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Sample Representativeness Analysis for Frontline Education: Clients Using Professional
Growth vs. National District Norms

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Sample Representativeness Analysis: Professional Growth Clients vs. National District Norms

This report descriptively analyzes the comparability of public school districts who use Frontline Education's Professional Growth (PG) solutions with the population of public school districts in the U.S. To determine the degree to which the PG client subsample was representative of school districts nationally, the Center for Research and Reform in Education (CRRE) at Johns Hopkins University compared district demographics using 2015-16 data from the National Center for Educational Statistics (NCES).[1] The population consisted of 13,128 public school districts, and the PG subsample of 1,147 public school districts, approximately 9% of the former.[2] Comparisons between the PG district sample and the public school district population were made on the following available demographic variables:

- Geographic region
- Urbanicity
- District size in terms of number of employees
- Low-income student population
- Special education student population
- Student population who have limited English proficiency
- Student population by race/ethnicity

The following section outlines the results from the descriptive analysis.

Results

Geographic Region

This analysis examined differences in the PG district subsample and population by geographic region in the U.S. The descriptive analysis showed both geographic regional differences and similarities between the PG district subsample and population. The descriptive analysis showed that districts located in the Northeast are overrepresented in the PG subsample compared with the population (47.5% vs. 19.1%), and districts located in the South and West are underrepresented (7.2% vs. 23.6% and 5.0% vs. 20.7%, respectively). These differences are consequential only if district and student characteristics differ across geographic regions, which

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[1] Data Source: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Local Education Agency (School District) Universe Survey Directory Data", 2015-16 v.1a; "Local Education Agency (School District) Universe Survey LEP Data", 2015-16 v.1a; "Local Education Agency (School District) Universe Survey Membership Data", 2015-16 v.1a; "Local Education Agency (School District) Universe Survey Special ED Data", 2015-16 v.1a; "Local Education Agency (School District) Universe Survey Staff Data", 2015-16 v.1a; "Public Elementary/Secondary School Universe Survey Free Lunch Data", 2015-16 v.1a; "Public Elementary/Secondary School Universe Survey Geo Data", 2014-15 v.1a.

[2] To best align the PG district subsample with the national district sample, public school districts in which all schools were charter schools were eliminated from the analysis, and the analysis was restricted to "regular public school districts."

is explored in more detail in a subsequent section. The percentages of districts located in the Midwest were relatively similar in the PG subsample and population.

Table 1

Percentages of districts by geographic region

Geographic Region	Overall %	PG Subsample %
Midwest	36.6	40.3
South	23.6	7.2
Northeast	19.1	47.5
West	20.7	5.0
Total	100	100

Urbanicity

This analysis examined differences in the PG district subsample and population by urbanicity. The percentages of districts by urbanicity in the PG subsample are within a few points of those in the overall population for districts located in cities, small or mid-sized suburbs, towns, and rural fringe areas. Districts located in large suburbs are overrepresented compared with the population (41.4% vs. 19.1%), and districts located in distant and remote rural areas are underrepresented (13.0% vs. 22.5% and 6.5% vs. 17.8%, respectively).

Table 2

Percentages of districts by urbanicity

Urbanicity	Overall %	PG Subsample %
City	6.1	7.8
Large suburb	19.1	41.4
Small or mid-sized suburb	4.3	5.7
Town	18.3	14.8
Rural fringe	11.9	10.8
Rural distant	22.5	13.0
Rural remote	17.8	6.5
Total	100	100

Differences in urbanicity for the PG district subsample and population can be at least partially explained by differences in geographic region. For example, a higher proportion of districts in the Northeast are located in large suburbs compared with districts located in other geographic areas, and the PG subsample contains a higher proportion of districts in the Northeast, relative to the population.

District Size

District size was defined in terms of the total number of staff in the district. The majority of districts in both the district population and PG subsample employ between 100–1000 employees. Yet the average PG district has more employees than the average district in the population. Small districts are underrepresented in the PG subsample (18.0% vs. 36.6%) whereas districts of size 100–1000 employees are overrepresented compared with the population (68.2% vs. 54.5%). Relatively few districts employ more than 1,000 employees, although higher proportions of PG districts employ over 1,000 and 2,500 employees each compared with the district population.

Table 3

Percentages of districts by size

Size	Overall %	PG Subsample %
1–100 employees	36.6	18.0
100–1000 employees	54.5	68.2
1000–2500 employees	6.3	9.9
2500+ employees	2.6	4.0
Total	100	100

Differences in district size between the PG subsample and district population is partially explained by differences in geographic region between the PG subsample and population. A higher proportion of districts in the Northeast have between 100–1000 employees, and a smaller proportion of districts in the Northeast have 100 or less employees, compared with districts in other geographic regions. Districts located in the Northeast are overrepresented in the PG district subsample.

Student Demographic Subgroup

Differences in student demographic characteristics between the PG district subsample and the district population were also examined. The descriptive analysis compared the district-level mean proportions of students in each category for the overall district population and the PG district subsample. The PG district subsample is very similar to the population in terms of student demographic characteristics, including student race/ethnicity and proportions of special education and limited English proficient students. The only student characteristic in which the mean district percentage differed by more than approximately one percentage point for the PG subsample and population was students' low-income status.[3] The PG districts serve a lower average proportion of low-income students compared with the average district (39.2% vs.

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[3] Students' low-income status was defined by receiving free or reduced-price meals.

48.5%). The difference between the average proportions of low-income students in the PG districts and population is ten percentage points. This difference is statistically significant and potentially consequential.

Table 4

Mean district percentages of student subgroups

Student Characteristics	Overall %	PG Subsample %
Low-income	48.5	39.2
Special education	14.4	15.0
Limited English proficient	6.4	5.1
Race/Ethnicity		
White	70.1	68.7
Hispanic	14.7	13.4
Black	7.0	9.4
Asian	2.1	3.9
More than one race	3.0	2.7
Other	3.2	2.3

Differences in the percentages of low-income students between the PG subsample and population are partially explained by differences in geographic region. For example, districts in the Northeast have lower proportions of low-income students than districts in other geographic areas, and districts in the Northeast are overrepresented in the PG subsample.

Conclusion

Given that PG school district clients are self-selected rather than randomly sampled, it is not expected for them to duplicate population characteristics. However, the descriptive comparison between PG school districts and the population of public school districts in the U.S. (as reported by the National Center for Educational Statistics) shows reasonable comparability on student characteristics examined: student low-income status, special education status, English proficiency, and race/ethnicity. There was a high degree of comparability between PG and population districts on all student characteristics with the exception of one: PG districts serve a lower proportion of low-income students than population districts, on average.

In terms of district characteristics, districts in the Northeast are overrepresented in the PG subsample. This finding partially explains why districts in the PG subsample also over-represent large suburbs. Districts in the PG subsample are typically larger (have more employees) than the average district in the population, which is also partly due to the overrepresentation of Northeast districts in the PG subsample.

Overall, these descriptive analyses suggest that PG districts are reasonably representative of the population in terms of student characteristics. Whether the PG districts are representative of the population in terms of district characteristics depends on the analysis and whether district geographic region, urbanicity, and size are consequential.