MEMORANDUM

To:	Poudre School District	**Date:**	June 7, 2023
From:	Kate Doiron Senior GIS Analyst	**Project No.:**	F2434.01.001
	Rebecca Wright Project Manager		

Re: Programming Analysis

The goal of this task was to analyze the Poudre School District (District) programs to compare student populations within programs to the student population as a whole. FLO completed a demographic analysis (comparing free and reduced lunch eligibility, gender, and race/ethnicity information), and a geographic analysis (comparing program student locations to the locations of the student population). The District confirmed the programs to use in the analysis and the methods to determine which 2022-23 students in the student information system (SIS) are enrolled or participating in each program. The District met with FLO on May 8, 2023, to review the demographic and geographic analysis results. FLO also added the mean center points and student density heat maps to a web map accessible to the District for review.

Programs and Student Universes

The programs used in the analysis include school-wide programs, like Core Knowledge schools, and smaller programs within schools, like the high school International Baccalaureate (IB) program (Table 1). Each program serves different grade levels, so the comparison group of students varies by grade. For example, the Core Knowledge K-5 program students were compared to all K-5 students in the district, not all of the students in the district. These district-wide groups of students for various grade levels (e.g., K-5, 6-8) are known as the **student universe** for that grade level. For the geographic analysis, program students were compared to in-district students only to produce more accurate geographic centers of the general student population.

Table 1. PSD Programs Included in Demographic and Geographic Analyses

Program Name	Program Type	Grades	Number of Students in Program	Number of Students in Student Universe
Core Knowledge	School-Wide	K-5, 6-8	K-5: 1,883 6-8: 731	K-5: 10,897 6-8: 5,983
IB – Primary Years Program	School-Wide	K-5	K-5: 1,854	10,897
IB – Middle Years Program	6-8: School-Wide 9-10: Not School-Wide	6-8, 9-10	6-8: 1,571 9-10: 166	6-8: 5,983 9-10: 4,438
IB – Diploma Program	Not School-Wide	11-12	136	4,427
Campus or HS Select	Not School-Wide	9-12	2,503	8,865
Dual Language Immersion	K-5: School-Wide 6-8: Not School-Wide	K-5, 6-8	K-5: 577 6-8: 59	K-5: 10,897 6-8: 5,983
Expeditionary Learning	School-Wide	K-12	K-5: 106 6-8: 117 9-12: 148	K-5: 10,897 6-8: 5,983 9-12: 8,865
Futures Lab	Not School-Wide	9-12	164	8,865
Center-Based Autism	Not School-Wide	K-12	124	25,745
Center-Based Integrated Learning Services (ILS)			174	
Center-Based SED			54	

Demographic Analysis

For each program FLO compared two sets of students, students within the program and the corresponding grades in the student universe, to determine if the program student demographics were similar to or dissimilar from the wider student population. FLO compared three sets of demographic data for each: free and reduced lunch eligibility (Yes/No), gender (Female/Male), and race/ethnicity (using the following Federal race/ethnicity categories: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, Hispanic/Latino, Two or More Races, White). These demographic data are captured in the District student information system. FLO calculated the percentage of each category within each program and within each student universe and compared those calculations (Table 2, Table 3, Table 4). Programs under-represented by more than ten percent of a particular population percentage are shown in blue, and programs over-represented by ten percent of a particular population percentage are shown in orange. For example, the K-5 student universe is 31.6 percent FRL eligible. If the program is more than 3.16 percent under the K-5 student universe, then the cell is blue. If the program is more than 3.16 percent over the K-5 student universe, then the cell is orange. In the race/ethnicity table, cells are gray if there is no representation in the program from a particular race/ethnicity (Table 4). The highest discrepancies for each table are indicated in bold.

Table 2. PSD Programs Demographic Analysis—Free and Reduced Lunch (FRL) Eligibility

Program Name	Number of Students	FRL Eligible	FRL Ineligible
Core Knowledge K-5	1,883	13.28%	86.72%
Student Universe K-5	*10,897*	*31.60%*	*68.40%*
Core Knowledge 6-8	731	**7.11%**	**92.89%**
Student Universe 6-8	*5,983*	*29.37%*	*70.63%*
IB Primary Years K-5	1,854	28.43%	71.57%
Student Universe K-5	*10,897*	*31.60%*	*68.40%*
IB Middle Years 6-8	1,571	39.34%	60.66%
Student Universe 6-8	*5,983*	*29.37%*	*70.63%*
IB Middle Years 9-10	166	**12.05%**	**87.95%**
Student Universe 9-10	*4,438*	*30.37%*	*69.63%*
IB Program Diploma 11-12	136	16.18%	83.82%
Student Universe 11-12	*4,427*	*25.05%*	*74.95%*
Campus or HS Select 9-12	2,503	14.78%	85.22%
Student Universe 9-12	*8,865*	*27.72%*	*72.28%*
Dual Language K-5	577	63.60%	36.40%
Student Universe K-5	*10,897*	*31.60%*	*68.40%*
Dual Language 6-8	69	85.51%	14.49%
Student Universe 6-8	*5,983*	*29.37%*	*70.63%*
Expeditionary Learning K-5	106	14.15%	85.85%
Student Universe K-5	*10,897*	*31.60%%*	*68.40%*
Expeditionary Learning 6-8	117	12.82%	87.18%
Student Universe 6-8	*5,983*	*29.37%*	*70.63%*
Expeditionary Learning 9-12	148	16.89%	83.11%
Student Universe 9-12	*8,865*	*27.72%*	*72.28%*
Futures Lab 9-12	164	24.39%	75.61%
Student Universe 9-12	*8,865*	*27.72%*	*72.28%*
Center Based Autism K-12	124	51.61%	48.39%
Student Universe K-12	*25,745*	*29.74%*	*70.26%*
Center Based ILS K-12	174	37.36%	62.64%
Student Universe K-12	*25,745*	*29.74%*	*70.26%*
Center Based SED K-12	54	59.26%	40.74%
Student Universe K-12	*25,745*	*29.74%*	*70.26%*

Programs over-represented by 10 percent
Programs under-represented by 10 percent

FLO Analytics

Table 3. PSD Programs Demographic Analysis—Gender

Program Name	Number of Students	Female	Male
Core Knowledge K-5	1,883	49.18%	50.82%
Student Universe K-5	*10,897*	*48.47%*	*51.53%*
Core Knowledge 6-8	731	49.93%	50.07%
Student Universe 6-8	*5,983*	*48.42%*	*51.58%*
IB Primary Years K-5	1,854	48.33%	51.67%
Student Universe K-5	*10,897*	*48.47%*	*51.53%*
IB Middle Years 6-8	1,571	45.96%	54.04%
Student Universe 6-8	*5,983*	*48.42%*	*51.58%*
IB Middle Years 9-10	166	53.01%	46.99%
Student Universe 9-10	*4,438*	*47.07%*	*52.93%*
IB Program Diploma 11-12	136	58.82%	41.18%
Student Universe 11-12	*4,427*	*49.60%*	*50.40%*
Campus or HS Select 9-12	2,503	51.86%	48.14%
Student Universe 9-12	*8,865*	*48.34%*	*51.66%*
Dual Language K-5	577	48.70%	51.30%
Student Universe K-5	*10,897*	*48.47%*	*51.53%*
Dual Language 6-8	69	50.72%	49.28%
Student Universe 6-8	*5,983*	*48.42%*	*51.58%*
Expeditionary Learning K-5	106	50.00%	50.00%
Student Universe K-5	*10,897*	*48.47%*	*51.53%*
Expeditionary Learning 6-8	117	49.57%	50.43%
Student Universe 6-8	*5,983*	*48.42%*	*51.58%*
Expeditionary Learning 9-12	148	56.76%	43.24%
Student Universe 9-12	*8,865*	*48.34%*	*51.66%*
Futures Lab 9-12	164	**26.83%**	**73.17%**
Student Universe 9-12	*8,865*	*48.34%*	*51.66%*
Center Based Autism K-12	124	**17.74%**	**82.26%**
Student Universe K-12	*25,745*	*48.41%*	*51.59%*
Center Based ILS K-12	174	45.40%	54.60%
Student Universe K-12	*25,745*	*48.41%*	*51.59%*
Center Based SED K-12	54	**16.67%**	**83.33%**
Student Universe K-12	*25,745*	*48.41%*	*51.59%*

Programs over-represented by 10 percent
Programs under-represented by 10 percent

FLO Analytics

Table 4. PSD Programs Demographic Analysis—Race/Ethnicity in Percent

Program Name	Number of Students	American Indian or Alaska Native	Asian	Black/ African American	Native Hawaiian/ Other Pacific Islander	Two or More Races	Hispanic / Latino	White
Core Knowledge K-5	1,883	0.37	7.06	1.01	0.21	**6.43**	10.94	73.98
Student Universe K-5	*10,897*	*0.46*	*2.48*	*1.17*	*0.12*	*4.91*	*21.37*	*69.49*
Core Knowledge 6-8	731	0.00	**10.53**	1.09	0.00	5.20	8.76	74.42
Student Universe 6-8	*5,983*	*0.47*	*2.56*	*1.15*	*0.17*	*4.13*	*19.94*	*71.59*
IB Primary Years K-5	1,854	0.16	2.64	1.40	0.05	3.99	14.72	77.02
Student Universe K-5	*10,897*	*0.46*	*2.48*	*1.17*	*0.12*	*4.91*	*21.37*	*69.49*
IB Middle Years 6-8	1,571	0.89	1.65	1.02	0.38	4.33	26.93	64.80
Student Universe 6-8	*5,983*	*0.47*	*2.56*	*1.15*	*0.17*	*4.13*	*19.94*	*71.59*
IB Middle Years 9-10	166	0.00	1.81	1.20	0.00	5.42	13.86	77.71
Student Universe 9-10	*4,438*	*0.34*	*2.28*	*1.40*	*0.16*	*3.83*	*21.02*	*70.98*
IB Program Diploma 11-12	136	0.00	5.15	0.00	0.00	5.88	15.44	73.53
Student Universe 11-12	*4,427*	*0.41*	*3.25*	*1.31*	*0.05*	*4.34*	*19.43*	*71.22*
Campus or HS Select 9-12	2,503	0.24	4.23	0.76	0.00	3.84	13.14	77.79
Student Universe 9-12	*8,865*	*0.37*	*2.76*	*1.35*	*0.10*	*4.08*	*20.23*	*71.10*
Dual Language K-5	577	0.69	0.00	0.52	0.00	1.73	69.84	27.21
Student Universe K-5	*10,897*	*0.46*	*2.48*	*1.17*	*0.12*	*4.91*	*21.37*	*69.49*
Dual Language 6-8	69	0.00	0.00	0.00	0.00	4.35	**84.06**	**11.59**
Student Universe 6-8	*5,983*	*0.47*	*2.56*	*1.15*	*0.17*	*4.13*	*19.94*	*71.59*
Expeditionary Learning K-5	106	**0.94**	0.00	0.00	0.00	4.72	5.66	88.68
Student Universe K-5	*10,897*	*0.46*	*2.48*	*1.17*	*0.12*	*4.91*	*21.37*	*69.49*
Expeditionary Learning 6-8	117	0.85	0.00	0.00	**0.85**	5.98	**3.42**	**88.89**
Student Universe 6-8	*5,983*	*0.47*	*2.56*	*1.15*	*0.17*	*4.13*	*19.94*	*71.59*
Expeditionary Learning 9-12	148	0.68	1.35	1.35	0.68	3.38	11.49	81.08
Student Universe 9-12	*8,865*	*0.37*	*2.76*	*1.35*	*0.10*	*4.08*	*20.23*	*71.10*
Futures Lab 9-12	164	0.61	0.61	0.00	0.00	3.66	18.90	76.22
Student Universe 9-12	*8,865*	*0.37*	*2.76*	*1.35*	*0.10*	*4.08*	*20.23*	*71.10*
Center Based Autism K-12	124	0.81	8.87	2.42	0.81	4.03	22.58	60.48
Student Universe K-12	*25,745*	*0.43*	*2.59*	*1.23*	*0.12*	*4.44*	*20.64*	*70.53*
Center Based ILS K-12	174	0.00	4.60	4.02	0.00	4.02	27.01	60.34
Student Universe K-12	*25,745*	*0.43*	*2.59*	*1.23*	*0.12*	*4.44*	*20.64*	*70.53*
Center Based SED K-12	54	0.00	1.85	**7.41**	0.00	**1.85**	24.07	64.81
Student Universe K-12	*25,745*	*0.43*	*2.59*	*1.23*	*0.12*	*4.44*	*20.64*	*70.53*

Programs over-represented by 10 percent
Programs under-represented by 10 percent

FLO Analytics

Geographic Analysis

FLO calculated the geographic mean center for the set of students in each program. Mean center is an average of all latitudes and all longitudes of the student address locations. This provides one location that falls within the center of all students in the program. FLO then calculated the mean center for all of the in-district students in each of the student universes. The straight-line Euclidean distance between the program students mean center and the student universe mean center was calculated in miles (Table 5). A map of the mean centers for all student universes and programs can be found in Attachment 1. Distances over two miles for all grades are indicated in orange and distances over 1.5 miles for K-5 are indicated in yellow. Lower distances represent programs whose student locations are more representative of the overall student population locations.

Table 5. PSD Programs Geographic Analysis

Program Name	Program Students Center to Student Universe Center (mi)
Core Knowledge K-5	3.65 miles
Core Knowledge 6-8	3.73 miles
IB Primary Years K-5	1.75 miles
IB Middle Years 6-8	2.54 miles
IB Middle Years 9-10	3.79 miles
IB Program Diploma 11-12	2.86 miles
Campus or HS Select 9-12	.61 miles
Dual Language K-5	1.68 miles
Dual Language 6-8	.28 miles
Expeditionary Learning K-5	2.3 miles
Expeditionary Learning 6-8	2.01 miles
Expeditionary Learning 9-12	1.76 miles
Futures Lab 9-12	0.83 miles
Center Based Autism K-12	0.36 miles
Center Based ILS K-12	0.25 miles
Center Based SED K-12	0.81 miles

Discussion

The above demographic and geographic program analyses display discrepancies in student population make-up compared to the general student population and highlight long distances to travel to access programs. Some of these discrepancies and distances may be easily explained, while others may initiate review by the District to ensure program equity. A discussion for each program based on the results of the analysis can be found in Table 6.

Table 6. Discussion of Program Analysis Results

Program Name	Miles	FRL	Gender	Race/Ethnicity* in Percent							Notes
				AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	
Core Knowledge K-5	3+	Eligible is Low		0.37	7.06	1.01	0.21	6.43	10.94	73.98	Core Knowledge K-5 and 6-8 schools are clustered in the southeast corner of the district, creating a high distance from the center of the student population. These programs are located in more affluent areas within the district leading to low FRL eligibility.
Core Knowledge 6-8	3+	Eligible is Low		0.00	10.53	1.09	0.00	5.20	8.76	74.42	
IB Primary Years K-5	1.5+			0.16	2.64	1.40	0.05	3.99	14.72	77.02	IB programs have varying levels of FRL eligibility and race/ethnicity demographics, but all four programs have high distances from the program attending students and the population as a whole based on the location of the programs.
IB Middle Years 6-8	2.5+	Eligible is High		0.89	1.65	1.02	0.38	4.33	26.93	64.80	
IB Middle Years 9-10	3.5+	Eligible is Low	Female is High	0.00	1.81	1.20	0.00	5.42	13.86	77.71	
IB Program Diploma 11-12	2.5+	Eligible is Low	Female is High	0.00	5.15	0.00	0.00	5.88	15.44	73.53	
Campus or HS Select 9-12		Eligible is Low		0.24	4.23	0.76	0.00	3.84	13.14	77.79	This program is generally accessible but has low FRL eligibility and low Hispanic/Latino populations.
Dual Language K-5	1.5+	Eligible is High		0.69	0.00	0.52	0.00	1.73	69.84	27.21	The Dual Language program is for Spanish. High Hispanic/Latino student populations are expected by the district.
Dual Language 6-8		Eligible is High		0.00	0.00	0.00	0.00	4.35	84.06	11.59	

Program Name	Miles	FRL	Gender	Race/Ethnicity* in Percent							Notes
Expeditionary Learning K-5	2+	Eligible is Low		AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	All grade levels for Expeditionary Learning have low Hispanic/Latino populations and high white populations, and FRL eligibility is low. For two of the grade groups, the distance from the general populations is over 2 miles, indicating the program may not be accessible.
				0.94	0.00	0.00	0.00	4.72	5.66	88.68	
Expeditionary Learning 6-8	2+	Eligible is Low		AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	
				0.85	0.00	0.00	0.85	5.98	3.42	88.89	
Expeditionary Learning 9-12		Eligible is Low	Female is High	AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	
				0.68	1.35	1.35	0.68	3.38	11.49	81.08	
Futures Lab 9-12			Female is Low	AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	Futures Lab provides transportation to the program, which has ensured a nearly representative geographic, FRL, and race/ethnicity program population. This program has the highest disproportionality between female and male students.
				0.61	0.61	0.00	0.00	3.66	18.90	76.22	
Center-Based Autism K-12		Eligible is High	Female is Low	AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	There is high FRL eligibility across all center-based programs. The low distances for these programs indicate students throughout the district have access to these programs. There are very low percentages of female students in the Autism and SED programs.
				0.81	8.87	2.42	0.81	4.03	22.58	60.48	
Center-Based ILS K-12		Eligible is High		AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	
				0.00	4.60	4.02	0.00	4.02	27.01	60.34	
Center-Based SED K-12		Eligible is High	Female is Low	AIAN	A	B/AA	NH/OPI	TOMR	H/L	W	
				0.00	1.85	7.41	0.00	1.85	24.07	64.81	

Programs over-represented by 10 percent
Programs under-represented by 10 percent

*Race/ethnicity headers have been abbreviated: AIAN (American Indian/Alaska Native), A (Asian), B/AA (Black/African American), NHPI (Native Hawaiian/Other Pacific Islander), TOMR (two or more races), H/L (Hispanic/Latino), W (white)

Recommendations

FLO provides the following recommendations to address programs where a change in location for a program, or increased transportation to a program, may address demographic and geographic disproportionalities and improve educational equity.

Core Knowledge – Create new Core Knowledge K-5 and 6-8 schools on the opposite side of the district from the current cluster of schools, preferably in an area with more students who are FRL eligible. This would drastically reduce the distance from the general student population and could establish more representative FRL eligibility and race/ethnicity demographics within the overall program. Example school locations: Putnam ES, Dunn ES, Lincoln MS.
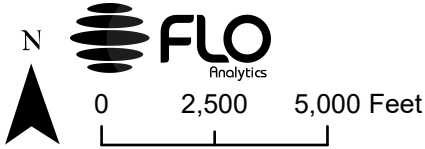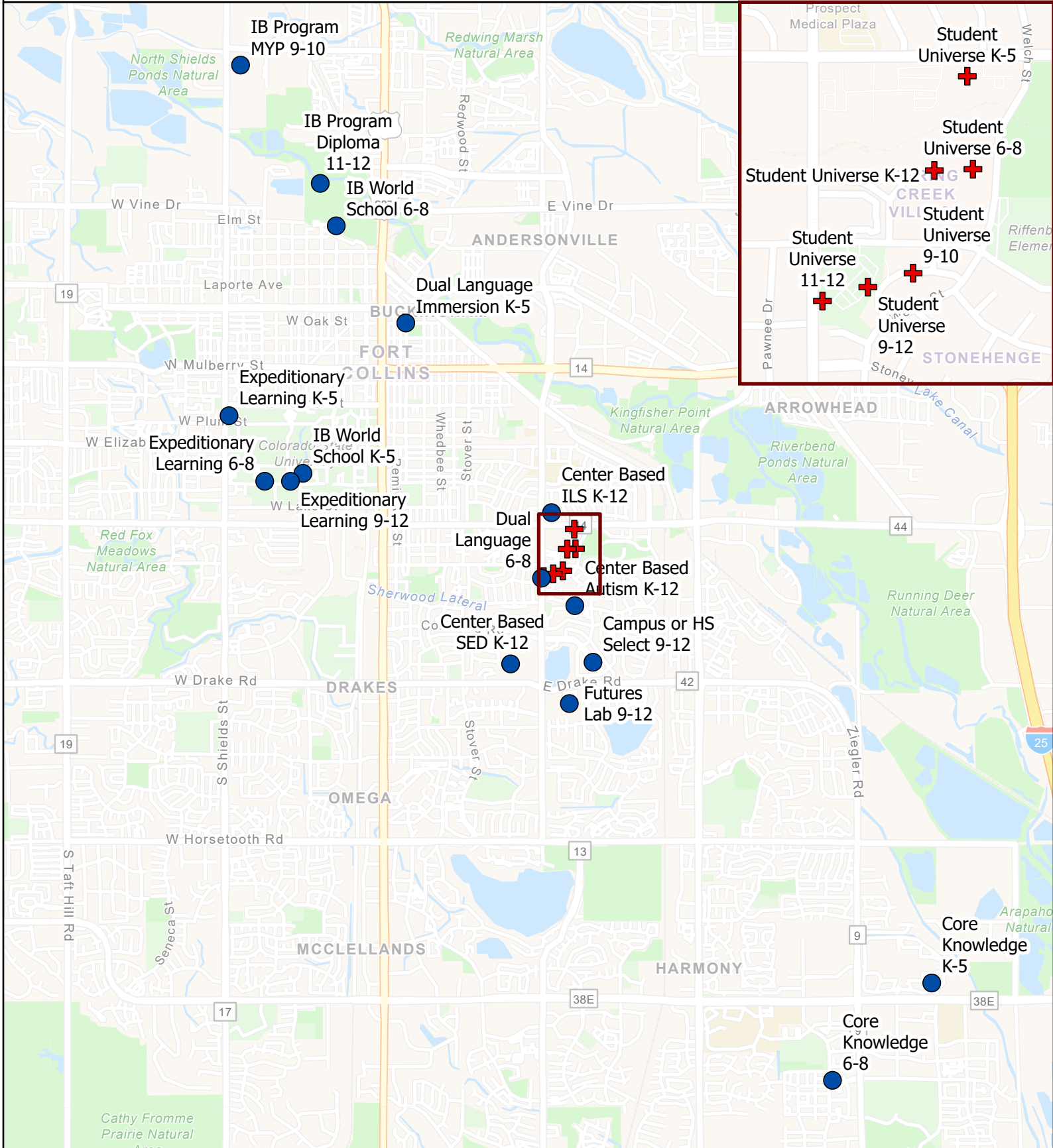
I**B Programs** – Generally the IB program students are located far from the center of the student universes for each grade group, and the IB programs tend to be clustered to the north of the population centers. The Primary Years IB program has a high percentage of white students and a low percentage of Hispanic/Latino students. The race/ethnicity disproportionality could partially be explained by the very high percentage of Hispanic/Latino K-5 students within the Dual Language program, especially where this IB program is otherwise equitable for FRL and gender. The Middle Years 6-8 IB program by contrast has a higher percentage of Hispanic/Latino students (potentially partially due to the lower enrollment in the 6-8 Dual Language program), which then drops significantly in the Middle Years 9-10 IB program, along with students eligible for FRL. Both high school IB programs (Middle Years and Diploma) have higher numbers of female students and lower numbers of students eligible for FRL. Locating some IB programs in the southern part of the district could lower the overall distances and could also target more students who are FRL eligible in the high school years. Providing transportation to these programs (as was noted for the Futures Lab program) could have a similar effect on all aspects of equality without having to move the programs. Example school locations within the same feeder: Bacon ES (opposite side of the K-5 mean center for current K-5 IB students, 29.9 percent non-white); Preston MS (opposite side of the 6-8 mean center, covering more students in that area); Fossil Ridge HS (opposite side of the 9-12 mean center for 9-12, covering more students in that area)

Expeditionary Learning – The Expeditionary Learning program is hosted at the Polaris Expeditionary Learning school, located in the northwest region of the lower school district (not including the mountain schools area). Students that attend the program are clustered in that area, leading to higher distance discrepancies for students in the rest of the district. Since the program is school based, we would recommend providing transportation to this program to make it more accessible to students throughout the district. This may address the distance and also race and ethnicity disproportionalities by opening up the program to students from other locations.

Futures Lab – The Futures Lab program successfully reaches students geographically throughout the district but has the lowest female to male ratio of any of the programs analyzed (outside of center-based programs). Maintaining transportation to the program to keep the current level of geographic, FRL, and race and ethnicity equity is recommended, while also searching for solutions to create more equity between genders in the program.

Poudre School District
Programming Analysis
Mean Centers Map

POUDRE SCHOOL DISTRICT
NORTHERN COLORADO

IB Program
MYP 9-10

IB Program
Diploma
11-12

IB World
School 6-8

Dual Language
Immersion K-5

Expeditionary
Learning K-5

Expeditionary
Learning 6-8

IB World
School K-5

Expeditionary
Learning 9-12

Center Based
ILS K-12

Dual
Language
6-8

Center Based
Autism K-12

Center Based
SED K-12

Campus or HS
Select 9-12

Futures
Lab 9-12

Core
Knowledge
K-5

Core
Knowledge
6-8

Student
Universe K-5

Student
Universe 6-8

Student Universe K-12

Student
Universe
9-10

Student
Universe
11-12

Student
Universe
9-12

N

FLO
Analytics

0   2,500   5,000 Feet

● Program Mean Centers

✚ Student Universe Mean Centers