

## Data Sources

A special enrollment projection by planning unit was produced in early 2021 for students estimated to attend a neighborhood school. These planning unit projections were calculated separately from, and use a different methodology than, the [Fall 2020 three-year projections](#). The planning unit enrollment projections are for Fall 2021 through Fall 2024 and include projected K-5 enrollment for the Abingdon and Dr. Charles R. Drew planning units and projected 6-12 enrollment for all planning units. The planning unit projections used the following data sources:

- September 30, 2019 official enrollment count from the Student Information System, which is matched to planning units, was used as a starting point, or base, for the projections. The September 30, 2020 official enrollment count was not used as a base. More information on the rationale for not using 2020 enrollment as a base can be found at the [Fall 2020 projections report](#).
- Several factors used in the enrollment projections used Student Information System address-level data, also matched to current planning units, from September 30 of 2020, 2018, and 2017.
- Housing Unit Forecast and single-family construction building permits from Arlington County Government (ACG) from September 2020, see Table 2: The housing forecast includes a timeline of when residential construction projects are forecasted by ACG to be completed and habitable, each project's residential type, number of net new units, and affordability levels. Meanwhile, the single-family construction permits were assumed to become habitable in the 2020-21 school year. This information helps APS estimate the number of new students and the year that a given housing development will add students to neighborhood schools.
- Student Generation Rates used in the Fall 2020 three-year projections and produced by APS staff are applied to the Housing Unit Forecast; see Attachment C of the [Fall 2020 projections report](#). Note that the Fall 2020 three-year projections used an updated version of the Fall 2019 student generation rates.
- Actual Resident Live Births from 2013 through 2019 are sourced from ACG, who receive that information from the Virginia Department of Health. This historical information is for live births to mothers who reside in Arlington County.

## Planning Unit Projections Assumptions and Methodology

Below are notable assumptions and methodological steps used in the planning unit projections for students, by grade level, estimated to attend a neighborhood school. Note that the planning unit projections were produced in consultation with Dr. Richard Grip and they differ from the methods used to project the three-year enrollment projections by schools from Fall 2020, which is available on the APS projections webpage, <https://www.apsva.us/statistics/enrollment-projections/>. Dr. Richard Grip, Executive Director of Statistical Forecasting LLC, has been advising APS staff on enrollment projections methodology since 2015 when he consulted on improvements to APS enrollment projections and County population forecasts as part of the Community Facilities Study, see <https://commissions.arlingtonva.us/community-facilities-study/documents> for more information.

## Projection Years

Planning unit projections were calculated for the years 2021 to 2024. The planning unit projections extend one additional year than the Fall 2020 three-year projections, which extended to 2023.

Below are some implications from projecting up to 2024:

- All the incoming kindergarten cohorts are based on recorded live births to Arlington County parents that took place between 2016 and 2019. A forecast of births from 2020 and future years was not needed to inform kindergarten cohorts from 2025 and beyond. Note that currently Arlington County Government only has access to 2019 births from the Virginia Department of Health.
- Because the planning unit projections use September 30, 2019 enrollment as a starting point, or base, for projections, the following projected cohorts are calculated from 2019 enrollment:
  - 2021 – the Grade 2 to 12 cohorts had been kindergarten to Grade 10 students in 2019; 11 projected cohorts (or 85% of projected K-12 enrollment) are partly based on 2019 enrollment.
  - 2022 – The Grade 3 to 12 cohorts had been kindergarten to Grade 9 students in 2019; 10 projected cohorts (or 77% of projected K-12 enrollment) are partly based on 2019 enrollment.
  - 2023 – The Grade 4 to 12 cohorts had been kindergarten to Grade 8 students in 2019; 9 projected cohorts (or 69% of projected K-12 enrollment) are partly based on 2019 enrollment.
  - 2024 – The Grade 5 to 12 cohorts had been kindergarten to Grade 7 students in 2019; 8 projected cohorts (or 62% of projected K-12 enrollment) are partly based on 2019 enrollment. At the elementary level, five out of six cohorts (K-5), or 83% of cohorts, are not based on recorded enrollment in 2019.
- Conversely, as projections extend further out in time, the proportion of projected cohorts that are not partly based on September 30, 2019 enrollment increases. These cohorts are based on assumptions on the number of newborns by planning unit assumed to enroll with APS five years later; the assumption of cohort transition rates; and assumptions of future new housing:
  - 2021 – two cohorts (K-1), or 15% of K-12 cohorts, are based on assumptions
  - 2022 – three cohorts (K-2), or 23% of K-12 cohorts, are based on assumptions
  - 2023 – four cohorts (K-3), or 31% of K-12 cohorts, are based on assumptions
  - 2024 – five cohorts (K-4), or 38% of K-12 cohorts, are based on assumptions

## Elementary Projections

Elementary (K-5) enrollment projections are reported for 46 planning units that correspond to Abingdon and Dr. Charles R. Drew boundaries for the 2020-21 school year. The purpose of this work is to project enrollment for K-5 students that are estimated to attend a neighborhood elementary school.

### Incoming kindergarten students by planning unit

- Births from 2013 to 2015 were matched to planning units. Similarly, kindergarten students enrolled with APS from 2018 to 2020 and that attended a neighborhood school were matched to planning units.
- Each planning unit's share of total (county-wide) births by year was quantified for 2013, 2014, and 2015. A weighted average of these birth shares by planning units was assessed using the following weights:
  - 20% for 2015 birth shares by planning unit
  - 40% for 2014 birth shares by planning unit
  - 40% for 2013 birth shares by planning unit

- Planning unit specific birth to kindergarten ratio were calculated:
  - Ratio of 2013 births to 2018 enrolled kindergarten students attending a neighborhood school by planning unit
  - Ratio of 2014 births to 2019 enrolled kindergarten students attending a neighborhood school by planning unit
  - Ratio of 2015 births to 2020 enrolled kindergarten students attending a neighborhood school by planning unit
- A weighted average of the birth to kindergarten ratios by planning units was assessed using the following weights:
  - 40% for the 2013 births to 2018 kindergarten enrollees attending a neighborhood school by planning unit
  - 40% for the 2014 births to 2019 kindergarten enrollees attending a neighborhood school by planning unit
  - 20% for the 2015 births to 2020 kindergarten enrollees attending a neighborhood school by planning unit
- The weighted average of each planning unit's birth share was applied to the total number of births that occurred between 2015 to 2019. This was done to attain a weighted average number of births by planning unit, based on total number of recorded births. The total number of births to Arlington County parents that occurred in this period are as follows:
  - 2016 – 3,207 births
  - 2017 – 2,971 births
  - 2018 – 2,934 births
  - 2019 – 2,652 births
- With a weighted average number of births by planning unit for 2016 to 2019 established, then the planning unit specific weighted average birth to kindergarten rate can be applied. The weighted average rate was applied as follows:
  - To 2016 births by planning unit to estimate the incoming kindergarten cohort in 2021 (or 5-years later) by planning unit
  - To 2017 births by planning unit to estimate the incoming kindergarten cohort in 2022 by planning unit
  - To 2018 births by planning unit to estimate the incoming kindergarten cohort in 2023 by planning unit
  - To 2019 births by planning unit to estimate the incoming kindergarten cohort in 2024 by planning unit

#### Cohort Transition Rates (CTR)

- Countywide weighted CTRs were applied to the K through Grade 5 cohorts by planning unit. The countywide CTRs for Grades K to 1, 1 to 2, 2 to 3, 3 to 4, and 4 to 5 were calculated based on the following weights:
  - 42.5% for CTRs between September 30, 2018 and September 30, 2017
  - 42.5% for CTRs between September 30, 2019 and September 30, 2018
  - 15.0% for CTRs between September 30, 2020 and September 30, 2019 (the purpose of the lower weight is to de-emphasize the 2020 enrollment which was impacted by the COVID-19 pandemic, while still acknowledging its possible impact to future enrollment trends)

#### Future Enrollment from Forecasted Development

- Estimates of students residing in forecasted housing rely on the *Updated Fall 2019 Student Generation Rates* that can be accessed in the [Arlington Public Schools 2020 3-Year Enrollment Projections Report \(see Attachment C\)](#)
- Assumptions on the timing of the enrollment impacts from new housing forecasted by Arlington County Government:
  - Full impact in the year of construction is assumed for Committed Affordable Units (CAFs) and Single Family Detached units.
  - The impact from all other housing types, mixed-income, and market-rate units is spread over a two-year period.
  - Single-family construction permits are incorporated into the projections in the 2020-21 school year, which also affects student estimates from new construction in later years from 2021 to 2024.
- The student estimates from new housing is added on a cumulative basis across projection years for the incoming kindergarten cohorts.
- For Grades 1-5, the student yield from new housing is not added on a cumulative basis. Rather the student yield from new residential construction is added on the year of construction (for CAFs and SFD) or over the course of two years (for all other housing types) only once.

#### Enrollment Base for Elementary Projections

- The starting point or “base” for the planning unit projections was the September 30, 2019 official enrollment. The base consists exclusively of K-5 students that attended a neighborhood school on September 2019 aggregated to their planning units of residence (matched by home address).
- The reason that the base consists of students that attended a neighborhood school is that the planning unit projections are used to building boundary scenarios for students estimated to attend a neighborhood elementary school.

#### Middle School Projections

Middle School (Grades 6 to 8) enrollment projections are reported for all current 347 APS planning units. The purpose of this work is to project enrollment for school students that are estimated to attend a neighborhood middle school.

#### Incoming Grade 6 students by planning unit

- The process starts by counting all Grade 5 students enrolled with APS on September 30, 2017, 2018, and 2019, by planning units based on students’ home address.
- Grade 6 students enrolled with APS on September 30, 2018, 2019, and 2020, were matched to planning units based on students’ home address. These Grade 6 students had to meet the following criteria:
  - Attend a neighborhood middle school in 2018, 2019, or 2020
  - If the students attended Gunston Middle School and attended the Immersion (IM) or Montessori (MN) programs, but lived outside of the Gunston attendance zone, then they were not counted at their planning unit of residence. In these instances, these students were treated the same as an option program student. Conversely, students that lived in the Gunston attendance zone in 2018, 2019, or 2020 and attended Gunston’ Immersion or Montessori program would be counted at their planning unit of residence.

- CTRs of Grade 5 (all students) to Grade 6 (attending a neighborhood school) were calculated for each planning unit. The Grade 5 and 6 student CTRs by planning unit included,
  - All 2017 Grade 5 students compared to 2018 Grade 6 students that attended a neighborhood middle school by planning unit
  - All 2018 Grade 5 students compared to 2019 Grade 6 students that attended a neighborhood middle school by planning unit
  - All 2019 Grade 5 students compared to 2020 Grade 6 students that attended a neighborhood middle school by planning unit
- A weighted average of the Grade 5 to Grade 6 CTRs for the 2017 to 2018 (42.5%), 2018 to 2019 (42.5%), and 2019 to 2020 (15%) periods were calculated for each planning unit. The lower weight of 15% is used in the 2019 to 2020 period to de-emphasize the 2020 enrollment which was impacted by the COVID-19 pandemic, while still acknowledging its possible impact to future enrollment trends.
- With each planning unit having a unique weighted average Grade 5 to Grade 6 CTR, the number of incoming Grade 6 students is projected using the below approach:
  - 2021: September 30, 2019, Grade 4 students residing in a planning unit are aged to Grade 5 using county-wide weighted average Grade 4 to 5 CTR. The projected Grade 5 students are then aged to Grade 6 using the planning unit's unique Grade 5 to 6 weighted average CTR.
  - 2022: September 30, 2019, Grade 3 students residing in a planning unit are aged to Grade 5 using county-wide weighted average Grade 3 to 4 and Grade 4 to 5 CTRs. The projected Grade 5 students are then aged to Grade 6 using the planning unit's unique Grade 5 to 6 weighted average CTR.
  - 2023: September 30, 2019, Grade 2 students residing in a planning unit are aged to Grade 5 using county-wide weighted average Grade 2 to 3, Grade 3 to 4, and Grade 4 to 5 CTRs. The projected Grade 5 students are then aged to Grade 6 using the planning unit's unique Grade 5 to 6 weighted average CTR.
  - 2024: September 30, 2019, Grade 1 students residing in a planning unit are aged to Grade 5 using county-wide weighted average Grade 1 to 2, Grade 2 to 3, Grade 3 to 4, and Grade 4 to 5 CTRs. The projected Grade 5 students are then aged to Grade 6 using the planning unit's unique Grade 5 to 6 weighted average CTR.

#### Cohort Transition Rates (CTR)

- Countywide weighted CTRs were applied to the Grade 6 through Grade 8 cohorts by planning unit. The countywide CTRs for Grades 6 to 7 and 7 to 8 were calculated based on the following weights:
  - 42.5% for CTRs between September 30, 2017 and September 30, 2016
  - 42.5% for CTRs between September 30, 2018 and September 30, 2017
  - 15.0% for CTRs between September 30, 2020 and September 30, 2019 (the purpose of the lower weight is to de-emphasize the 2020 enrollment which was impacted by the COVID-19 pandemic, while still acknowledging its possible impact to future enrollment trends)
  - Note that the CTRs between September 30, 2019 and September 30, 2018 were not used. This period was not used because there was a boundary change between both school years which could impact CTRs rates.

#### Future Enrollment from Forecasted Development

- Estimates of students residing in forecasted housing rely on the *Updated Fall 2019 Student Generation Rates* that can be accessed in the [Arlington Public Schools 2020 3-Year Enrollment Projections Report \(see Attachment C\)](#)
- Assumptions on the timing of the enrollment impacts from new housing forecasted by Arlington County Government:
  - Full impact in the year of construction is assumed for Committed Affordable Units (CAFs) and Single Family Detached units.
  - The impact from all other housing types, mixed-income, and market-rate units is spread over a two-year period.
  - Single-family construction permits are incorporated into the projections in the 2020-21 school year, which also affects student estimates from new construction in later years from 2021 to 2024.
- The student estimates from new housing is added on a cumulative basis across projection years for the incoming Grade 6 cohorts.
- For Grades 6 and 7, the student yield from new housing is not added on a cumulative basis. Rather the student yield from new residential construction is added on the year of construction (for CAFs and SFD) or over the course of two years (for all other housing types) only once.

#### Enrollment Base for Middle School Projections

- The starting point or “base” for the planning unit projections was the September 30, 2019 official enrollment. At the middle school level, the base consists exclusively of Grades 6 to 8 students that attended a neighborhood school on September 2019 aggregated to their planning units of residence (matched by home address).
- The reason that the base consists of students that attended a neighborhood school is that the planning unit projections are used to building boundary scenarios for students estimated to attend a neighborhood middle school.
- Because of this, students that attended an option school or program on September 30, 2019, were not counted in their planning unit of residence for purposes of establishing the Grades 6 to 8 base. Additionally, if the Grade 6 to 8 students attended Gunston Middle School because of enrollment in the Immersion or Montessori programs and resided outside of the Gunston attendance zone, then they were not counted in their planning unit of residence for purposes of establishing the base. Conversely, students that lived in the Gunston attendance zone in 2019 and attended Gunston’ Immersion or Montessori program would be counted at their planning unit of residence.

#### High School Projections

High School (Grades 9 to 12) enrollment projections are reported for all current 347 APS planning units. The purpose of this work is to project enrollment for school students that are estimated to attend a neighborhood high school.

#### Incoming Grade 9 students by planning unit

- The process starts by counting all Grade 8 students enrolled with APS on September 30, 2017, 2018, and 2019, by planning units based on students’ home address.
- Grade 9 students enrolled with APS on September 30, 2018, 2019, and 2020, were matched to planning units based on students’ home address. These Grade 9 students had to meet the following criteria:

- Attend a neighborhood middle school in 2018, 2019, or 2020
- In addition, the following steps were applied to some Grade 9 students:
  - If the students attended Washington-Liberty and attended the IB program, but lived outside of the Washington-Liberty attendance zone, then they were not counted at their planning unit of residence. In these instances, these students were treated the same as an option program student.
  - If the students attended Wakefield and attended the AP or Immersion program, but lived outside of the Wakefield attendance zone, then they were not counted at their planning unit of residence. In these instances, these students were treated the same as an option program student.
- CTRs of Grade 8 (all students) to Grade 9 (attending a neighborhood school) were calculated for each planning unit. The Grade 8 to 9 student CTRs by planning unit included,
  - All 2017 Grade 8 students compared to 2018 Grade 9 students that attended a neighborhood middle school by planning unit
  - All 2018 Grade 8 students compared to 2019 Grade 9 students that attended a neighborhood middle school by planning unit
  - All 2019 Grade 8 students compared to 2020 Grade 9 students that attended a neighborhood middle school by planning unit
- A weighted average of the Grade 8 to Grade 9 CTRs for the 2017 to 2018 (42.5%), 2018 to 2019 (42.5%), and 2019 to 2020 (15%) periods were calculated for each planning unit. The lower weight of 15% is used in the 2019 to 2020 period to de-emphasize the 2020 enrollment which was impacted by the COVID-19 pandemic, while still acknowledging its possible impact to future enrollment trends.
- With each planning unit having a unique weighted average Grade 8 to Grade 9 CTR, the number of incoming Grade 9 students is projected using the below approach:
  - 2021: September 30, 2019, Grade 7 students residing in a planning unit are aged to Grade 8 using county-wide weighted average Grade 7 to 8 CTR. The projected Grade 8 students are then aged to Grade 9 using the planning unit's unique Grade 8 to 9 weighted average CTR.
  - 2022: September 30, 2019, Grade 6 students residing in a planning unit are aged to Grade 8 using county-wide weighted average Grade 6 to 7 and Grade 7 to 8 CTRs. The projected Grade 8 students are then aged to Grade 9 using the planning unit's unique Grade 8 to 9 weighted average CTR.
  - 2023: September 30, 2019, Grade 5 students residing in a planning unit are aged to Grade 8 using county-wide weighted average Grade 5 to 6, Grade 6 to 7, and Grade 7 to 8 CTRs. The projected Grade 8 students are then aged to Grade 9 using the planning unit's unique Grade 8 to 9 weighted average CTR.
  - 2024: September 30, 2019, Grade 4 students residing in a planning unit are aged to Grade 8 using county-wide weighted average Grade 4 to 5, Grade 5 to 6, Grade 6 to 7, and Grade 7 to 8 CTRs. The projected Grade 8 students are then aged to Grade 9 using the planning unit's unique Grade 8 to 9 weighted average CTR.

#### Cohort Transition Rates (CTR)

- Countywide weighted CTRs were applied to the Grade 9 through Grade 12 cohorts by planning unit. The countywide CTRs for Grades 9 to 10, 10 to 11, and 11 to 12 were calculated based on the following weights:
  - 42.5% for CTRs between September 30, 2018 and September 30, 2017
  - 42.5% for CTRs between September 30, 2019 and September 30, 2018

- 15.0% for CTRs between September 30, 2020 and September 30, 2019 (the purpose of the lower weight is to de-emphasize the 2020 enrollment which was impacted by the COVID-19 pandemic, while still acknowledging its possible impact to future enrollment trends)
- Note that all high school enrollment information used for the CTRs incorporate the last high school boundary adjustment that took place at the beginning of the 2017-18 school year. See <https://www.apsva.us/engage/high-school-boundary-refinements/> for more information.

#### Future Enrollment from Forecasted Development

- Estimates of students residing in forecasted housing rely on the *Updated Fall 2019 Student Generation Rates* that can be accessed in the [Arlington Public Schools 2020 3-Year Enrollment Projections Report \(see Attachment C\)](#)
- Assumptions on the timing of the enrollment impacts from new housing forecasted by Arlington County Government:
  - Full impact in the year of construction is assumed for Committed Affordable Units (CAFs) and Single Family Detached units.
  - The impact from all other housing types, mixed-income, and market-rate units is spread over a two-year period.
  - Single-family construction permits are incorporated into the projections in the 2020-21 school year, which also affects student estimates from new construction in later years from 2021 to 2024.
- The student estimates from new housing is added on a cumulative basis across projection years for the incoming Grade 9 cohorts.
- For Grades 10, 11 and 12, the student yield from new housing is not added on a cumulative basis. Rather the student yield from new residential construction is added on the year of construction (for CAFs and SFD) or over the course of two years (for all other housing types) only once.

#### Enrollment Base for High School Projections

- The starting point or “base” for the planning unit projections was the September 30, 2019 official enrollment. At the high school level, the base consists exclusively of Grades 9 to 12 students that attended a neighborhood school on September 2019 aggregated to their planning units of residence (matched by home address).
- The reason that the base consists of students that attended a neighborhood school is that the planning unit projections are used to building boundary scenarios for students estimated to attend a neighborhood high school.
- Because of this, students that attended an option school or program on September 30, 2019, were not counted in their planning unit of residence for purposes of establishing the Grades 9 to 12 base. Additionally,
  - If the students attended Washington-Liberty and attended the IB program, but lived outside of the Washington-Liberty attendance zone, then they were not counted at their planning unit of residence. In these instances, these students were treated the same as an option program student.
  - If the students attended Wakefield and attended the AP or Immersion program, but lived outside of the Wakefield attendance zone, then they were not counted at their



planning unit of residence. In these instances, these students were treated the same as an option program student.