

MSBA Enrollment Analysis – Andover

The following are base enrollment projections prepared for the Andover School District. These projections have been produced using a modified grade-to-grade cohort survival method. This method is based on a weighted mathematical formula assuming enrollment trends in the past will continue into the future. A grade-to-grade survival ratio is the proportion of students enrolled in one grade in specific school year relative to the number of students enrolled in the next incremented grade level and school year. This method assumes that the rate of progression from one grade to the next (and also the ratio of the number of births to the number of kindergarten students 5 years later) will be consistent with rates of progression in previous years.

The data used in developing these projections includes historic enrollments on file with DESE for Andover through the 2016-2017 school year; actual birth data through 2014 from DPH (latest year reported); female population data from the US Census Bureau through 2010 (most recent available); and population projections from the U Mass Donahue Institute thru 2030.

The analysis uses the last three years of actual births and calculates fertility rates for each cohort (age group) of female population. These 3-year average fertility rates are applied to actual and projected female populations moving forward through 2030. Births translate to kindergarten enrollments 5 years later so births through 2020 give us kindergarten through 2025. Then, by

applying the average of the most recent 5-year birth-to-kindergarten and grade-to-grade survival ratios, the methodology forecasts births to kindergarten and kindergarten through grade 12 populations.

Refer to the chart on page 4 which shows graphically that births in Andover have been on a decreasing trend over the past several years. The last two years show an increasing trend and, going forward, the model projects a fairly significant increase in the birth rate through 2025.

Page 8 shows that elementary grade enrollments have been decreasing slightly over the past five years and will continue to decrease over the next 2-3 years, stabilize for four years, then increase fairly significantly. Enrollments in middle and high school grades appear to have been stable in past years and will continue to be stable going forward, perhaps decreasing slightly.

All trend projections and enrollment estimates are speculative in nature which means that there is a constant need for updating the statistics. An experienced enrollment projections specialist can provide more comprehensive, customized studies incorporating local population dynamics, housing trends, and other data.

MSBA Enrollment Analysis – Andover

Historic Enrollment Data (DESE)

| YEAR | PK | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | K-12 | K-5 | 6-8 | 9-12 |
|---------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|
| 1993-94 | 27 | 418 | 430 | 449 | 460 | 455 | 442 | 419 | 397 | 384 | 328 | 355 | 290 | 279 | 5,106 | 2,654 | 1,200 | 1,252 |
| 1994-95 | 31 | 419 | 464 | 445 | 462 | 463 | 468 | 445 | 425 | 398 | 329 | 319 | 332 | 278 | 5,247 | 2,721 | 1,268 | 1,258 |
| 1995-96 | 41 | 428 | 460 | 488 | 466 | 473 | 727 | 442 | 416 | 212 | 347 | 320 | 312 | 320 | 5,411 | 3,042 | 1,070 | 1,299 |
| 1996-97 | 31 | 425 | 473 | 462 | 486 | 463 | 478 | 468 | 458 | 434 | 368 | 338 | 312 | 292 | 5,457 | 2,787 | 1,360 | 1,310 |
| 1997-98 | 39 | 387 | 458 | 478 | 481 | 501 | 469 | 469 | 473 | 461 | 388 | 359 | 339 | 311 | 5,574 | 2,774 | 1,403 | 1,397 |
| 1998-99 | 36 | 413 | 446 | 475 | 482 | 504 | 503 | 460 | 469 | 466 | 414 | 385 | 350 | 331 | 5,698 | 2,823 | 1,395 | 1,480 |
| 1999-00 | 27 | 397 | 460 | 460 | 482 | 487 | 503 | 501 | 471 | 461 | 419 | 407 | 389 | 344 | 5,781 | 2,789 | 1,433 | 1,559 |
| 2000-01 | 32 | 425 | 422 | 476 | 463 | 486 | 504 | 495 | 504 | 472 | 445 | 395 | 405 | 381 | 5,873 | 2,776 | 1,471 | 1,626 |
| 2001-02 | 35 | 383 | 458 | 427 | 478 | 468 | 482 | 497 | 514 | 497 | 421 | 407 | 383 | 397 | 5,812 | 2,696 | 1,508 | 1,608 |
| 2002-03 | 39 | 415 | 435 | 470 | 446 | 489 | 477 | 478 | 507 | 512 | 472 | 386 | 408 | 381 | 5,876 | 2,732 | 1,497 | 1,647 |
| 2003-04 | 62 | 409 | 425 | 438 | 482 | 461 | 493 | 476 | 478 | 503 | 468 | 464 | 375 | 405 | 5,877 | 2,708 | 1,457 | 1,712 |
| 2004-05 | 71 | 441 | 436 | 442 | 448 | 480 | 468 | 481 | 478 | 483 | 470 | 444 | 456 | 358 | 5,885 | 2,715 | 1,442 | 1,728 |
| 2005-06 | 54 | 407 | 475 | 452 | 455 | 467 | 494 | 465 | 484 | 484 | 423 | 469 | 445 | 441 | 5,961 | 2,750 | 1,433 | 1,778 |
| 2006-07 | 71 | 403 | 423 | 488 | 469 | 474 | 466 | 499 | 469 | 490 | 452 | 410 | 456 | 427 | 5,926 | 2,723 | 1,458 | 1,745 |
| 2007-08 | 84 | 418 | 453 | 455 | 502 | 485 | 487 | 476 | 519 | 476 | 454 | 446 | 402 | 432 | 6,005 | 2,800 | 1,471 | 1,734 |
| 2008-09 | 75 | 448 | 447 | 456 | 467 | 507 | 493 | 491 | 494 | 526 | 450 | 443 | 436 | 390 | 6,048 | 2,818 | 1,511 | 1,719 |
| 2009-10 | 78 | 397 | 464 | 474 | 486 | 469 | 515 | 497 | 492 | 492 | 490 | 441 | 442 | 426 | 6,085 | 2,805 | 1,481 | 1,799 |
| 2010-11 | 66 | 435 | 426 | 478 | 497 | 493 | 472 | 520 | 507 | 482 | 460 | 470 | 440 | 432 | 6,112 | 2,801 | 1,509 | 1,802 |
| 2011-12 | 70 | 391 | 467 | 453 | 512 | 507 | 507 | 471 | 523 | 514 | 448 | 450 | 462 | 424 | 6,129 | 2,837 | 1,508 | 1,784 |
| 2012-13 | 73 | 370 | 441 | 503 | 469 | 528 | 512 | 514 | 479 | 537 | 466 | 433 | 440 | 453 | 6,145 | 2,823 | 1,530 | 1,792 |
| 2013-14 | 65 | 355 | 410 | 452 | 515 | 477 | 528 | 509 | 522 | 478 | 488 | 444 | 430 | 429 | 6,037 | 2,737 | 1,509 | 1,791 |
| 2014-15 | 63 | 375 | 387 | 444 | 479 | 519 | 489 | 530 | 508 | 522 | 420 | 477 | 432 | 415 | 5,997 | 2,693 | 1,560 | 1,744 |
| 2015-16 | 68 | 380 | 406 | 428 | 461 | 497 | 526 | 477 | 532 | 503 | 471 | 413 | 469 | 429 | 5,992 | 2,698 | 1,512 | 1,782 |
| 2016-17 | 73 | 355 | 425 | 412 | 449 | 472 | 505 | 506 | 483 | 523 | 446 | 459 | 421 | 462 | 5,918 | 2,618 | 1,512 | 1,788 |

MSBA Enrollment Analysis – Andover

Historic Birth Data (MA Department of Public Health)

| Maternal Age | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 10-14 Yrs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15-19 Yrs | 5 | 5 | 6 | 6 | 6 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 0 | 0 |
| 20-24 Yrs | 23 | 27 | 14 | 23 | 12 | 14 | 7 | 12 | 11 | 8 | 7 | 9 | 7 | 8 | 11 | 14 | 13 | 11 | 14 | 9 | 14 | 10 | 0 | 5 | 9 | 0 |
| 25-29 Yrs | 89 | 82 | 62 | 98 | 62 | 64 | 76 | 73 | 52 | 54 | 55 | 43 | 41 | 44 | 31 | 33 | 37 | 42 | 50 | 34 | 44 | 34 | 45 | 33 | 28 | 35 |
| 30-34 Yrs | 154 | 155 | 135 | 156 | 155 | 167 | 157 | 160 | 169 | 161 | 151 | 138 | 149 | 145 | 146 | 142 | 119 | 99 | 133 | 103 | 106 | 80 | 98 | 107 | 111 | 110 |
| 35-39 Yrs | 73 | 77 | 64 | 78 | 81 | 87 | 94 | 107 | 99 | 99 | 117 | 115 | 98 | 121 | 82 | 101 | 96 | 86 | 101 | 96 | 93 | 84 | 62 | 65 | 79 | 96 |
| 40-44 Yrs | 16 | 12 | 18 | 11 | 9 | 11 | 23 | 12 | 17 | 25 | 21 | 31 | 19 | 27 | 18 | 17 | 26 | 28 | 19 | 16 | 13 | 13 | 20 | 18 | 18 | 20 |
| Total Births | 360 | 358 | 301 | 372 | 326 | 347 | 366 | 368 | 350 | 352 | 354 | 338 | 318 | 349 | 293 | 310 | 292 | 269 | 326 | 262 | 273 | 230 | 231 | 228 | 249 | 268 |

Female Population Data

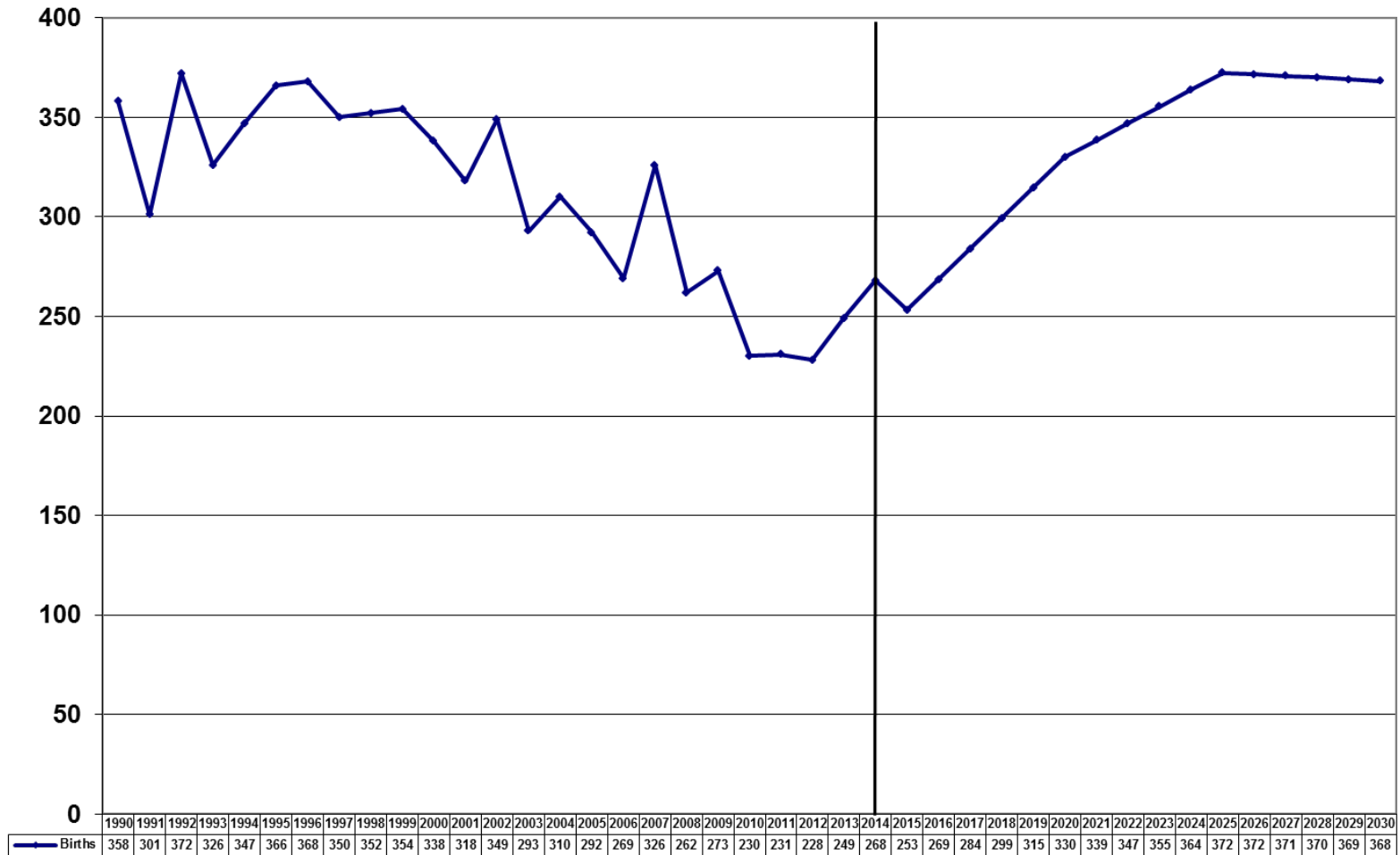
| Maternal Age | US Census Data | | | U Mass Donohue Institute | | | | 2011-2013 Avg Fertility Rate |
|---------------|----------------|--------|--------|--------------------------|--------|--------|--------|------------------------------|
| | 1990 | 2000 | 2010 | 2015 | 2020 | 2025 | 2030 | |
| 10-14 Yrs | 987 | 1,298 | 1,343 | 1,328 | 1,141 | 1,041 | 1,348 | 0.00% |
| 15-19 Yrs | 1,057 | 1,000 | 1,171 | 1,069 | 1,070 | 925 | 853 | 0.00% |
| 20-24 Yrs | 867 | 434 | 847 | 835 | 792 | 810 | 705 | 0.56% |
| 25-29 Yrs | 846 | 570 | 533 | 878 | 857 | 820 | 847 | 4.40% |
| 30-34 Yrs | 1,142 | 943 | 680 | 771 | 1,247 | 1,195 | 1,143 | 15.10% |
| 35-39 Yrs | 1,378 | 1,430 | 1,088 | 909 | 1,014 | 1,615 | 1,537 | 8.34% |
| 40-44 Yrs | 1,561 | 1,641 | 1,362 | 1,137 | 979 | 1,075 | 1,698 | 1.55% |
| Total Females | 15,106 | 16,197 | 17,180 | 17,344 | 17,872 | 18,752 | 19,738 | 1.44% |

Birth Projections

| Maternal Age | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 10-14 Yrs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15-19 Yrs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20-24 Yrs | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 |
| 25-29 Yrs | 39 | 38 | 38 | 38 | 38 | 38 | 37 | 37 | 37 | 36 | 36 | 36 | 37 | 37 | 37 | 37 |
| 30-34 Yrs | 116 | 131 | 145 | 160 | 174 | 188 | 187 | 185 | 184 | 182 | 180 | 179 | 177 | 176 | 174 | 173 |
| 35-39 Yrs | 76 | 78 | 79 | 81 | 83 | 85 | 95 | 105 | 115 | 125 | 135 | 133 | 132 | 131 | 129 | 128 |
| 40-44 Yrs | 18 | 17 | 17 | 16 | 16 | 15 | 15 | 16 | 16 | 16 | 17 | 19 | 20 | 22 | 24 | 26 |
| Totals | 253 | 269 | 284 | 299 | 315 | 330 | 339 | 347 | 355 | 364 | 372 | 372 | 371 | 370 | 369 | 368 |

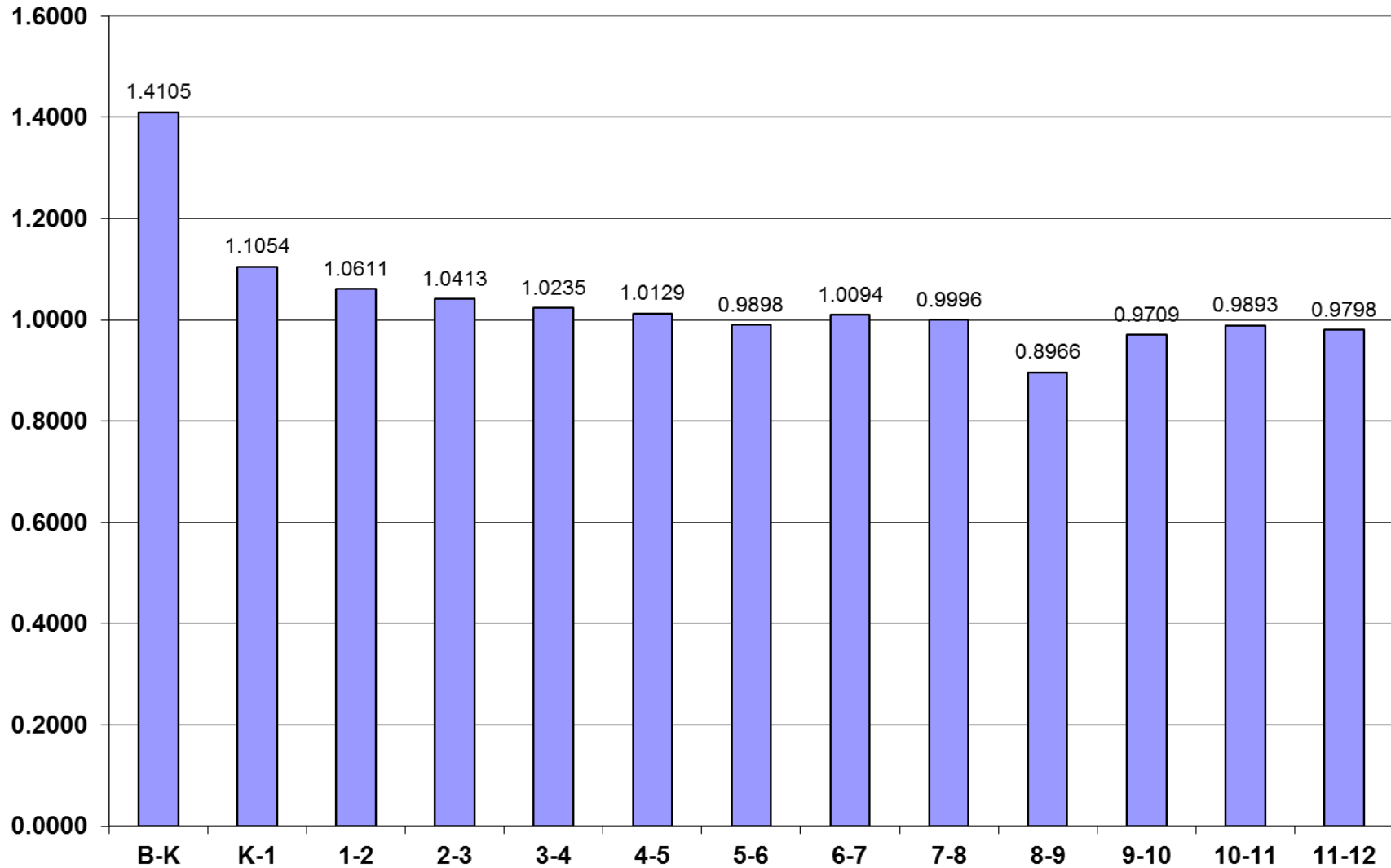
MSBA Enrollment Analysis – Andover

Births



MSBA Enrollment Analysis – Andover

Grade-to-Grade Ratios - 5 Yr Average



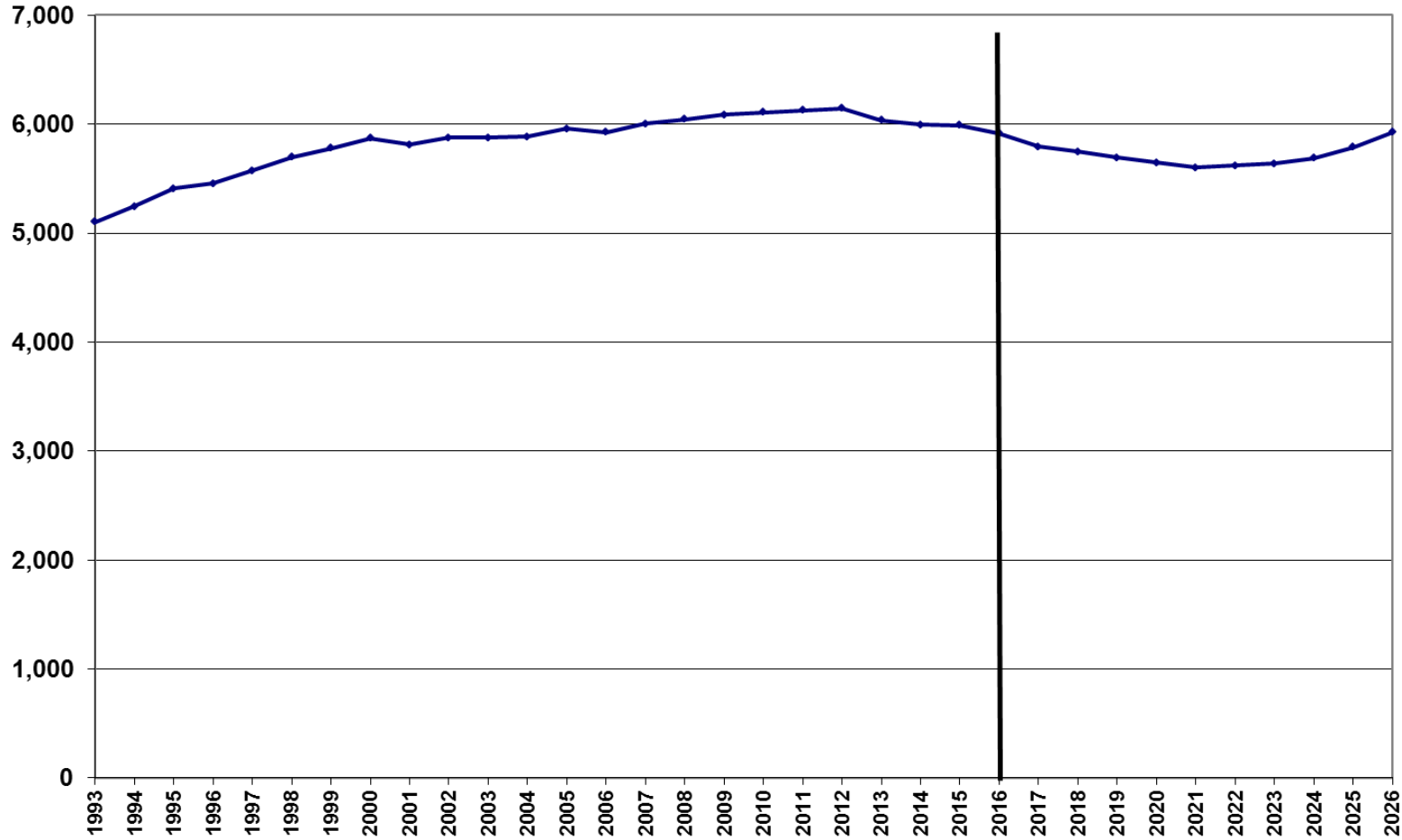
MSBA Enrollment Analysis – Andover

Base Enrollment Projections

| YEAR | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | TOTAL | K-5 | 6-8 | 9-12 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|
| 1993 | 418 | 430 | 449 | 460 | 455 | 442 | 419 | 397 | 384 | 328 | 355 | 290 | 279 | 5,106 | 2,654 | 1,200 | 1,252 |
| 1994 | 419 | 464 | 445 | 462 | 463 | 468 | 445 | 425 | 398 | 329 | 319 | 332 | 278 | 5,247 | 2,721 | 1,268 | 1,258 |
| 1995 | 428 | 460 | 488 | 466 | 473 | 727 | 442 | 416 | 212 | 347 | 320 | 312 | 320 | 5,411 | 3,042 | 1,070 | 1,299 |
| 1996 | 425 | 473 | 462 | 486 | 463 | 478 | 468 | 458 | 434 | 368 | 338 | 312 | 292 | 5,457 | 2,787 | 1,360 | 1,310 |
| 1997 | 387 | 458 | 478 | 481 | 501 | 469 | 469 | 473 | 461 | 388 | 359 | 339 | 311 | 5,574 | 2,774 | 1,403 | 1,397 |
| 1998 | 413 | 446 | 475 | 482 | 504 | 503 | 460 | 469 | 466 | 414 | 385 | 350 | 331 | 5,698 | 2,823 | 1,395 | 1,480 |
| 1999 | 397 | 460 | 460 | 482 | 487 | 503 | 501 | 471 | 461 | 419 | 407 | 389 | 344 | 5,781 | 2,789 | 1,433 | 1,559 |
| 2000 | 425 | 422 | 476 | 463 | 486 | 504 | 495 | 504 | 472 | 445 | 395 | 405 | 381 | 5,873 | 2,776 | 1,471 | 1,626 |
| 2001 | 383 | 458 | 427 | 478 | 468 | 482 | 497 | 514 | 497 | 421 | 407 | 383 | 397 | 5,812 | 2,696 | 1,508 | 1,608 |
| 2002 | 415 | 435 | 470 | 446 | 489 | 477 | 478 | 507 | 512 | 472 | 386 | 408 | 381 | 5,876 | 2,732 | 1,497 | 1,647 |
| 2003 | 409 | 425 | 438 | 482 | 461 | 493 | 476 | 478 | 503 | 468 | 464 | 375 | 405 | 5,877 | 2,708 | 1,457 | 1,712 |
| 2004 | 441 | 436 | 442 | 448 | 480 | 468 | 481 | 478 | 483 | 470 | 444 | 456 | 358 | 5,885 | 2,715 | 1,442 | 1,728 |
| 2005 | 407 | 475 | 452 | 455 | 467 | 494 | 465 | 484 | 484 | 423 | 469 | 445 | 441 | 5,961 | 2,750 | 1,433 | 1,778 |
| 2006 | 403 | 423 | 488 | 469 | 474 | 466 | 499 | 469 | 490 | 452 | 410 | 456 | 427 | 5,926 | 2,723 | 1,458 | 1,745 |
| 2007 | 418 | 453 | 455 | 502 | 485 | 487 | 476 | 519 | 476 | 454 | 446 | 402 | 432 | 6,005 | 2,800 | 1,471 | 1,734 |
| 2008 | 448 | 447 | 456 | 467 | 507 | 493 | 491 | 494 | 526 | 450 | 443 | 436 | 390 | 6,048 | 2,818 | 1,511 | 1,719 |
| 2009 | 397 | 464 | 474 | 486 | 469 | 515 | 497 | 492 | 492 | 490 | 441 | 442 | 426 | 6,085 | 2,805 | 1,481 | 1,799 |
| 2010 | 435 | 426 | 478 | 497 | 493 | 472 | 520 | 507 | 482 | 460 | 470 | 440 | 432 | 6,112 | 2,801 | 1,509 | 1,802 |
| 2011 | 391 | 467 | 453 | 512 | 507 | 507 | 471 | 523 | 514 | 448 | 450 | 462 | 424 | 6,129 | 2,837 | 1,508 | 1,784 |
| 2012 | 370 | 441 | 503 | 469 | 528 | 512 | 514 | 479 | 537 | 466 | 433 | 440 | 453 | 6,145 | 2,823 | 1,530 | 1,792 |
| 2013 | 355 | 410 | 452 | 515 | 477 | 528 | 509 | 522 | 478 | 488 | 444 | 430 | 429 | 6,037 | 2,737 | 1,509 | 1,791 |
| 2014 | 375 | 387 | 444 | 479 | 519 | 489 | 530 | 508 | 522 | 420 | 477 | 432 | 415 | 5,997 | 2,693 | 1,560 | 1,744 |
| 2015 | 380 | 406 | 428 | 461 | 497 | 526 | 477 | 532 | 503 | 471 | 413 | 469 | 429 | 5,992 | 2,698 | 1,512 | 1,782 |
| 2016 | 355 | 425 | 412 | 449 | 472 | 505 | 506 | 483 | 523 | 446 | 459 | 421 | 462 | 5,918 | 2,618 | 1,512 | 1,788 |
| 2017 | 322 | 392 | 451 | 429 | 460 | 478 | 500 | 511 | 483 | 469 | 433 | 454 | 412 | 5,794 | 2,532 | 1,494 | 1,768 |
| 2018 | 351 | 356 | 416 | 470 | 439 | 465 | 473 | 505 | 511 | 433 | 455 | 428 | 445 | 5,747 | 2,497 | 1,489 | 1,761 |
| 2019 | 378 | 388 | 377 | 434 | 481 | 445 | 461 | 478 | 504 | 458 | 420 | 450 | 420 | 5,693 | 2,503 | 1,443 | 1,748 |
| 2020 | 357 | 418 | 412 | 393 | 444 | 487 | 440 | 465 | 477 | 452 | 444 | 416 | 441 | 5,647 | 2,511 | 1,382 | 1,753 |
| 2021 | 379 | 395 | 443 | 429 | 402 | 450 | 482 | 444 | 465 | 428 | 439 | 440 | 407 | 5,603 | 2,498 | 1,391 | 1,714 |
| 2022 | 401 | 419 | 419 | 462 | 439 | 407 | 445 | 486 | 444 | 417 | 416 | 434 | 431 | 5,619 | 2,547 | 1,375 | 1,698 |
| 2023 | 422 | 443 | 444 | 436 | 473 | 445 | 403 | 449 | 486 | 398 | 405 | 411 | 426 | 5,641 | 2,663 | 1,338 | 1,640 |
| 2024 | 444 | 467 | 470 | 463 | 446 | 479 | 440 | 407 | 449 | 436 | 387 | 400 | 403 | 5,690 | 2,769 | 1,296 | 1,626 |
| 2025 | 466 | 491 | 495 | 489 | 474 | 452 | 474 | 444 | 407 | 403 | 423 | 383 | 392 | 5,792 | 2,867 | 1,325 | 1,601 |
| 2025 | 478 | 515 | 521 | 516 | 501 | 480 | 448 | 478 | 444 | 365 | 391 | 419 | 375 | 5,928 | 3,011 | 1,370 | 1,550 |
| 10 yr avg | 392 | 433 | 456 | 484 | 495 | 503 | 499 | 506 | 505 | 459 | 448 | 437 | 429 | 6,047 | 2,763 | 1,510 | 1,774 |
| 5 yr avg | 367 | 414 | 448 | 475 | 499 | 512 | 507 | 505 | 513 | 458 | 445 | 438 | 438 | 6,018 | 2,734 | 1,522 | 1,780 |
| 2 yr avg | 368 | 416 | 420 | 455 | 485 | 516 | 492 | 508 | 513 | 459 | 436 | 445 | 446 | 5,955 | 2,658 | 1,512 | 1,785 |
| 5 yr proj | 357 | 390 | 420 | 431 | 445 | 465 | 471 | 480 | 488 | 448 | 438 | 438 | 425 | 5,697 | 2,508 | 1,440 | 1,749 |
| 10 yr proj | 400 | 428 | 445 | 452 | 456 | 459 | 457 | 467 | 467 | 426 | 421 | 424 | 415 | 5,715 | 2,640 | 1,390 | 1,686 |

MSBA Enrollment Analysis – Andover

Total Enrollment



MSBA Enrollment Analysis – Andover

Enrollment by Grade Group

