

Data Summary of Select KID Museum Programs at Montgomery County Public Schools

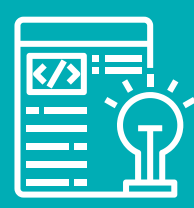
2022–2023



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Shared Accountability
Applied Research and Evaluation





Program Description

Overview

Since 2017, Montgomery County Public Schools (MCPS) has partnered with KID Museum to provide a district wide science, technology, engineering, and math (STEM) initiative to broaden students' access to hands-on, project-based learning experiences.

KID Museum's mission is to foster the "Mind of a Maker" in kids and youth, empowering the next generation with the skills to invent the future (KID Museum website, 2023). Their approach is to foster this mindset in students by working with them to become empathetic and persistent problem-solvers, teammates, and changemakers. The KID Museum Invention Programs, including KID Inventors and Invent the Future, integrate STEM design and social responsibility, along with social-emotional learning. Across multiple sessions, students are guided through the invention process of designing, prototyping, and troubleshooting their ideas. KID Afterschool program is designed to engage K–3 students in STEAM content through a KID-Museum-provided-curriculum which centers literacy, social emotional learning, and culturally responsive pedagogy through the practice of making.

Program Design Principles



Designed to empower students with the skills to invent the future, KID Museum programs...

- are always grounded in making.
- encourage exploration and iteration.
- go deeper than skill building.
- foster agency.
- are collaborative and interactive.
- include everyone.

Program Components in this Summary



KID Afterschool is a semester-long, maker-based after-school program for students in grades Kindergarten (K)– Grade 3. This program is designed to engage students in STEAM content through a KID-Museum-provided-curriculum which centers literacy, social emotional learning, and culturally responsive pedagogy through the practice of making.



KID Inventors program is for Grades 2–4. This program, implemented during class, introduces students to engineering design and includes field trips to the KID Museum, in-class curriculum, and teacher professional support.



Invent the Future (ITF) program is for Grades 6–8 and can be implemented during an existing course (e.g., technology, computer science, engineering), as an ITF elective course, or as an after-school club. This program participates in one of the region's largest maker challenges, integrating science, technology, engineering, and design while challenging students to design solutions to improve life on our planet.



Data Summary Scope

MCPS has partnered with the KID Museum to provide a data summary for three KID Museum programs implemented at 15 elementary and 18 middle schools during the 2022–2023 school year. Eleven of the elementary and three of the middle schools were Title 1 schools. The three programs included in this summary are:

- KID Afterschool (Grades K–3)
- KID Inventors (Grades 2–4)
- Invent the Future (Grades 6–8)

This data summary describes enrollment by program as well as demographic characteristics of participants.

Purpose of Evaluation



The purpose of this data summary is to better understand who is participating in the KID Museum programs and to identify areas in which KID Museum may wish to further enhance their recruitment efforts.

Research Questions

1

How many MCPS elementary students participated in the KID **Afterschool** program and what were their demographic characteristics?

2

How many MCPS elementary students participated in the **KID Inventors** program and what were their demographic characteristics?

3

How many MCPS middle school students participated in **Invent the Future** program and what were their demographic characteristics?



This data summary employs descriptive quantitative research to describe both the extent of participation in three KID Museum programs and the demographic characteristics of the participants.

Data Sources

The following data sources were used in this data summary:

- For in-class programs: student enrollment was obtained through class records in which a KID Museum program was implemented.
- For after-school programs: student enrollment was obtained through club sponsors (i.e. teachers) who shared their student rosters.
- Demographic characteristics of student participants were obtained through MCPS student records.

Analysis

- Descriptive statistics were used to report the number and percentage of enrollment in KID museum programs in total and across schools, as well as demographic characteristics of student participants.

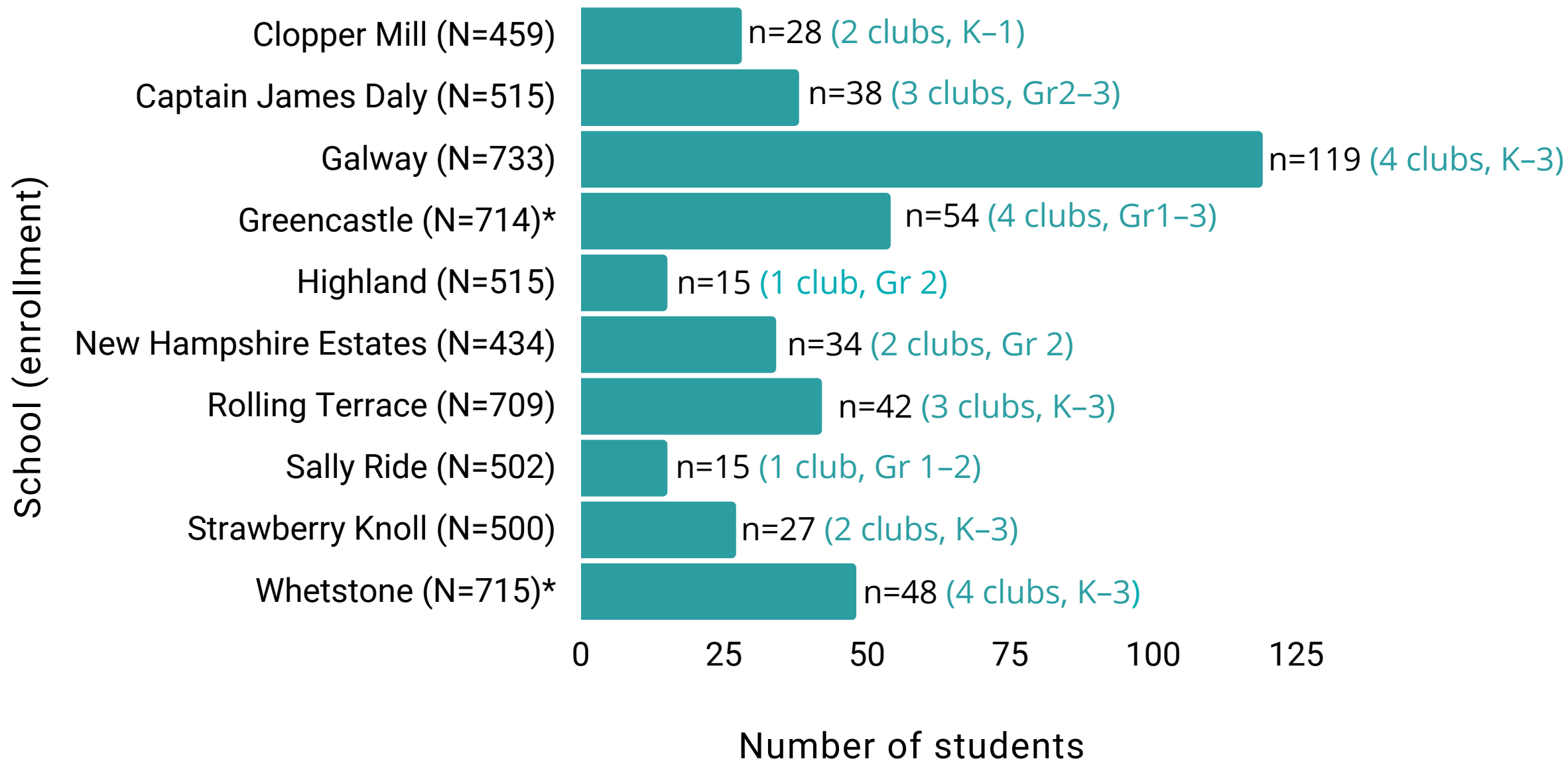
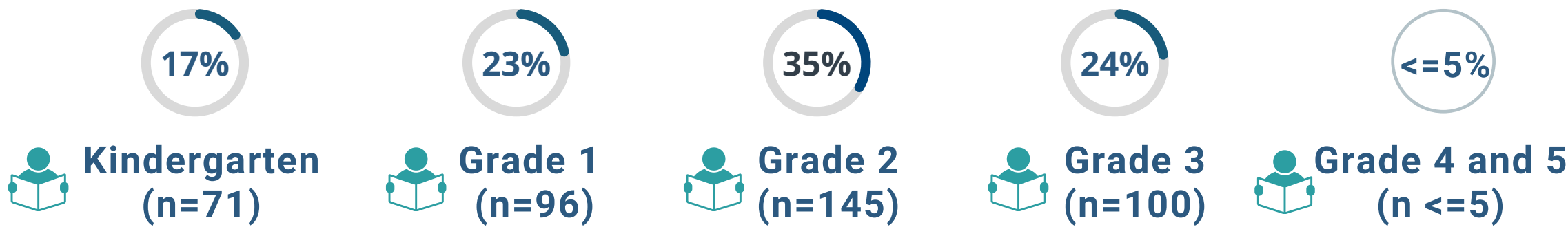




Results: KID Afterschool

Participation by grade and school

420 Elementary Student Participants



Findings

The KID Afterschool program was for K–5 students in ten participating elementary schools; eight schools were Title 1 schools.

A total of 420 students participated in the KID Afterschool program. Almost all student participants were in K–Grade 3 with about one-third (35%) in Grade 2.

Schools offered between 1–4 Afterschool clubs. Galway Elementary had the greatest number of participants with 119 students in four afterschool clubs. Galway is a large school with the greatest school enrollment of 733 students.

Most KID Afterschool teachers were K–Grade 3 teachers; however other school staff led the clubs such as: special education teachers, a media specialist, paraeducators, substitute teachers, and Grade 4–5 teachers. Five of the elementary schools participated in KID Inventors.

*Two schools each had five or less students in Grade 4 or 5.



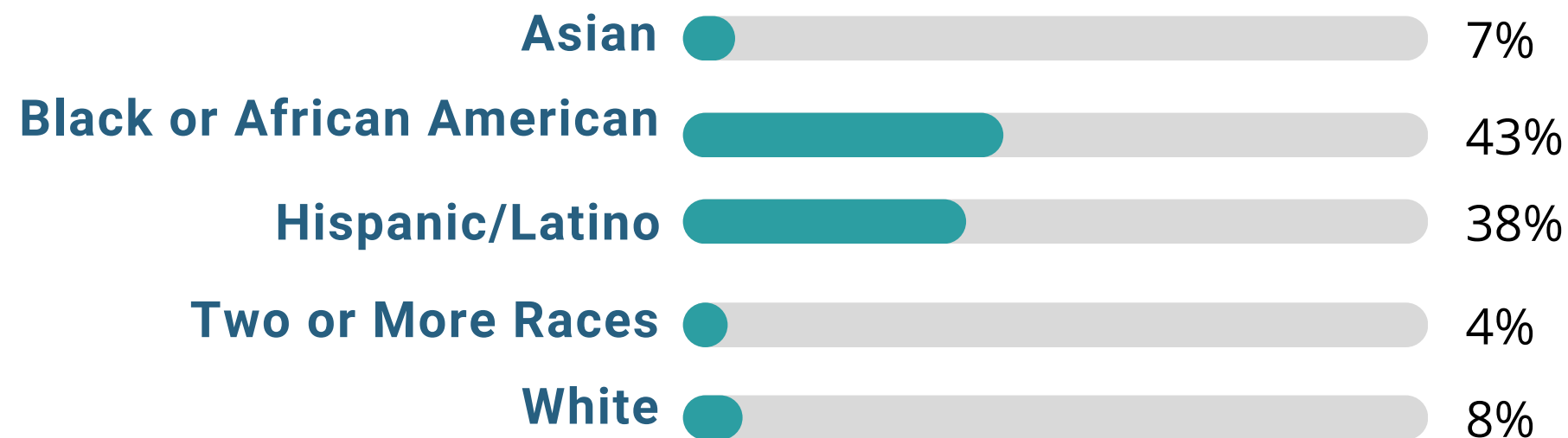
Results: KID Afterschool

Participation by gender, race/ethnicity and services received

Gender

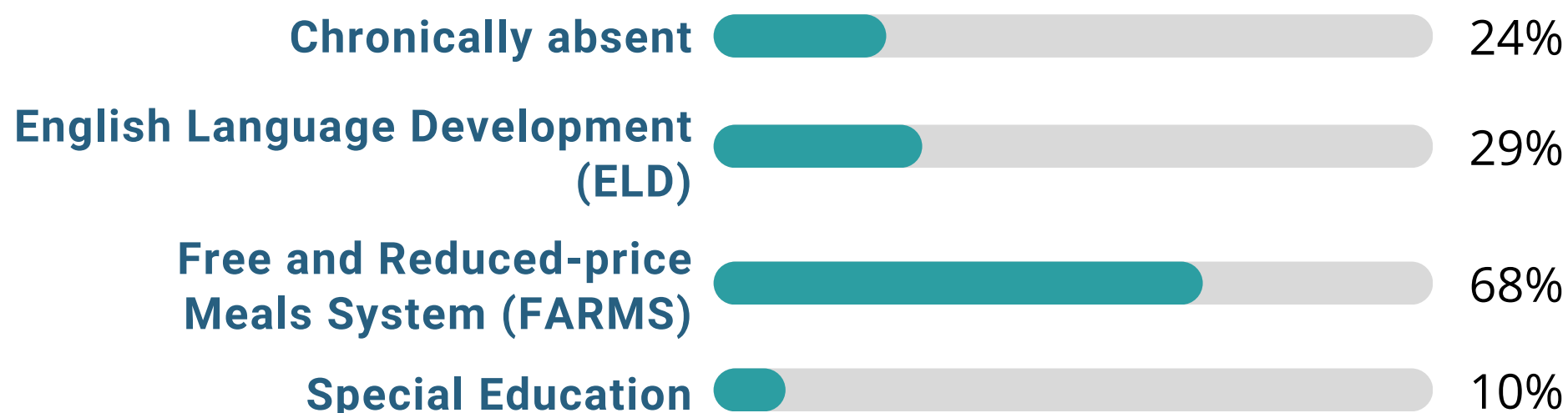


Race/Ethnicity



Note. American Indian, and Pacific Islander were under .5% and are not displayed.

Services Received



Findings

Just over half of the 420 elementary Afterschool participants were male (53%) and 47% were female.

Eighty one percent of the students were either Black or African American (43%) or Hispanic/Latino (38%).

Over two-thirds (68%) of the participants received FARMS, 29% received ELD services, and 10% received special education services. Just under one-fourth (24%) of the Afterschool participants were considered chronically absent (missed at least 10% of instructional days).



Results: KID Inventors

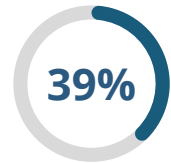
Participation by grade and school



2,186 Elementary Student Participants



Grade 2 (n=710)

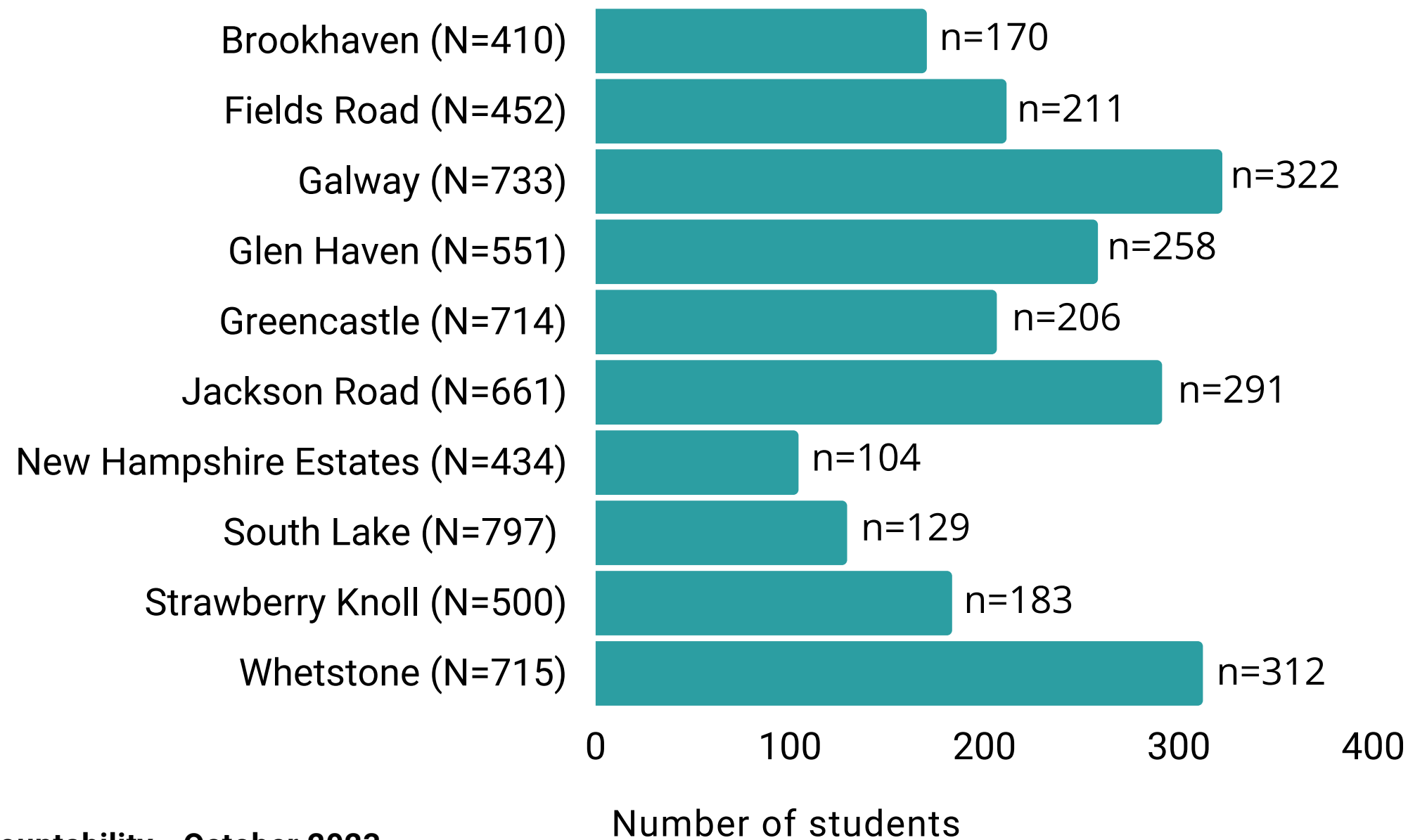


Grade 3 (n=854)



Grade 4 (n=622)

School (enrollment)



Findings

KID Inventors is for Grades 2–4 and was implemented during class in ten participating schools; seven of the schools were Title 1 schools. This program introduces students to engineering design and includes field trips to KID Museum, in-class curriculum, and teacher professional support.

A total of 2,186 students were in participating classes across the ten elementary schools. Most of the students were in Grade 3 (39%); 33% in Grade 2, and 29% in Grade 4.

Galway (n=322), Whetstone (n=312), and Jackson Road (n=291) elementary schools had the most number of student participants. These three schools were among the top four with the highest school enrollment.

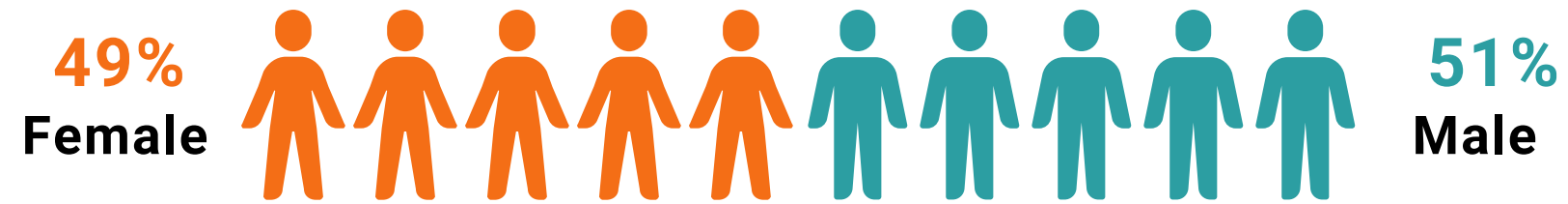
Five of the elementary schools also participated in the KID Afterschool program.



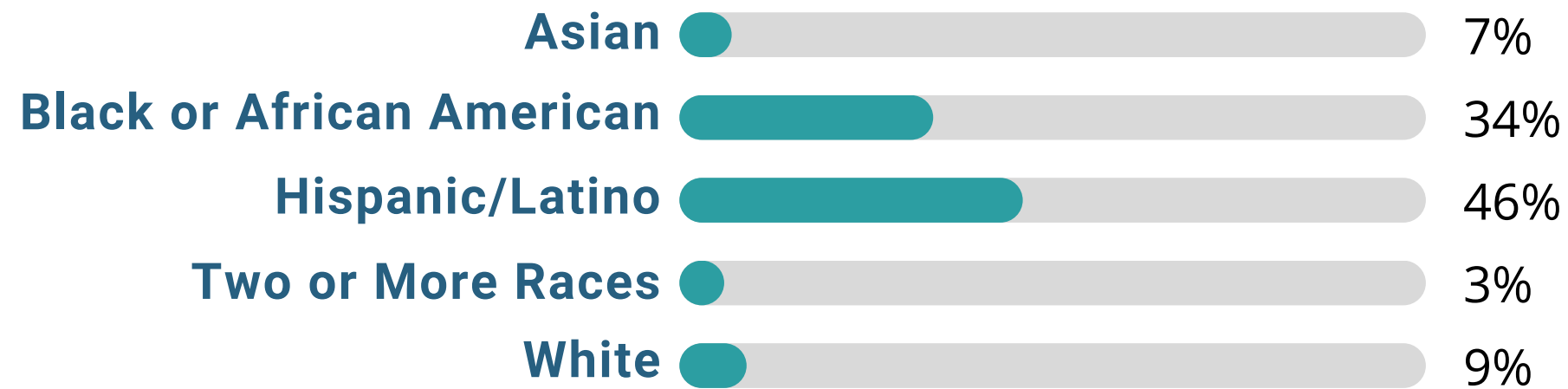
Results: KID Inventors

Participation by gender, race/ethnicity and services received

Gender

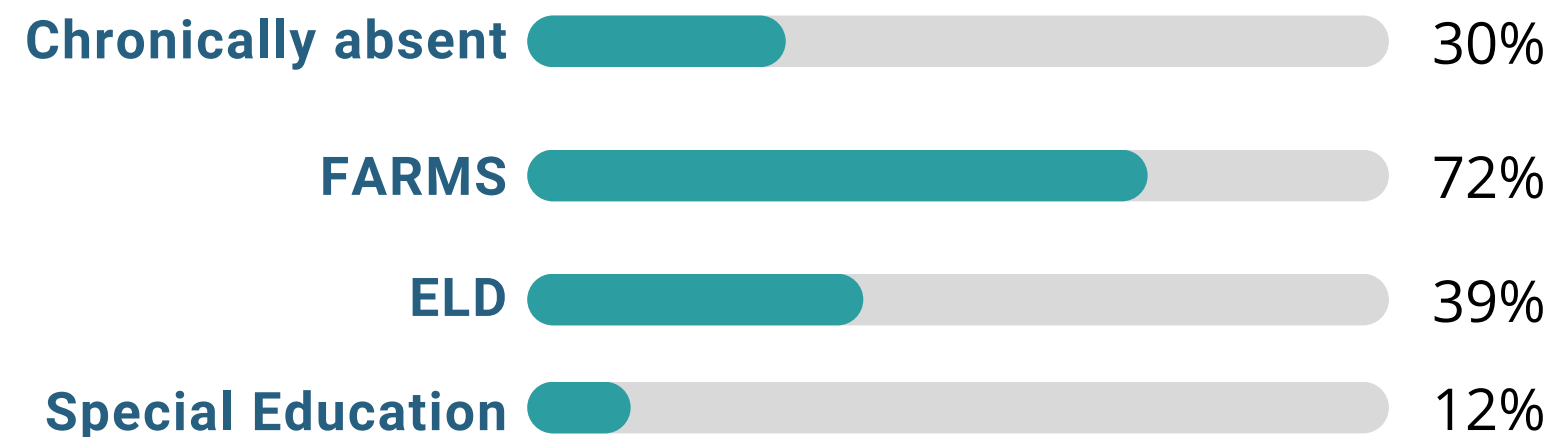


Race/Ethnicity



Note. American Indian, and Pacific Islander were under .5% and are not displayed.

Services Received



Findings

Approximately half of the 2,186 Grade 2–4 students were female (49%) and half were male (51%).

Ninety percent of the student participants were Hispanic/Latino (46%) or Black or African American (34%).

Almost three-fourths (72%) of the participants received FARMS, 39% received ELD services, and 12% received special education services. Just under one-third (30%) of the participants were chronically absent and missed 10% or more of instructional days.

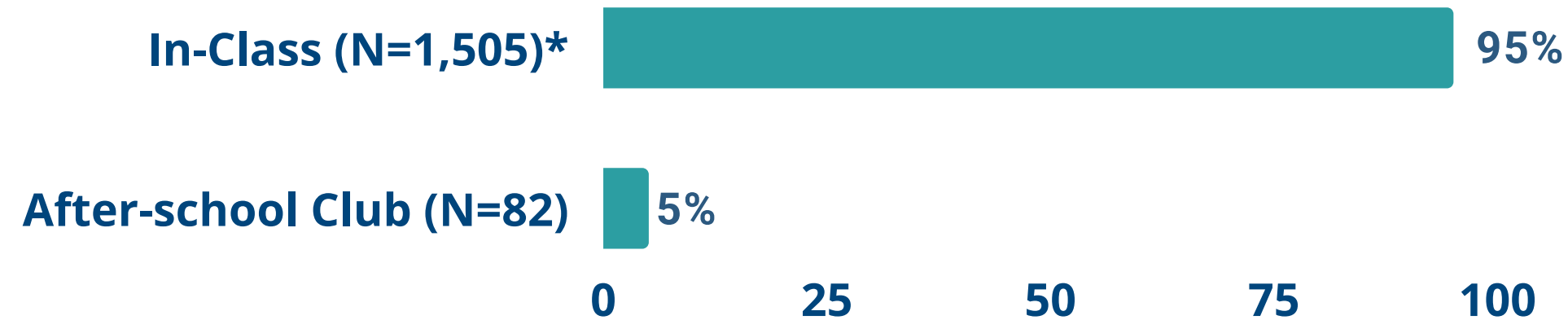


Results: KID Invent the Future

Participation by delivery method and grade level

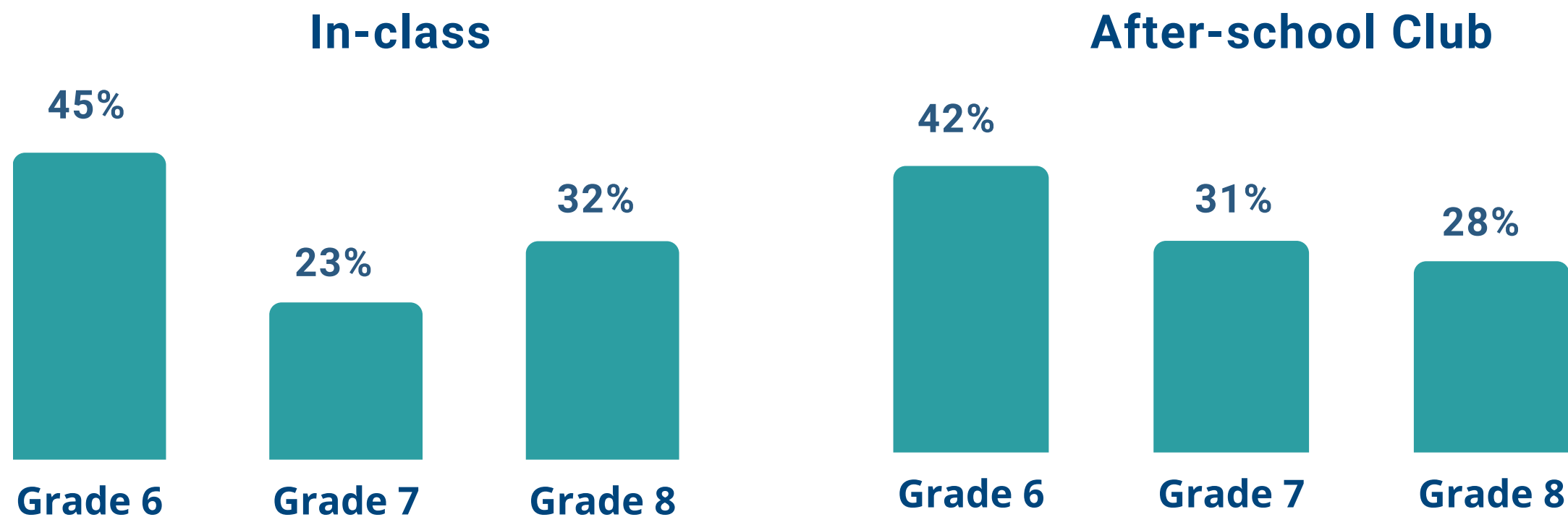


1,576 Middle School Student Participants



Notes. Eleven students were enrolled in both in-class and after-school.

In-class was delivered as an elective ITF course (44%) or during an existing course (56%).



Findings

ITF was delivered through a class or as an after-school club: 1,576 middle school students participated in ITF with the vast majority in-class (95%).

The in-class format was delivered as either:

- an elective ITF course at six schools (44% of in-class students), or
- incorporated in an existing course such as technology, engineering, coding, or computer science courses at nine schools (56% of in-class students).

Sixth grade had the highest proportion of participants for both deliver methods. The majority of the ITF participants were in Grade 6 (45%), followed by Grade 8 (32%), and Grade 7 (23%). For the after-school club, 42% were in Grade 6, 31% in Grade 7, and 28% in Grade 8.



Results: KID Invent the Future

Total enrollment and delivery method by school



Findings

Fourteen middle schools implemented ITF during class and eight during an after-school club; four schools delivered ITF in both class and after-school clubs.

Shady Grove middle school (MS) had the greatest number of student participants (n=262) followed by Neelsville MS (n=200). Students in these two schools participated during class and represented 53% and 25% of their total school enrollment respectively.

Notes. Eleven students participated in both in-class and an after-school club.

Data for Sligo MS after-school club was not available; therefore not included in data.

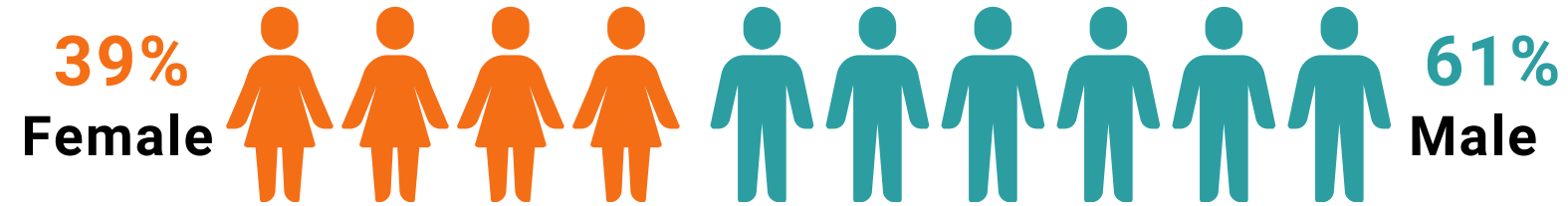
Middle School (school enrollment)	ITF Enrollment	In-class	After school
Argyle (N=995)	n=78	X	
Banneker (N=781)	n=23	X	
Briggs Chaney (N=864)	n=70	X	
Eastern (N=893)	n=52	X	
Gaithersburg (N=875)	n=37	X	X
Key (N=965)	n=20		X
Montgomery Village (N=773)	n=60	X	X
Neelsville (N=815)	n=200	X	
Parkland (N=1,050)	n=132	X	
Pyle (N=1,241)	n=6		X
Redland (N=571)	n=48	X	
Roberto W Clemente (N=857)	n=127	X	
Rosa Parks (N=848)	n=17		X
Shady Grove (N=495)	n=262	X	X
Silver Spring (N=1,158)	n=157	X	
Sligo (N=676)	n/a		X
White Oak (N=852)	n=104	X	X
William H Farquhar (N=674)	n=178	X	



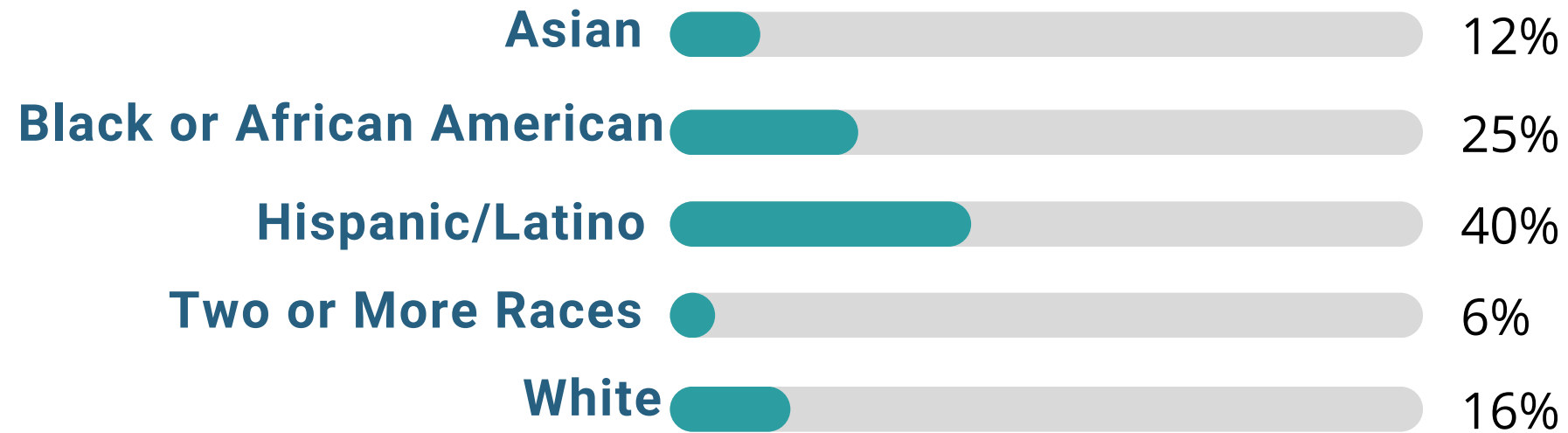
Results: KID Invent the Future

Participation by gender, race/ethnicity, and services received

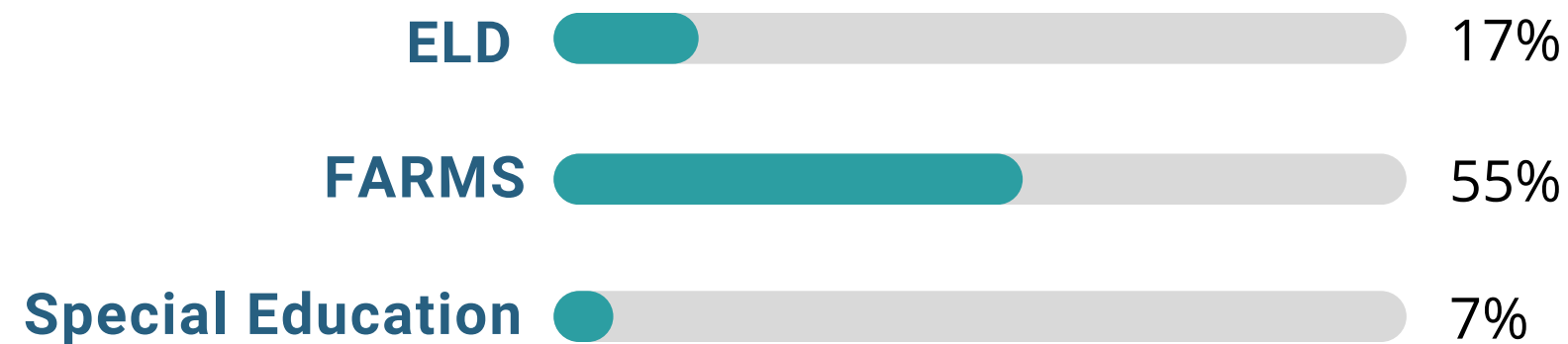
Gender



Race/Ethnicity



Services Received



Findings

Among the total 1,576 ITF participants, more than half were male (61%) and 39% were female.

Forty percent of the student participants were Hispanic/Latino and 25% were Black or African American.

Just over half (55%) of the participants received FARMS, 17% received ELD services, and 7% received special education services.

Notes. Non-binary, American Indian, and Pacific Islander were under .5% and are not displayed.



Results: KID Invent the Future

Gender, race/ethnicity, and services received by delivery method

In-Class (N=1,505)

Gender

61% Male 

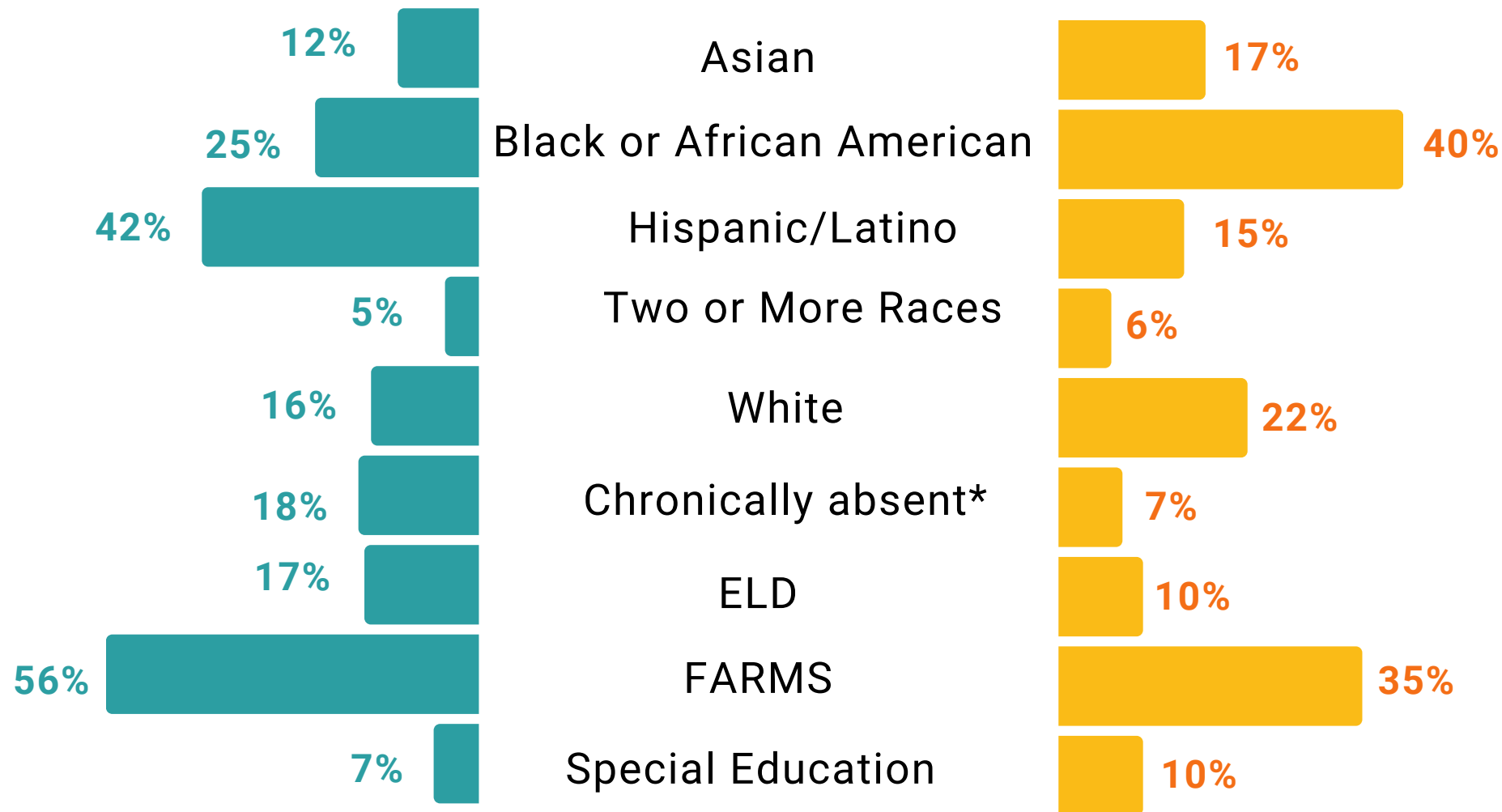
39% Female 

After-school Club (N=82)

Gender

56% Male 

43% Female 



Findings

When comparing the ITF in-class participants to after-school participants, the in-class had a higher proportion of male to female students (61% to 39% in-class vs. 56% to 43% after school), and a higher percentage of students receiving FARMS (56% vs. 35%) and ELD services (17% vs. 10%).

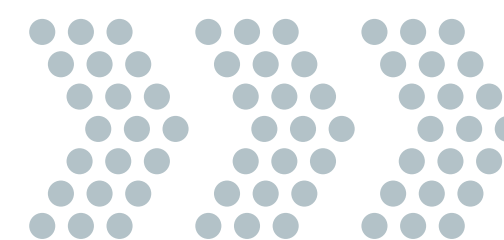
There is also a higher percentage of chronically absent students among the in-class ITF compared to after school (18% vs. 7%).

Additionally, there is a much greater percentage of Hispanic/Latino students in the in-class delivery method compared to after school (42% vs. 15%), but a higher percentage of all other races/ethnicities after school.

Notes. Data for Sligo MS club was not available; therefore is not included in data. Non-binary, American Indian, and Pacific Islander were under .5% and are not displayed. *Chronically absent = absent 10% or more school days.



Summary of Participation



A total of 4,182 elementary (N=2,606) and middle school (N=1,576) students participated in three selected KID Museum programs implemented during the 2022–2023 school year. A summary of the participation and descriptive analysis of this report is presented below.

KID Elementary Afterschool

- 420 elementary students (mostly K–Grade 3) participated after school across ten elementary schools; eight of the ten schools were Title 1 schools.
- One school with four KID Afterschool groups, had many more student participants (N=119) than the other schools that ranged from 15 to 54 students. Although not the only large school, this school had the greatest total school enrollment.
- A large majority of the participants were Hispanic (38%) or Black or African American (43%), or received FARMS (68%).
- A lower percentage of participants were identified as chronically absent (24% KID Afterschool) compared to 30% of the in-class KID Inventors program. However, it is worth noting that not only was this program delivered after school, but younger students (i.e. K and Grade 1) also attended this program.

KID Inventors

- 2,186 Grade 2–4 students participated during the instructional day across ten elementary schools; seven of the ten schools were Title 1 schools.
- The number of participants ranged from 104 to 322 students at each school.
- A large majority of participants were Hispanic/Latino (46%) or Black or African American (34%) students, or received FARMS services (72%).

Invent the Future (ITF)

- 1,576 Grade 6–8 students participated in-class or after school across 18 middle schools; three of the schools were Title 1 schools.
- Students primarily participated in-class (95%) compared to after school (5%). Therefore, there was a much greater number of students participating in schools delivering ITF in-class (N=1505) compared to after school (N=82).
- Overall, the majority of participants were male (61%), Hispanic/Latino (40%) or Black or African American (25%), or received FARMS services (55%).
- The in-class delivery method had a much greater percentage of Hispanic/Latino students (42% vs. 15%) and those receiving FARMS services (56% vs. 35%) compared to after school.
- The after-school delivery method had a lower percentage of students who were identified as chronically absent (7%) compared to the in-class format (18%).