanic/Asian	42%	28%

- Approximately 1500 titles and 29 job groups*

*Titles assigned to job groups by DCAS, published in 2016 Workforce Profile Report

Title DI Trends

- Fiscal year 2013-2018



Top Contributors to DI

- Top three titles and job groups contributing to the overall DI*

Job Titles							
	Gender Dyad	Race/Ethnicity Dyads					
Rank	Men/Women	White/Black	White/Hispanic	White/Asian	Black/Hispanic	Black/Asian	Hispanic/Asian
1	Principal Admin Assoc.	School Safety Agent	Community Assoc.	Computer Specialist	Principal Admin. Assoc.	Caretaker (NYCHA)	Computer Specialist
2	Clerical Assoc.	Clerical Assoc.	School Safety Agent	Computer Systems Mgr.	Community Assoc.	Computer Specialist	Computer Systems Mgr.
3	Community Associate	Caretaker	Caretaker	School Safety Agent	School Safety Agent	Computer Systems Mgr.	Community Assoc.

Job Groups							
	Gender Dyad	Race/Ethnicity Dyads					
Rank	Men/Women	White/Black	White/Hispanic	White/Asian	Black/Hispanic	Black/Asian	Hispanic/Asian
1	Social Worker	Social Workers	Paraprofessionals	Science Professionals	Social Workers	Science Professionals	Science Professionals
2	Craft	Clerical	Managers	Management Specialists	Clerical	Social Workers	Management Specialists
3	Clerical	Management Specialists	Personal Services	Craft	Management Specialists	Public Relations	Managers

* Uniformed services excluded for methodological reasons

Research Questions

- Based on trends uncovered in data exploration
- Four primary topics
 - Uniformed Service titles
 - Civil service hiring practices
 - Physically taxing jobs
 - Race and ethnicity most affected

Research Question 1

- Are “Uniformed Services” titles a source of citywide occupational segregation?

Comparison Dyad	DI Including Uniformed Services	DI Civilian Only	Change
Male/Female	54	49	-5
White/Black	57	55	-2
White/Hispanic	37	45	+8
White/Asian	41	39	-2

Comparison Dyad	DI Including Uniformed Services	DI Civilian Only	Change
Black/Hispanic	31	24	-5
Black/Asian	48	49	+1
Hispanic/Asian	42	47	+5

- Removed “Uniformed Services” titles (e.g., Sanitation Worker, Police Officer, Corrections Officer, Firefighter, etc.)
- **Red** indicates decrease in OS
- Uniformed services contributes, but effect is varied

Research Question 2

- Are there trends indicating a change in citywide occupational segregation due to differences in civil service hiring practices?

Title	Job Group	Percent Majority	Majority	Men (%)	Women (%)	Total Employees FY2018 Q4	Class
BATTALION CHIEF	Fire Supervisor	97.8	White	100.0	0.0	357	Competitive
CAPTAIN (FIRE)	Fire Supervisor	96.0	White	99.8	0.2	547	Competitive
LIEUTENANT (FIRE)	Fire Supervisor	89.9	White	99.6	0.4	1529	Competitive
CARPENTER	Craft	86.0	White	99.1	0.9	449	Competitive
PLUMBER	Craft	79.8	White	99.4	0.6	332	Competitive
CHILD PROTECTIVE SPEC SUPERVISOR	Social Worker	78.3	Black	18.7	81.3	525	Competitive
CHILD WELFARE SPECIALIST	Social Worker	78.1	Black	28.9	71.1	201	Competitive
GENERAL SUPERINTENDENT (SANITATION)	Managers	77.6	White	95.3	4.7	255	Competitive
FIREFIGHTER	Firefighters	74.3	White	99.0	1.0	8490	Competitive
CITY SEASONAL AIDE	Laborers	74.0	Black	49.3	50.7	1288	Non-competitive
CAPTAIN (CORRECTION)	Police Supervisors	72.7	Black	40.0	60.0	847	Competitive
DIRECTOR OF FIELD OPERATIONS (CPS)	Managers	72.4	Black	17.1	82.9	246	Non-competitive
POLICE COMM. TECHNICIAN	Clerical	71.8	Black	14.0	86.0	1227	Competitive
ASSISTANT CORPORATION COUNSEL	Lawyers	71.1	White	41.8	58.2	830	Exempt
PROBATION OFFICER	Social Worker	71.0	Black	31.6	68.4	586	Competitive
ENVIRONMENTAL POLICE OFFICER	Police & Detective	70.7	White	88.5	11.5	208	Competitive

- 20% of all employees are in non-competitive titles
- Only 2 of 16 most imbalanced titles

Research Question 3

- Do physically taxing jobs contribute to occupational segregation?

Title	Job Group	Total Employees	% Male	Approximate Wages	Approximate Annual Wages*
Sewage Treatment Worker	Craft	624	99.8%	\$42/hour	\$76,440
Electrician	Craft	436	99.7%	\$58/hour	\$105,560
Oiler	Craft	194	99.4%	\$57/hour	\$103,740
Construction Laborer	Laborers	306	99.9%	\$35/hour	\$67,340
Plumber	Craft	332	99.4%	\$51/hour	\$92,820
<i>Largest Physically Taxing Title</i>					
Caretaker	Building Services	3138	55.4%	\$43,079/year	\$43,079

- Top 5 gender-skewed “Physically Taxing” titles¹
- Median full-time annual base salary is \$68,277²

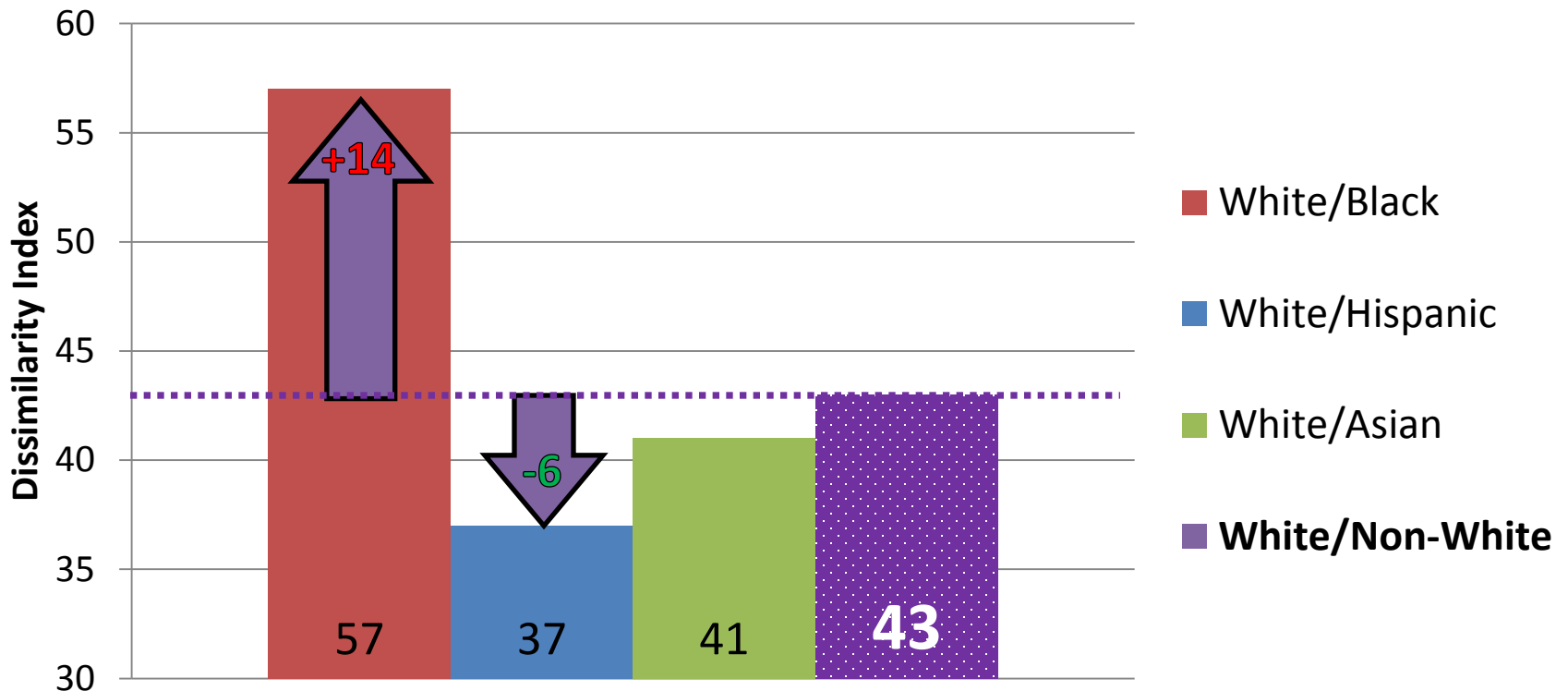
*Based on a 35 hour work week

¹From NYCERS Physically Taxing Titles Fact Sheet

²2016 Workforce Profile Report published by the Department of Citywide Administrative Services

Research Question 4

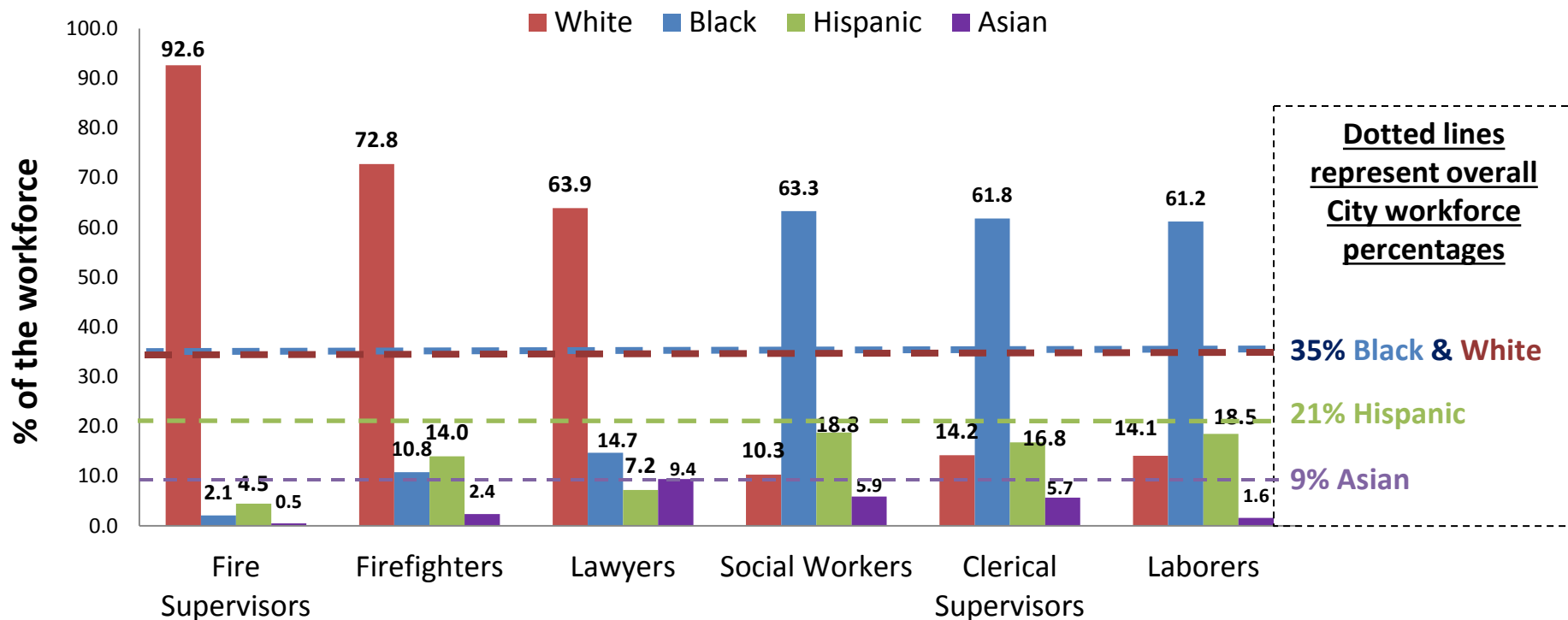
- Does occupational segregation affect all races and ethnicities equally?



- New dyad created: White/Non-white
- Indicates unique nature of White/Black occupational segregation

Research Question 4 cont'd

- Does occupational segregation affect all races and ethnicities equally?



- Six job groups with the greatest imbalances between Whites, Blacks, and non-Whites
- The White/Black occupational segregation is more pronounced than White/Hispanic and White/Asian segregation

Next Steps

- Gather data
 - CEEDS reports, applicant tracking, onboarding and exit surveys
- Calculate agency dissimilarity index and identify imbalances
- Conduct barrier analysis for all underutilized and overutilized job groups
- Consider cross-training, succession planning, transference of KSAs

Thank you