MOORHEAD SCHOOL DISTRICT #152

ENROLLMENT PROJECTIONS

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MOORHEAD SCHOOL DISTRICT
ENROLLMENT PROJECTIONS

Executive Summary

- Moorhead Public School enrollment increased by 12.5 percent in the past ten years
  - Resident enrollment increased 12.9 percent
  - In 2014-15, nonresidents make up 3.1 percent of K-12 enrollment
  - The Moorhead Public Schools experienced net in migration all but two years in the past ten years and Kindergarten was larger than the previous year's Grade 12 in the past four years
  - The district's estimated school age population increased as well. Today, the Moorhead Public Schools capture 79.3 percent of the district's school age population

- Enrollment is projected to increase 25 to 30 percent in the next ten years
  - In 2024-25, projected enrollment ranges from 7,154 students to 7,436 students. This compares to 5,724 students in 2014-15
  - **For growth to occur at this rate, the district must continue to have an increase in single-family detached housing units**

- Projections by race/ethnicity show increases in the number of White students and the number of minority students. Minority students are projected to be 21.9 percent of K-12 students in five years

- Projections for free/reduced lunch students show this student population decreasing. Free/reduced meal students are projected to be 32.8 percent of K-12 students, down from 38.5 percent. The economy and eligibility requirements affect this population

- In five years, elementary enrollment increases at all elementary schools but especially at Robert Asp and S.G. Reinertsen

CHAPTER 1

DISTRICT-WIDE ENROLLMENT PROJECTIONS

Introduction

In a school district, the school age population is closely related to the other population characteristics of the district. A prime example is the relationship between the age of adults and the number of births in a school district. A larger number of women of prime childbearing age results in more births and larger kindergarten classes five to six years later. Another example is the relationship between age and changing one's residence. Older people move less often than younger people. Families with children under 18 years who move from one locale to another can have an effect on school enrollment. Further, in a mobile society, enrollment changes throughout the school year as families and children move.

While population changes affect the total number of school age children residing in a school district, Minnesota students and their families have education choices. These choices also effect enrollment in the district's schools. Therefore, when analyzing public school enrollment, choice must be considered as well as population dynamics. Choice includes nonpublic schools, home schools, and the public options of open enrollment, charter schools and alternative schools. Two others choices exist: a) dropping out of high school, and b) attending a kindergarten alternative.

Enrollment Trends

Enrollment in the Moorhead Public Schools

Current Enrollment/Past Trends

Enrollment in the Moorhead Public Schools is 638 students or 12.5 percent higher in 2014-15 than in 2005-06. Resident enrollment increased by 635 students or 12.9 percent in the past ten years. As these numbers indicate, nonresident enrollment was flat. Today, nonresidents make up 3.1 percent of Moorhead Public School enrollment. After more modest increases earlier, enrollment growth accelerated beginning in 2012-13.

TOTAL K-12 ENROLLMENT									
2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
5,086	5,185	5,168	5,200	5,261	5,273	5,299	5,428	5,551	5,724

Source: Moorhead School District, Fall Enrollment. Excludes Early Childhood and ALCs

To better understand enrollment change, it is important to understand the components of change. Like all population change, school enrollment change results from two different phenomena—natural increase/decrease and net migration. The difference between the size of the incoming kindergarten class and the previous year's Grade 12, called natural increase or decrease, measures the change in past birth numbers or cohort change. For example, the Baby Boom (1946-1964) and the Baby Bust (1965-1976) set in motion cycles of rising and falling enrollment that are reflected as natural increase/decrease. As the next table shows, Moorhead's kindergarten classes have been larger than the previous year's Grade 12 more often than not. This phenomenon accounted for 414 students in the past ten years. Further, the difference between the size of the kindergarten class and the previous year's Grade 12 increased beginning in 2011-12.

COMPONENTS OF ENROLLMENT CHANGE				
	Total		Natural Increase/ Decrease	Net Migration
Fall to Fall	#	%		
2005 to 2006	99	2.0%	24	75
2006 to 2007	-17	-0.3%	-33	16
2007 to 2008	32	0.6%	-8	40
2008 to 2009	61	1.2%	48	13
2009 to 2010	12	0.2%	-38	50
2010 to 2011	26	0.5%	41	-15
2011 to 2012	129	1.4%	133	-4
2012 to 2013	123	1.3%	108	15
2013 to 2014	173	3.1%	139	34

The other phenomenon affecting school enrollment is migration, an indirectly derived estimate. Migration is the term used when people move across a boundary or border, in this case, the school district boundary. Net migration is calculated by the progression from grade-to-grade of public school students. For example, public school Kindergarten students are moved to Grade 1 in the following year, Grade 1 students to Grade 2, etc. Because the probability of death is very low among children, the same number of students should be in the next higher grade the following year. Therefore, if the number of students changes, migration is assumed to have occurred. A positive number indicates a net flow into the public schools and a negative number reflects a net flow out of the public schools.

This method for estimating migration does not distinguish between physical movement across the district's boundaries and education choices, such as transferring from a nonpublic school to a public school, transferring to a charter school or open enrolling in another public school outside the district. Further, students who move into or out of a school district but never enroll in the district's public schools are not reflected in the migration numbers in this report.

Based on the described methodology, net migration was positive all but two years in the past ten years. Net migration added 224 students to the Moorhead Public Schools. The difference between the net migration and the natural increase is the change in enrollment.

Student Choices in the Moorhead School District

The number of education options available affects enrollment in a district's public schools. Nonpublic schools have been an option for many years. More recently, home schools became another option. Since its inception, public school options are attracting more students every year. Open enrollment allows residents of one district to attend public schools in another district. Charter schools are another public option. All these choices mean competition for students.

Nonpublic Enrollment and Home Schools

Today, nonpublic enrollment falls into two categories—traditional nonpublic schools and home schools. Most traditional nonpublic schools are associated with religious institutions and many home school curriculums also are faith based.

NONPUBLIC SETTINGS			
Year	Traditional Nonpublic Schools	Home Schools	Total
2005-06	486	110	596
2006-07	455	113	568
2007-08	547	120	667
2008-09	508	148	656
2009-10	503	137	640
2010-11	562	120	682
2011-12	553	144	697
2012-13	426	152	578
2013-14	565	135	700
2014-15	732	151	883

Source: Moorhead School District

In Minnesota, 7.4 percent of all enrolled students were enrolled in traditional nonpublic schools and 1.9 percent of enrolled students were home schooled in 2013-14. In Moorhead, 8.4 percent of enrolled students were in traditional nonpublic schools and 2.0 percent were home schooled.

The proportion of ISD #152 residents in nonpublic settings is slightly higher than the statewide percentages. Combining home school students and nonpublic students, 10.4 percent of Moorhead district residents were in nonpublic settings. In Minnesota, 9.2 percent were enrolled in nonpublic settings. In the past ten years, traditional nonpublic enrollment decreased statewide while home schooled children increased. In the Moorhead School District, traditional nonpublic enrollment increased 50.6 percent. The number of home schooled students also increased in the Moorhead School District.

Public Options

Open Enrollment. Open enrollment allows Minnesota students to attend public schools outside their district of residence. The application to open enroll is made by the student and his/her parents and families generally provide their own school transportation. No tuition is charged.

Some students attend public schools outside their home district because their home district enters into an agreement with another district, usually to provide specialized services. This is called a tuition agreement, but this arrangement is not technically a student choice.

Since its beginning, open enrollment has attracted more and more students statewide and in the Moorhead School District. In 2013-14, 171 nonresident students enrolled into the Moorhead Public Schools while 516 district residents attended public schools elsewhere through open enrollment or tuition agreements. In 2014-15, there were 179 nonresident students attending the Moorhead Public Schools and 412 residents were attending school elsewhere through the open enrollment and tuition agreements.

PUBLIC OPTIONS						
	In	Out				
Year	Open Enrollment	Open Enrollment	Tuition	Charter Schools	Other	Net
2005-06	176	226		3	162	-52
2006-07	185	262		7	193	-84
2007-08	162	275		10	137	-123
2008-09	197	351		16	161	-170
2009-10	182	377		19	135	-214
2010-11	178	392		22	115	-236
2011-12	184	437		17	96	-270
2012-13	192	473		13	128	-294
2013-14	171	516		19	97	-364
2014-15	179	412		14	140	-247

Tuition students are included in open enrollment. Other includes the ALC, which is not included in the net
Source: Moorhead School District.

Nonresident students who enroll in the Moorhead Public Schools accounted for 3.1 percent of Moorhead's total enrollment in 2013-14. Students leaving the district to attend public schools elsewhere represented 7.7 percent of the district's school age residents. In 2013-14, 7.4 percent of Minnesota students chose open enrollment.

Charter Schools. Charter schools are another public education option. While 4.7 percent of Minnesota students attended charter schools in 2013-14, only 0.3 percent of Moorhead School District residents attended charter schools.

Other Public Options. Other public options include the alternative learning options. These options account for 1.4 percent of the school age population in the Moorhead School District in 2013-14 and 1.3 percent of enrolled students in Minnesota.

As the education choice data show, nonpublic schools attract the largest number of students not attending the Moorhead Public Schools.

K-12 Capture Rate of District School Age Residents

To estimate a capture rate, there must be an estimate of a district's school age population or more precisely, a district's school age population enrolled in school. A district's enrolled population can be estimated based on resident students in the district's schools and then adding district residents attending traditional nonpublic schools, residents being home schooled and residents opting for open enrollment out, charter schools and other public options.

Based on 2005-06 and 2014-15, the estimated resident school age population increased from 5,897 to 6,994 students, an increase of 1,097 students or 18.6 percent. Resident enrollment in the Moorhead Public Schools increased by 635 students or 12.9 percent from 2005-06 to 2014-15. These percentages indicate that the Moorhead Public Schools' market share decreased, which is typical in Minnesota. (A capture rate is another term for market share.) Based on the estimated 2014-15 enrolled population of 6,994, the Moorhead Public Schools (K-12) captured 79.3 percent of the district's school age population. In 2005-06, the capture rate was 83.3 percent. Moorhead's current market share is average for Minnesota school districts.

MOORHEAD SCHOOL DISTRICT ESTIMATED RESIDENT SCHOOL AGE POPULATION				
Year	Moorhead Public Schools Resident Enrollment	Nonpublic Settings	Public Options	Total
2005-06	4,910	596	391	5,897
2006-07	5,000	568	462	6,030
2007-08	5,006	667	422	6,095
2008-09	5,003	656	528	6,187
2009-10	5,079	640	531	6,250
2010-11	5,095	682	529	5,306
2011-12	5,115	697	550	6,362
2012-13	5,236	578	614	6,428
2013-14	5,380	700	632	6,712
2014-15	5,545	883	566	6,994

History of Enrollment by Grade

The history of public school enrollment contains several patterns with implications for the future. First, the kindergarten class, while fluctuating from year-to-year, increased beginning in 2012-13. In 2013-14, the district offered free all-day kindergarten. Kindergarten has increased slightly this past year.

The number of students per grade varies in the Moorhead Public Schools. A way of expressing the differences by grade is to look at the "average" number of students per grade. For example, the average elementary grade (K-5) has 475 students. The average middle school grade (6-8) has 427 students and the average high school grade is 398 students. The middle school and high school grades

reflect net inflows between Grade 5 and Grade 6 and between Grade 8 to Grade 9. These differences in average grade sizes suggest that enrollment will increase if kindergarten remains near today's level because the current distribution by grade has "built in" growth momentum.

ENROLLMENT										
Grade	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
K	377	421	381	397	417	387	429	483	494	500
1	411	401	431	405	402	432	405	441	490	499
2	358	413	392	426	407	421	427	413	434	515
3	368	358	415	398	440	396	421	437	433	459
4	359	379	356	417	391	446	405	418	433	436
5	390	372	386	379	417	392	444	407	418	442
6	352	420	374	401	397	435	400	444	414	441
7	410	363	423	370	403	418	417	398	446	409
8	419	398	373	404	374	407	417	434	395	432
9	393	432	413	377	423	382	406	403	448	401
10	420	387	436	420	367	415	381	397	402	425
11	432	427	383	437	398	354	397	367	383	378
12	397	414	405	369	425	388	350	386	361	387
Total	5,086	5,185	5,168	5,200	5,261	5,273	5,299	5,428	5,551	5,724

Source: Moorhead School District, Fall Enrollment. Excludes Early Childhood and ALC

Minnesota's largest graduating high school class since 1978 graduated in 2009. State wide, graduating classes will be getting smaller. Based on Moorhead's enrollment history, Moorhead's largest recent senior class graduated in 2007 but will be larger again in the near future.

Enrollment Projections

Projection Background

Some factors affecting future school enrollment are known. However, other important factors are less clear. First, the trends around which there is confidence.

Trends Where Confidence is High

- ∞ Aging. The population in the U.S. and Minnesota is aging. By 2020, 16-17 percent of Minnesota's population will be 65 years old or older. In 2010, the elderly made up 12.9 percent of the population. There is no historical precedent for this high proportion of older population; therefore, society is entering uncharted waters as to the effects of this change. However, we know that aging will affect the housing market and reduce geographic mobility because older people move less frequently than younger people.

- ∞ Decrease in the school age population per household. From 2000 to 2010, the number of school age children per household decreased sharply as Baby Boomer households empty nested and

started to "age in place." After 2010, households with children will be headed primarily by Generation X parents who are members of a much smaller generation. Gen X (1965-1976) is only 60 percent the size of the Baby Boom (1946-1964) generation, which means the percentage of households with 5-17 year-olds will continue to decrease but more slowly.

∞ Shift in size of key adult age groups. The size of the Baby Boom generation and the Baby Bust generation will result in significant changes in the size of adult age groups, which in turn will affect the demand for new housing units. The modest increase in the 20-34 year-old population between 2010 and 2020 is especially significant for the demand for "first" homes (including apartments) and the decrease in 35-54 year-olds will affect the "move up" market. Growth in the 55+ year-old markets will create demand for housing for mature adults and seniors; however, these units will not yield school age children.

These population changes by age point to a future very different from the recent past. Demand for additional housing will slow because the adult population age 20+ will increase more slowly and the 35-54 year-old age group that helped fuel the housing boom will decrease from 2010-2020. Furthermore, 60 percent of the increase in adults 20 years of age and older will be persons 65+ years of age. There may be more sellers than buyers in the housing market.

∞ Fertility. Today, completed fertility is near the replacement level. Completed fertility refers to the number of children born per woman throughout her childbearing years. In Minnesota, White non-Hispanic women have below replacement fertility. (Replacement is 2.11 children per female at the end of childbearing.) Fertility rates for Asian and Hispanic women are now near replacement. Black women (African-American and African-born) have the highest fertility level, just below 3, that is, just less than 3 children per woman at the end of childbearing.

RESIDENT LIVE BIRTHS			
Calendar Year	Minnesota	Clay County	Moorhead City
1999	65,953	647	439
2000	67,451	516	302
2001	66,617	430	289
2002	68,037	587	361
2003	70,053	694	412
2004	70,614	654	406
2005	70,920	715	417
2006	73,515	757	485
2007	73,675	782	474
2008	72,382	780	507
2009	70,617	771	491
2010	68,407	817	543
2011	68,416	750	494
2012	68,783	807	567
2013	69,183	812	555

Source: Minnesota Department of Health

∞ Births. Births fell after 1990 in the U.S. and in Minnesota; however, beginning in 2003 through 2007, births increased. In 2007, births were higher than at any time since 1964; however, 2007 births were well below the peak Minnesota birth year of 1959 (88,000 resident births). In 2008, 2009, 2010 and 2011, births fell in the U.S. and Minnesota, although in Minnesota, births were flat between 2010 and 2011 (+9 births). These declines are attributed to the poor economy and are the result of the decline in the fertility rates of women of color. In 2012 and 2013, Minnesota resident births increased.

As the history of resident births shows, from 1999 to 2013, resident births in Minnesota increased 4.9 percent while resident births in Clay County increased 25.5 percent. In Moorhead City, resident births increased 26.4 percent.

∞ Enrollment cycles. Births will increase again and a third enrollment cycle will occur in the first half of this century. Already, kindergarten classes are increasing in some districts, a sign of the beginning of this third enrollment cycle. The end of the third enrollment cycle is projected to be around 2040. (From start to finish, these cycles last about 30 years.)

Unknowns

The unknowns reflect recent changes such as the collapse of the housing market and tighter credit. Another unknown is the longer-term effect of the recession on domestic migration and international immigration, especially in a slow recovery. Furthermore, will attitude and behavior changes prompted by the recession, especially delayed marriage and lower fertility, continue?

∞ Collapse of the housing market and tighter credit. A high level of mobility was possible with a robust housing market with rapid appreciation and easy credit. This changed with the collapse of the housing market and tighter credit. Recently, however, home prices have been increasing and new construction is occurring.

∞ The recession. Although the recession is officially over, the sluggish job market slowed population movement between and within states. Minnesota felt the effect of this change as fewer young and middle-aged adults moved to Minnesota slowing population growth. Today, Minnesota is outpacing the nation in job growth, but the economy is not robust. The recession also increased public school enrollment as some families decided that nonpublic schools were beyond their current financial resources. Further, births to women of color and, hence, their fertility rates, dropped significantly. Whether lower fertility will continue for these women is unclear.

Cohort Survival Method

The most common and most robust model for projecting school enrollment is the cohort survival method. The first step in the cohort survival method is aging the population. In a standard cohort survival model, aging the population involves estimating the number of deaths expected in an age group before it reaches the next older age group. When the cohort survival method is used to project school enrollment, the first step is to move a grade to the next higher grade. However, because mortality is so low in the school age population, the entire grade is assumed to "survive" to the next higher grade in the following year.

Once a grade or cohort has been "aged" to the next grade, net migration is added to or subtracted from that grade. Using survival rates accomplishes both "aging" and migration in a single step. Over time, the size of a cohort will increase or decrease as a result of migration as its progresses through the grades. For example, the 2005-06 kindergarten class had 377 members. This same cohort had 401 members in Grade 9 in 2014-15.

The projection of future kindergarten class size is important in long-term enrollment projections because these students will be in school over the life of the projection. If a school census exists, it is a resource for short-term kindergarten projections, i.e., a couple of years. However, school censuses are notoriously inaccurate for children less than four years of age, in part, because the preschool population is more mobile than the school age population.

To project kindergarten, the best theoretical approach, but the least practical, is to project births based on the age of the female population. These birth projections then must be survived to age five and then adjusted for migration to yield kindergarten projections. Determining the age of females in a school district is the first challenge, and then many assumptions must be made, making this approach impractical.

A simpler approach is to use resident births as a proxy for kindergarten five years later. Of course, not every child born in the district will enter the district's kindergarten classes five to six years later. However, some "native born" children who move out before enrolling in kindergarten will be replaced by children born elsewhere who move into the district before entering kindergarten. If the number of "ins" and "outs" are equal, the net effect is zero and the kindergarten class would be 100 percent of resident births. However, no public school system captures all its potential. Some resident kindergarten students attend private schools or are home schooled. Others may attend a charter school or open enroll at another district. Therefore, a public school's kindergarten to birth ratio is expected to be less than 100 percent. If the ratio is 100 percent or higher, more preschool children are moving into or open enrolling into the district than leaving (net in migration).

If births are used as a kindergarten proxy, kindergarten projections are available for only a few years into the future. To extend kindergarten projections another five years, Moorhead's kindergarten will be projected based on the Minnesota Demographic Center's projection of state births.

Kindergarten Assumptions

Upon special request, the Minnesota Department of Health will provide resident births by address so births can be geocoded to a school district's boundaries. However, "out-of-wedlock" births may be withheld because unmarried parents can choose whether to make birth information by address public. This policy results in some under reporting. When compared to Moorhead City and Clay County resident births, the district births appear to be significantly underreported especially in the past several years. Therefore, the advantage of an additional year of data is negated by the issues resulting from underreporting. Clay County births will be used instead.

The Moorhead kindergarten pool uses Clay County resident births as a proxy. With county birth data available through 2013, kindergarten classes through 2018-19 can be projected from actual births.

MOORHEAD'S KINDERGARTEN AS A PERCENTAGE OF THE COUNTY KINDERGARTEN POOL			
Birth Years	County Kindergarten Pool	Percentage	Kindergarten Year
1999; 2000	560	67.3%	2005-06
2000; 2001	458	91.9%	2006-07
2001; 2002	535	71.2%	2007-08
2002; 2003	659	60.2%	2008-09
2003; 2004	667	62.5%	2009-10
2004; 2005	695	55.7%	2010-11
2005; 2006	743	57.7%	2011-12
2006; 2007	774	62.4%	2012-13
2007; 2008	781	63.3%	2013-14
2008; 2009	774	64.6%	2014-15
2009; 2010	801		2015-16
2010; 2011	772		2016-17
2011; 2012	789		2017-18
2012; 2013	810		2018-19

The above table shows Moorhead's kindergarten as a percentage of the county pool. In the past ten years, Moorhead's kindergarten class as a percentage of the pool fluctuated but in the past three years the percentage has been relatively stable and increasing somewhat. When rates are averaged, a more stable trend appears. (Calculating an average of the kindergarten to birth ratio for two or more years smooth out annual fluctuations and produce more "typical" ratio for that period.) The average of the past ten years is 65.7 percent while the average of the past three years is 63.4 percent. Averages of all other years result in lower percentages, which seems unreasonable with free all-day kindergarten.

For enrollment projections, the average of the past ten years will be used as the high kindergarten assumption and the average of the past three years will be used as the low kindergarten assumption.

To extend kindergarten projections beyond 2018-19, projected Minnesota resident births (0-year olds) will be used as a guide. These data present a complication because of the large gap between 2013 resident births (69,183) and the 2014 projection of 0-year olds (74,107). To avoid an abrupt increase in a single year, births were slowly increased from 2013 actual births to the 2020 projection of 74,282.

Clay County's resident births were 0.98 percent of Minnesota resident births in 1999. In 2013, Clay County accounts for 1.17 percent of Minnesota's resident births. Clay County has been at or near 1.17 percent for the past four years.

Because Clay County's births are such a small percentage of Minnesota births, using the projection of 0-4 year olds for Clay County would be a more logical guide. However, the projections for Clay County 0-4 year-olds show that population going down while actual births have gone up. Based on these data, Clay County resident births are projected to be 1.17 percent of Minnesota's projected births. This assumption results 869 resident births in 2019, which compares to 812 resident births in 2013. Births will be increased in regular increments to the 2019 projected level. Then these resident birth projections will be converted into a kindergarten pool.

MINNESOTA O-YEAR OLDS	
Year	Number
2014	74,107
2015	74,201
2016	74,258
2017	74,290
2018	74,278
2019	74,279
2020	74,282

Source: Minnesota Demographic Center

CLAY COUNTY 0-4 YEAR-OLDS				
	2010	2015	2020	2025
Total	**4,056**	3,415	3,433	3,398
One year (1/5)	**811**	683	687	680

Source: Minnesota Demographic Center

KINDERGARTEN POOL	
Year	District
2015-16	**801**
2016-17	**772**
2017-18	**789**
2018-19	**810**
2019-20	818
2020-21	828
2021-22	837
2022-23	846
2023-24	857
2024-25	865

Applying the kindergarten to birth ratio to the projected kindergarten pool results in kindergarten projections. The low kindergarten projection results in 5,213 kindergarten students over ten years while the high projection produces 5,401 kindergarten students over ten years. This compares with 4,286 kindergarten students over the past ten years.

KINDERGARTEN PROJECTIONS		
	District Pool	
Year	@63.4%	@65.7%
2014-15	**500**	**500**
2015-16	508	526
2016-17	489	507
2017-18	500	518
2018-19	514	532
2019-20	519	537
2020-21	525	544
2021-22	531	550
2022-23	536	556
2023-24	543	563
2024-25	548	568
Total	5,213	5,401

Through 2018-19, the kindergarten projections are based on actual births. The large Gen Y population will begin to enter its prime childbearing years after 2015. This means the kindergarten pool should increase. As the pool increases, so will the size of the kindergarten classes.

Net Migration Assumptions

The concept and method of calculating migration was explained earlier in this report. However, the limitations of the methodology are worth repeating. The method of calculating migration does not distinguish between physical movement across a district's boundaries and education choices, such as transferring from a nonpublic school to a public school, transferring to a charter school or open enrolling in another public school. Further, students who move into or out of a school district but never enroll in the district's public schools are not reflected in the migration numbers in this report.

In the past ten years, annual net migration fluctuated from year to year but was positive for all but two years.

The next table shows net migration aggregated by the elementary grades (Kindergarten-Grade 5), the middle school grades (6-8) and the high school grades. Kindergarten to Grade 5 net migration was positive every year and the numbers are large. At the middle school grades, net migration was positive all but two years. The high school grades experienced net out migration every year.

NET MIGRATION SCHOOL YEAR TO SCHOOL YEAR									
	05 to 06	06 to 07	07 to 08	08 to 09	09 to 10	10 to 11	11 to 12	12 to 13	13 to 14
K-5	50	8	50	14	30	20	29	16	67
6-8	29	15	-8	24	43	-11	15	6	4
9-12	-4	-7	-2	-25	-23	-24	-48	-7	-37
Total	75	16	40	13	50	-15	-4	15	34

Net in migration between Kindergarten and Grade 1 is typical in Minnesota's public schools, although this may change with free all-day kindergarten. In the Moorhead Public Schools, net migration between Kindergarten and Grade 1 has been positive every year but the numbers are modest in the past two years. The progression from grade to grade in the remaining elementary grades fluctuates but is mixed. There is a consistent net in migration between Grade 5 and Grade 6, although the number fluctuates widely. Like many other Minnesota public schools, there is a net inflow between Grade 8 and Grade 9 when nonpublic students transfer into the public schools. However, this number also fluctuates. After Grade 10, the high school grades show losses nearly every year, especially between Grade 10 and Grade 11 and Grade 11 and Grade 12, again a typical pattern.

NET MIGRATION BY GRADE
SCHOOL YEAR TO SCHOOL YEAR

	05 to 06	06 to 07	07 to 08	08 to 09	09 to 10	10 to 11	11 to 12	12 to 13	13 to 14
K to 1	24	10	24	5	15	18	12	7	5
1 to 2	2	-9	-5	2	19	-5	8	-7	25
2 to 3	0	2	6	14	-11	0	10	20	25
3 to 4	11	-2	2	-7	6	9	-3	-4	3
4 to 5	13	7	23	0	1	-2	2	0	9
5 to 6	**30**	**2**	**15**	**18**	**18**	**8**	**0**	**7**	**23**
6 to 7	11	3	-4	2	21	-18	-2	2	-5
7 to 8	-12	10	-19	4	4	-1	17	-3	-14
8 to 9	**13**	**15**	**4**	**19**	**8**	**-1**	**-14**	**14**	**6**
9 to 10	-6	4	7	-10	-8	-1	-9	-1	-23
10 to 11	7	-4	1	-22	-13	-18	-14	-14	-24
11 to 12	-18	-22	-14	-12	-10	-4	-11	-6	4
Total	75	16	40	13	50	-15	-4	15	34
Percent	1.5	0.3	0.8	0.3	1.0	-0.3	-0.1	0.3	0.6

For making projections, migration is converted into survival rates. Survival rates show the percentage change from grade to grade each year. For example, 1.000 indicates no change or 100 percent of the grade progressed to the next highest grade. Any number over 1.000 reflects the percentage increase while a number below 1.000 reflects the percentage decrease. For example, 0.98 indicates a 2 percent decrease.

SURVIVAL RATES SCHOOL YEAR TO SCHOOL YEAR									
	05 to 06	06 to 07	07 to 08	08 to 09	09 to 10	10 to 11	11 to 12	12 to 13	13 to 14
K to 1	1.064	1.024	1.063	1.013	1.036	1.047	1.028	1.014	1.010
1 to 2	1.005	0.978	0.988	1.005	1.047	0.988	1.020	0.984	1.051
2 to 3	1.000	1.005	1.015	1.033	0.973	1.000	1.023	1.048	1.058
3 to 4	1.030	0.994	1.005	0.982	1.014	1.023	0.993	0.991	1.007
4 to 5	1.036	1.018	1.065	1.000	1.003	0.996	1.005	1.000	1.021
5 to 6	**1.077**	**1.005**	**1.039**	**1.047**	**1.043**	**1.020**	**1.000**	**1.017**	**1.055**
6 to 7	1.031	1.007	0.989	1.005	1.053	0.959	0.995	1.005	0.988
7 to 8	0.971	1.028	0.955	1.011	1.010	0.998	1.041	0.992	0.969
8 to 9	**1.031**	**1.038**	**1.011**	**1.047**	**1.021**	**0.998**	**0.966**	**1.032**	**1.015**
9 to 10	0.985	1.009	1.017	0.973	0.981	0.997	0.978	0.998	0.949
10 to 11	1.017	0.990	1.002	0.948	0.965	0.957	0.963	0.965	0.940
11 to 12	0.958	0.948	0.963	0.973	0.975	0.989	0.972	0.984	1.010

COMPARISON OF SURVIVAL RATES AVERAGED			
Grade	Past 10 years	Past 5 years	Past 2 years
K to 1	1.033	1.027	1.012
1 to 2	1.007	1.018	1.018
2 to 3	1.017	1.020	1.053
3 to 4	1.004	1.006	0.999
4 to 5	1.016	1.005	1.011
5 to 6	**1.034**	**1.027**	**1.036**
6 to 7	1.004	1.000	0.997
7 to 8	0.997	1.002	0.981
8 to 9	**1.018**	**1.006**	**1.024**
9 to 10	0.987	0.981	0.974
10 to 11	0.972	0.958	0.953
11 to 12	0.975	0.986	0.997

One of the advantages of the cohort survival method is that it produces projections for every grade, which requires migration assumptions for every grade. At first glance, the rates look similar. However, the average of survival rates for the past two years and the average for the past ten years result in the highest projections in ten years. The difference between these two sets of survival rates is only 15 students in ten years. The average of the past five years results in the lowest projection. To reflect possibilities, two migration assumptions were constructed. The desired outcome was a low end and a high end of recent experience. The average of the past five years will be the low assumption and the average of the past two years will be the high assumption.

Because net migration will be projected based on survival rates by grade, the percentage change will be the same each year while the actual number of students added or subtracted by grade may change from year to year.

PROJECTED SURVIVAL RATES		
Grade	Low (Past 5 Years)	High (Past 2 Years)
K to 1	1.027	1.012
1 to 2	1.018	1.018
2 to 3	1.020	1.053
3 to 4	1.006	0.999
4 to 5	1.005	1.011
5 to 6	1.027	1.036
6 to 7	1.000	0.997
7 to 8	1.002	0.981
8 to 9	1.006	1.024
9 to 10	0.981	0.974
10 to 11	0.958	0.953
11 to 12	0.986	0.997

Projection Results

The kindergarten and net migration assumptions are trend lines, which remove annual fluctuations. However, the future, like the past, will be characterized by annual fluctuation, sometimes large. Because there is no reasonable way to forecast when fluctuations around trend lines will occur, it is arbitrary to project them. Furthermore, long-term projections are designed to approximate a future point in time not to yield the best projection for each intervening year between the present and the projection end date. For this reason, long-term projections should not be used for annual budgeting purposes. The district should continue to use its version of the cohort survival methodology for annual enrollment projections.

Four cohort projections are shown in the next table. In ten years, there is a 282 student difference between the lowest projection and the highest projection. The migration assumptions account for a 79-81 student difference in ten years. The kindergarten assumptions account for a 201-203 student difference in the ten years. In these projections, the kindergarten assumptions have a bigger effect on the difference among the projections than the migration assumptions. All the projections show the effect of larger kindergarten classes with enrollment growth nearly equally spread between the first five projection years and the last five projection years.

The lowest projection is based on the low kindergarten and low migration assumptions. In this projection, enrollment increases by 1,430 students by 2024-25 or 25.0 percent. In five years, enrollment increases to 6,438 students, which is 714 students higher than in 2014-15.

The highest projection, based on the high kindergarten and high migration assumptions, shows an enrollment increase of 1,712 students or 29.9 percent between 2014-15 and 2024-25. In five years, enrollment increases by 842 students.

In between the highest and lowest projections are two other projections. In 2024-25, these two projections differ by 122 students. As a group, the four projections reflect a range of possibilities with all four showing enrollment increasing.

ENROLLMENT PROJECTIONS				
Year	Low K Low Mig	Low K High Mig	High K Low Mig	High K High Mig
2014-15	**5,724**	**5,724**	**5,724**	**5,724**
2015-16	5,867	5,877	5,885	5,895
2016-17	6,007	6,021	6,043	6,057
2017-18	6,129	6,150	6,185	6,204
2018-19	6,297	6,329	6,372	6,404
2019-20	6,438	6,473	6,532	6,566
2020-21	6,606	6,650	6,721	6,765
2021-22	6,751	6,808	6,886	6,944
2022-23	6,886	6,951	7,044	7,109
2023-24	7,030	7,100	7,209	7,280
2024-25	7,154	7,233	7,355	7,436

Excludes Early Childhood and ALC

Looking at the projections based on the elementary, middle school and high school grades is instructive. K-5 enrollment increases throughout the projection period based on ever larger kindergarten classes. For the first five projection years, virtually all of these kindergarten students have already been born. Therefore, elementary enrollment growth is almost certain in the first five projection years unless there is an economic disruption or more competition in the Moorhead School District.

ENROLLMENT PROJECTIONS				
	K-5	6-8	9-12	Total
2014-15	**2,851**	**1,282**	**1,591**	**5,724**
2019-20				
Low K/Low Mig	3,175	1,561	1,702	6,438
Low K/High Mig	3,183	1,595	1,694	6,473
High K/Low Mig	3,269	1,561	1,702	6,532
High K/High Mig	3,277	1,595	1,694	6,566
2024-25				
Low K/Low Mig	3,355	1,665	2,134	7,154
Low K/High Mig	3,363	1,692	2,177	7,233
High K/Low Mig	3,477	1,725	2,154	7,355
High K/High Mig	3,485	1,753	2,198	7,436

Excludes Early Childhood and ALC

Middle school enrollment increases in the first five projection years and then continues to increase as the larger elementary grades age into middle school in the last five projection years. In the

second five projection years, the kindergarten assumptions effect the middle school projections but in the first five years only the migration assumptions are effecting the size of the middle schools grades.

High school enrollment is projected to increase as well throughout the projection period. The kindergarten assumptions have only a small effect on the high school projections.

In 2024-25, the 2014-15 kindergarten class will be in Grade 10, which means that all the grades below Grade 10 are products of the projection assumptions. Detailed grade by year projections are at the end of this report.

Housing Unit Method

The housing unit method provides another way of projecting population and school enrollment. While the number of dwelling units (housing units) is related to the number of school age children, dwelling units alone do not determine the number of school age children. The number of school age children per unit is also a key variable in the projection equation.

The chief reason to use the housing unit method is to understand the effect of additional housing units on enrollment. It could be said that housing stock is like DNA. It determines the size and characteristics of the resident school age population.

After dwelling unit type, the year built and the market value emerge as the most important housing characteristics. Year built reflects how families lived in a particular era and is a proxy for square feet and characteristics such as number of bedrooms, number of bathrooms and number of garage spaces. The presence of a master suite, walk-in closets, etc. can also be inferred from year built. Value implies some of these same characteristics plus lot size, location and interior amenities such as kitchen and bathroom appointments and finishes.

The relationship between housing unit characteristics and student numbers and characteristics has been established by work in three states. Findings based on school districts in three states follow.

- *Dwelling unit type affects the school age child per unit yield. Single-family detached units have the highest school age child per unit yield. Single-family attached, such as townhouses, have significantly fewer children per unit than single-family detached units, while apartment units have even fewer school age children per unit, although there are some local exceptions.*

  In the Moorhead School District, single-family detached units yield less than half a student per unit. Yield per unit varies by community within the district.

  Eighty (80.0) percent of resident students live in single-family detached units. Seventeen (16.7) percent of students reside in apartments. These apartment dwellers are likely to be more mobile.

  About 81 percent of resident students live in the City of Moorhead and Moorhead has the highest per student yield of the communities that comprise the district. The highest valued homes are in Dilworth.

MOORHEAD PUBLIC SCHOOLS HOUSING TYPE BY STUDENT YIELD			
Housing Type	Units	K-12 Students	K-12 Yield
Single-Family Detached	11,724	4,483	0.38
Duplex/Triplex	n.a.	67	n.a.
Apartments	n.a.	936	n.a.
Mobile Homes	n.a.	119	n.a.
Total	n.a.	5,605	n.a.

Source: Clay County Geographic Information System and Student Information System

MOORHEAD PUBLIC SCHOOLS STUDENT YIELD BY CITY*				
Minor Civil Division	Single-Family Detached Homes	Median Value of Single-Family Detached Homes	K-12 Students	K-12 Student Yield
Dilworth	387	$196,600	68	0.18
Georgetown	61	$87,400	11	0.18
Moorhead	10,923	$140,000	3,297	0.36
Sabin	308	$137,400	76	0.25
Total	11,679		4,082	0.35

**With at least 10 homes*

Source: Clay County Geographic Information Systems and Student Information System

∞ *Newer single-family detached units yield more students per unit than older single-family detached units.*

Like other districts studied, newer single-family detached units built in 2000 or later have the highest student yield per unit (0.62) in the Moorhead School District. The oldest units, those built pre 1940, have the lowest yield per unit (0.21).

MOORHEAD PUBLIC SCHOOLS SINGLE-FAMILY DETACHED RESIDENT STUDENT YIELD BY YEAR BUILT			
		Resident K-12	
Era Built	Units	#	Yield
2000 or later	2,266	1,407	0.62
1970-1999	2,626	1,203	0.46
1940-1969	3,736	1,211	0.32
Pre 1940	3,096	662	0.21
Total	11,724	4,483	0.38

Source: Clay County Geographic Information System and Student Information System

∞ *As single-family detached units sell (turnover), student yield per unit usually increases in the newer units. In older units, yield may decrease.*

In the Moorhead School District, as units sell, the yield of public school students increases. Therefore, the Moorhead Public Schools see an increase in students as single-family detached units sell. Units built since 2012 have the highest per unit yield. Note that 266 new single-family detached units were built since January 1, 2012.

MOORHEAD PUBLIC SCHOOLS SINGLE-FAMILY DETACHED UNITS BY SALES STATUS (Sold 2012-2014)		
Status	Units	K-12 Yield
New (Built 2012-14)	266	0.49
Existing (Pre 2012)		
Not Sold	9,999	0.37
Sold	1,459	0.44
Total	11,724	0.38

Source: Clay County Geographic Information System and Student Information System

∞ *The market value of single-family detached units affects the school age child per unit yield. Moderately priced to higher priced units yield more students per unit than the lowest priced units.*

Like most other school districts, in the Moorhead School District, the highest yield per unit (0.56) comes from the most expensive single-family detached units and the lowest yield per unit comes from the least expensive homes (0.23).

MOORHEAD PUBLIC SCHOOLS SINGLE-FAMILY DETACHED RESIDENT STUDENT YIELD BY MARKET VALUE			
Estimated	Single-Family	Resident K-12	
Market Value	Units	#	Yield
$200,000 or more	2,305	1,281	0.56
$150,000-$199,000	2,589	1,135	0.44
$100,000-$149,000	5,247	1,709	0.33
Less than $100,000	1,583	358	0.23
Total	11,724	4,483	0.38

Source: Clay County Geographic Information System and Student Information System

∞ *As the population ages, more dwelling units are being built for mature adults (55+ years) and for seniors. These units will have zero school age children per unit*.

Currently, 34 percent of the district's single-family detached units contain at least one person age 55+, while 21 percent of single-family detached units contain a Moorhead Public Schools student. The percentage of the 55+ population is low in the Moorhead School District showing that the district's population residing in single-family detached units is quite young.

MOORHEAD SCHOOL DISTRICT SINGLE-FAMILY DETACHED HOMES WITH MAHTOMEDI PUBLIC SCHOOL K-12 STUDENTS OR REGISTERED VOTERS AGE 55+					
Attendance Area	Single-Family Detached	With K-12 Mahtomedi Public School Students	Percentage with K-12 Moorhead Public School Students	With Registered Voter 55+	Percentage with Registered Voter 55+
District wide	11,724	2,524	21%	4,006	34%

Source: Clay County Geographic Information System and Student Information System

Projections

In 2014, the Moorhead School District is estimated to have more than 21,100 dwelling units. Single-family detached units account for 11,724 or 55.6 percent of all units. Not all dwelling units are occupied at any point in time; however, for the purposes of calculating public school yield per unit, all units are assumed to be occupied.

Dwelling Unit Growth

The projected increase in single-family detached units in Moorhead City is substantial and will have a measurable effect on enrollment. While the yield per unit is lower for townhomes and apartments, the projected numbers are large enough to also effect enrollment. These housing unit projections support further enrollment growth.

PROJECTED DEVELOPMENT to 2017-18			
City	Single-Family Detached	Townhomes/Twin Homes	Apartments
Dilworth	0	0	100
Georgetown	0	0	0
Moorhead	300-420	135-255	393
Sabin	7	0	0

CHAPTER 2

SPECIAL POPULATIONS

Chapter 2 focuses on several special populations that are subsets of total enrollment. Some of these special populations experience changes in eligibility or funding that can affect the number of students served. This makes accurately projecting these populations difficult. The special populations covered in this chapter include White students, minority students, and free and reduced meal students. Basic data about these populations are in the Appendix.

The cohort survival method will be used to project the special student populations. This method was described in detail in Chapter 1. The high kindergarten projections will be used for all the special population projections. (In five years, there is an 18 student difference between the low and high kindergarten projections.) Kindergarten will be allocated to each special population group based on the trend in that group's kindergarten share. Projecting future share, however, is more complex than it might appear because shares have fluctuated in the past five years. For net migration, the survival rates based on the average of the past two years, which corresponds with the district-wide high migration assumption, will be used for the special population projections.

Race/Ethnicity

For this analysis, students will be classified as White or Minority. White enrollment increased by 228 students or 5.3 percent in the past five years. During the same period, minority enrollment increased by 250 students or 26.7 percent. White kindergarten classes are larger than the previous year's Grade 12, and there are more White students in the elementary grades than in the higher grades, so there is "growth momentum" in the White student population. Minority enrollment increased as a result of larger kindergarten classes than the previous years' Grade 12 and net in migration some years. For projections, the White and minority populations were adjusted so that the number of students by grade equaled district-wide enrollment by grade. (See Appendix)

K-12 ENROLLMENT BY RACE/ETHNICITY					
	2010-11	2011-12	2012-13	2013-14	2014-15
White	4,331	4,325	4,410	4,467	4,559
Minority	935	979	1,036	1,095	1,185
Sum	5,266	5,304	5,446	5,562	5,744
Total	5,273	5,299	5,428	5,551	5,724

Source: Moorhead School District, Fall Enrollment. Excludes Early Childhood and ALC

The White share of kindergarten students has fluctuated but is about the same today as it was five years ago. In light of this pattern, the White share of kindergarten students will be kept at 80 percent of kindergarten.

Survival rates based on the average of the past two years had to be adjusted slightly for three White grade progressions because White survival rates increased in the past year. The adjustment weighted the past year more heavily in calculating an "average."

The sum of the two kindergarten classes always equals the district-wide high kindergarten projection. Other grades, however, were not controlled to the district-wide total for that grade. In 2019-20, the sum of the White and minority projections (6,569) is virtually the same very as the high kindergarten/high migration district-wide total of 6,566. Changes in kindergarten shares could change these projections as could changes in the migration rates.

As the following table shows, White enrollment increases and the rate of change is greater than in the past five years. However, the White share of total enrollment decreases slightly. Minority enrollment is projected to grow at a slower rate than in the past five years; however, by 2019-20, about 22 percent of the students in the Moorhead Public Schools will be minority students.

KINDERGARTEN SHARE BY RACE/ETHNICITY		
Historic Shares	White	Minority
2010-11	79.1%	20.9%
2011-12	77.2%	22.8%
2012-13	82.6%	17.4%
2013-14	81.4%	18.6%
2014-15	80.6%	19.4%
Projected Shares		
2015-16	80.0%	20.0%
2016-17	80.0%	20.0%
2017-18	80.0%	20.0%
2018-19	80.0%	20.0%
2019-20	80.0%	20.0%

RACE/ETHNICITY		
	White	Minority
2014-15	**4,559**	**1,185**
2019-20	5,128	1,441
Change		
2010-11 to 2014-15	**5.3%**	**26.7%**
2014-15 to 2019-20	12.5%	21.6%
Percent Distribution		
2014-15	**79.4%**	**20.6%**
2019-20	78.1%	21.9%

Free/Reduced Meals

The free/reduced meals student population increased in the past five years, although far more slowly than in many other school districts. The free/reduced meal population peaked in 2012-13 and has decreased since. The improving economy should reduce this population further. This population is subject to changes in eligibility as well.

K-12 ENROLLMENT BY FREE AND REDUCED MEALS					
	2010-11	2011-12	2012-13	2013-14	2014-15
Students	2,052	2,068	2,246	2,133	2,201

Source: Moorhead School District, Fall Enrollment. Excludes Early Childhood and ALC

Projections based on the high kindergarten and the average of the past two year's survival rates show continued decline in the free/reduced meals population. The free/reduced meals population is projected to decrease from 2,201 students to 2,153 students in five years. The rate of change is driven by the migration rates, which don't necessarily reflect movement but rather no longer meeting eligibility requirements. However, even with this decrease in the rate of change, 32.8 percent of students will be in the free/reduced meals population in five years. Further improvements in the economy could reduce this percentage.

KINDERGARTEN SHARE OF FREE/REDUCED MEALS	
Historic Shares	
2010-11	40.8%
2011-12	42.2%
2012-13	41.4%
2013-14	47.6%
2014-15	40.8%
Projected Shares	
2015-16	40.8%
2016-17	40.8%
2017-18	40.8%
2018-19	40.8%
2019-20	40.8%

FREE/REDUCED MEALS	
2014-15	**2,201**
2019-20	2,153
Change	
2010-11 to 2014-15	**7.3%**
2014-15 to 2019-20	-2.2%
Percent Distribution	
2014-15	**38.5%**
2019-20	32.8%

K-12 ENROLLMENT BY RACE/ETHNICITY AND FREE/REDUCED MEALS						
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
White	**4,546**	4,673	4,778	4,866	5,015	5,128
Minority	**1,178**	1,223	1,284	1,342	1,390	1,441
Sum	**5,724**	5,896	6,062	6,208	6,405	6,569
District wide	**5,724**	5,895	6,057	6,204	6,404	6,566
Free/Reduced	**2,201**	2,207	2,181	2,156	2,156	2,153

Excludes Early Childhood and ALC

CHAPTER 3

ENROLLMENT PROJECTIONS BY ELEMENTARY SCHOOLS AND ELEMENTRY ATTENDANCE AREAS

Projecting K-5 enrollment by school or attendance area is fraught with potential errors because the enrollment at any one school or in any one attendance area is small, which magnifies annual fluctuations. For this reason along with the short time that existing students are part of the K-5 student body, projections will be made for five years rather than ten years. This chapter focuses on the three Moorhead elementary schools and the district's three elementary geographic attendance areas.

Past Trends

The following three tables show a five year history of K-5 enrollment by school, Grade 1 enrollment by school, and net migration by school. Since 2010-11, K-5 enrollment increased by 377 students or 15.2 percent. The movement of many kindergarten students to Probstfield makes enrollment change at the individual schools artificial. However, based on the table below, enrollment increased at Robert Asp, while enrollment growth at Ellen Hopkins was modest. S.G. Reinertsen provided the most students to Probstfield, an indication of the growth at that school. (For the projections, enrollment by grade by school was adjusted to equal district-wide enrollment by grade.)

ENROLLMENT GRADES K-5					
School	2010-11	2011-12	2012-13	2013-14	2014-15
Robert Asp	770	802	842	869	883
Ellen Hopkins	808	833	839	854	849
Probstfield				223	295
S. G. Reinertsen	901	905	939	772	834
Total	2,479	2,540	2,620	2,718	2,861
District-wide	2,474	2,531	2,599	2,702	2,851

Note: The sum of the schools does not equal the district-wide totals

District-wide, the 2014-15 Grade 1 was 67 students larger than the 2010-11 Grade 1. During the past five years, Grade 1 increased by 29 students at Asp and by 27 students at Reinertsen. Grade 1 was only 11 students larger at Hopkins.

GRADE 1					
School	2010-11	2011-12	2012-13	2013-14	2014-15
Robert Asp	131	122	153	164	160
Ellen Hopkins	156	135	143	159	167
S. G. Reinertsen	145	147	148	171	172
Total	432	404	444	494	499
District-wide	432	405	441	490	499

K-5 net migration has been positive since 2010-11. However, only Robert Asp Elementary School had positive net migration every year. The largest net in migration occurred in the past year at S.G. Reinertsen Elementary School.

NET MIGRATION GRADES K-5				
School	2010-11 to 2011-12	2011-12 to 2012-13	2012-13 to 2013-14	2013-14 to 2014-15
Robert Asp	43	28	19	59
Ellen Hopkins	-6	-17	-5	8
S. G. Reinertsen	-9	28	-7	44
Total	28	39	7	111
District-wide	20	29	16	67

Note: Because the sum of the schools does not equal the district-wide totals, the sum of net migration will not equal the district-wide totals

K-5 Projections

Individual Elementary Schools

Individual school projections will be made using the cohort survival method. The advantage of this method is that it begins by aging the student population. Therefore, any differences in grade sizes are reflected in the projections when these classes leave elementary school. Further, this method is sensitive to the number of births in the immediate past. However, with the cohort survival method, it is very difficult to calibrate migration rates to reflect new housing units, which is a disadvantage. Therefore, the method is weak in anticipating enrollment growth resulting from additional housing units, especially if the number of additional units is large.

Kindergarten and Grade 1

For kindergarten projections by school, kindergarten students can be allocated to the individual schools based on each school's share. The same principle will be used to project Grade 1 by school; however, Grade 1 share will be based on the average of the shares of the past two years.

PERCENT OF GRADE 1 AT EACH SCHOOL							
School	2010-11	2011-12	2012-13	2013-14	2014-15	Past 2 yr. avg.	Projection
Robert Asp	30.3%	30.2%	34.5%	33.2%	32.1%	32.7%	32.7%
Ellen Hopkins	36.15	33.4%	32.2%	32.2%	33.4%	32.8%	32.8%
S. G. Reinertsen	33.6%	36.4%	33.3%	34.6%	34.5%	34.5%	34.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

GRADE 1 PROJECTIONS BY SCHOOL						
School	**2014-15**	2015-16	2016-17	2017-18	2018-19	2019-20
Robert Asp	**160**	165	174	168	171	176
Ellen Hopkins	**167**	166	174	168	172	176
S. G. Reinertsen	**172**	175	184	177	181	186
Total	**499**	506	532	513	524	537

Migration

Averaging survival rates removes some of the year to year fluctuations, although the average may not be the actual rate in any future year. The average of the past two year's survival rates will be used in the individual school projections. (This is the same assumption that was used for the high migration assumption in the district-wide projections.) Adjustments were made from Grade 1 to Grade 2 at Asp and Reinertsen.

SURVIVAL RATES USED IN THE PROJECTIONS					
School	K to 1	1 to 2	2 to 3	3 to 4	4 to 5
Robert Asp		1.046	1.071	1.038	1.032
Ellen Hopkins		0.986	1.008	0.939	0.980
S. G. Reinertsen		1.025	1.075	1.013	1.007

Projection Results

Enrollment projections by school will extend only five years into the future. The 2014-15 kindergarten will be in Grade 5 in 2019-20. Therefore, enrollment in the last couple of projection years is largely derived from the assumptions. A summary of the cohort survival projections by school is shown in the next table and annual projections are in a following table. (Background data are in the Appendix.)

COHORT SURVIVAL METHOD PROJECTION BY SCHOOL GRADES K-5				
			Change	
School	**2014-15**	2019-20	#	%
Robert Asp	**786**	943	157	20.0%
Ellen Hopkins	**732**	827	95	13.0%
S. G. Reinertsen	**833**	969	136	16.3%
Kindergarten	**500**	537	37	7.4%
Sum	**2,851**	3,276	425	14.9%
District-wide	**2,851**	3,277	426	14.9%

K-5 enrollment is 426 students or 14.9 percent higher in 2019-20 than in 2014-15. The sum of the individual school projections is only 1 student lower than the high kindergarten/high migration

district-wide projection. The individual school projections are a good fit with the district-wide projection. The largest projected increase is at Robert Asp (+157). S.G. Reinertsen follows with 136 more students.

COHORT SURVIVAL METHOD PROJECTIONS BY SCHOOL BY YEAR GRADES K-5 HIGH/HIGH						
School	**2014-15**	2015-16	2016-17	2017-18	2018-19	2019-20
Robert Asp	**786**	827	894	923	926	943
Ellen Hopkins	**732**	745	779	809	818	827
S. G. Reinertsen	**833**	882	914	947	954	969
Kindergarten	**500**	526	507	518	532	537
Sum	**2,851**	2,980	3,094	3,197	3,230	3,276
District wide	**2,851**	2,982	3,095	3,197	3,231	3,277
Difference	**0**	-2	-1	0	-1	-1

Attendance Area Projections

Attendance area projections will be made using the housing starts method. These projections show the potential of each attendance area to produce resident K-5 students. (The attendance areas of Asp, Hopkins and Reinertsen will be projected. No separate projection will be made by kindergarten attendance areas.) The housing starts method shows the effect of new housing units and the sale of existing units. The method's weakness is that it doesn't reflect changes in grade size or in births because the yields per unit remain at today's level throughout the projection period.

Method

The Housing Occupancy and Enrollment Study for the Moorhead School District provides resident K-5 yields for existing units and new units. Yield data for existing units are specific for recently sold units and units that did not turnover. The housing starts method will be calculated as follows:

New Single-Family Detached Units X K-5 yield = Projected students (A)

Existing Single-Family Detached Units X Percent Sold Annually = Units with movers (new residents) and units with non-movers (no change)

--Existing Single-Family Detached Units (not sold) X K-5 yield = Projected students (B)
--Existing Single-Family Detached Units (sold) X K-5 yield = Projected students (C)

Add Projected Students from A, B and C = Projected students from Single-Family Detached Units

Add Projected Students from Single-Family Detached Units to Projected Students from Non Single-Family Detached Units = K-5 Resident Students by Attendance Area

The number of projected additional single-family detached units is large, that is, 300 to 427 units in the next three years. These additional units will result in enrollment growth.

PROJECTED NEW SINGLE-FAMILY DETACHED UNITS 2014-2017	
Attendance Area	Number
Robert Asp	99-138
Ellen Hopkins	0
S. G. Reinertsen	201-289

The next two tables show estimated annual single-family detached unit sales and the K-5 Moorhead Public School yields by attendance area. The sales data are based on sales from January 1, 2012 through December 31, 2014.

The annual rates of sales by attendance area are the same. Areas where annual sales exceed 4 percent have a high rate of annual sales.

PERCENT OF EXISTING SINGLE-FAMILY DETACHED UNITS WITH TURNOVER ANNUALLY (January 1, 2012-December 31, 2014)	
Attendance Area	%
Robert Asp	4.7%
Ellen Hopkins	4.7%
S. G. Reinertsen	4.7%

K-5 RESIDENT STUDENT YIELD FROM SINGLE-FAMILY UNITS						
Attendance Area	Existing Units (pre 2012)				New Units (2012-2014)	
	Non Movers		Movers (New Residents)			
	#	Yield	#	Yield	#	Yield
Robert Asp	4,072	0.16	601	0.21	96	0.21
Ellen Hopkins	2,662	0.14	447	0.21	2	0.00
S. G. Reinertsen	3,265	0.21	411	0.41	168	0.40
Total	9,999	0.17	1,459	0.27	266	0.33

The K-5 yield per unit is low for units that do not turnover in the Hopkins and Asp attendance areas. In all attendance areas, but especially in Reinertsen, when units turnover (sell), yield is higher than in units that did not turnover. Therefore, the sale of existing units adds students immediately. (The data do not reflect any preschool children who may be present.) As the above table shows, the pattern for new units is mixed, although district-wide, new units yield more students per unit.

The next table shows student yield per unit for the middle school and high school grades as well as the elementary grades.

RESIDENT STUDENT YIELD BY DWELLING UNIT TYPE				
Dwelling Type	Number	K-5 Yield	6-8 Yield	9-12 Yield
Single-Family Detached	11,724	0.18	0.08	0.12

Students also reside in non-single-family detached units. Rather than trying to project resident students from non-single-family detached units, the 2014-15 student numbers will be used throughout the projection period. This assumption has some weaknesses, but overall is less problematic than trying to project students in these units.

STUDENTS FROM OTHER DWELLING UNIT TYPES* 2014-15	
Attendance Area	K-5 Resident Students
Robert Asp	212
Ellen Hopkins	255
S. G. Reinertsen	191
Total	658

*Duplex, Triplex, Mobiles Homes and Apartments

The housing unit method projections show the K-5 resident potential of current and projected new units. With this method, the district total is the sum of the attendance area projections. In 2014-15, there were 2,159 resident K-5 students residing in single-family detached units with another 658 resident K-5 students living in other unit types for a total of 2,817 resident K-5 students.

Projections from the housing starts method, using the lowest projected increase in units, show 2,428 resident K-5 students residing in single-family detached units by 2017-18. Over the three years, resident K-5 students residing in single-family detached units increase by 269 students or 12.5 percent. The attendance area projections reflect attendance area specific new unit yields as well as attendance area specific turnover rates and yields.

Although the 2017-18 projections do not increase the number of resident students residing in other types of housing units, the projected growth in the number of these units will result in more students living in these types of units in the future.

HOUSING UNIT METHOD PROJECTIONS RESIDENT K-5 MOORHEAD PUBLIC SCHOOL STUDENTS BY ATTENDANCE AREA 2017-18			
	Resident K-5 Students		
Attendance Area	Single-Family Units	All Other Units	Total
Robert Asp	846	212	1,058
Ellen Hopkins	492	255	747
S. G. Reinertsen	1,090	191	1,281
Total	2,428	658	3,086

HOUSING UNIT METHOD RESIDENT K-5 MOORHEAD PUBLIC SCHOOL STUDENTS BY ATTENDANCE AREA 2014-15 AND 2017-18				
	2014-15		2017-18	
Attendance Area	Single-Family	Total	Single-Family	Total
Robert Asp	**790**	**1,002**	846	1,058
Ellen Hopkins	**506**	**761**	492	747
S. G. Reinertsen	**863**	**1,054**	1,090	1,281
Total	**2,159**	**2,817**	2,428	3,086

School and Attendance Area Projections

The individual school cohort projections differ from the attendance area projections because the school projections include nonresidents and the attendance area projections are residents only. In 2014-15, nonresidents made up 1.2 percent of K-5 enrollment. Another source of difference between the projections is the number of students who do not attend the elementary school in the attendance area in which they live. The next table shows the number and percentage of students attending the school in their attendance area.

MOORHEAD PUBLIC SCHOOLS K-5 STUDENTS BY ATTENDANCE AREA AND BY SCHOOL ATTENDED					
	Attendance Area				
School	Robert Asp	Ellen Hopkins	S.G. Reinertsen	Probstfield	Total
Robert Asp	770	64	41		875
Ellen Hopkins	120	577	123		820
S.G. Reinertsen	53	53	727		833
Probstfield	59	67	163		289
Total	1,002	761	1,054		2,817
Percent	76.8%	75.8%	70.0%		

The next table shows K-5 projections produced by both projection methods. *If nonresidents remain at 1.2 percent of K-5 enrollment, the housing unit method projection, with nonresidents added, would result in 3,123 K-5 students. The projected increase in townhomes and apartments will probably add another 84 students bringing the housing unit method projection of total K-5 enrollment to 3,207, which is only 9 students less than the cohort projection*. The individual school projections different from the housing unit projections because of nonresidents and students not attending the K-5 school in the attendance area of residence.

HOUSING UNIT METHOD
RESIDENT K-5 MOORHEAD PUBLIC SCHOOL STUDENTS
BY ATTENDANCE AREA
2014-15 AND 2017-18

School or Attendance Area	**2014-15**		2017-18	
	Residents Housing Method	All Students Cohort Method	Residents Housing Method	All Students Cohort Method*
Robert Asp	**1,002**	**882**	1,058	1,039
Ellen Hopkins	**761**	**846**	747	923
S.G. Reinertsen	**1,054**	**833**	1,281	947
Probstfield		**290**		327
Total	**2,817**	**2,851**	3,086	3,216

*Kindergarten assumed to be at 2014-15 levels for Asp and Hopkins

APPENDIX

MOORHEAD PUBLIC SCHOOL WHITE ENROLLMENT					
Grade	2010-11	2011-12	2012-13	2013-14	2014-15
K	306	331	399	402	403 (400)
1	333	313	342	401	402
2	343	338	329	337	408
3	325	339	336	334	355 (354)
4	355	326	343	328	341 (337)
5	303	359	320	333	334 (335)
6	355	312	352	331	342 (348)
7	340	349	313	352	328 (322)
8	325	344	354	308	345 (344)
9	328	330	335	366	308 (309)
10	354	321	323	335	356 (353)
11	316	345	324	317	320 (316)
12	348	318	340	323	317 (318)
Total	4,331	4,325	4,410	4,467	4,559 (4,546)

MOORHEAD PUBLIC SCHOOLS WHITE NET MIGRATION Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K-5	13	23	-16	38
6-8	7	-1	6	-1
9-12	-9	-18	5	-25
Total	11	4	-5	12

MOORHEAD PUBLIC SCHOOLS WHITE NET MIGRATION BY GRADE Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	7	11	2	0
1 to 2	5	16	-5	7
2 to 3	-4	-2	5	18
3 to 4	1	4	-8	7
4 to 5	4	-6	-10	6
5 to 6	**9**	**-7**	**11**	**9**
6 to 7	-6	1	0	-3
7 to 8	4	5	-5	-7
8 to 9	**5**	**-9**	**12**	**0**
9 to 10	-7	-7	0	-10
10 to 11	-9	3	-6	-15
11 to 12	2	-5	-1	0
Total	11	4	-5	12

MOORHEAD PUBLIC SCHOOLS WHITE SURVIVAL RATES Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	1.023	1.033	1.005	1.000
1 to 2	1.015	1.051	0.985	1.017
2 to 3	0.988	0.994	1.015	1.053
3 to 4	1.003	1.012	0.976	1.021
4 to 5	1.011	0.982	0.971	1.018
5 to 6	**1.030**	**0.981**	**1.034**	**1.027**
6 to 7	0.983	1.003	1.000	0.991
7 to 8	1.012	1.014	0.984	0.980
8 to 9	**1.015**	**0.974**	**1.034**	**1.000**
9 to 10	0.979	0.979	1.000	0.973
10 to 11	0.975	1.009	0.981	0.955
11 to 12	1.006	0.986	0.997	1.000

MOORHEAD PUBLIC SCHOOL MINORITY ENROLLMENT					
Grade	2010-11	2011-12	2012-13	2013-14	2014-15
K	81	97	85	96	102 (100)
1	99	91	102	93	97
2	77	98	89	98	107
3	74	85	106	102	105
4	91	79	82	105	101 (99)
5	92	84	87	89	106 (107)
6	79	86	89	86	90 (93)
7	74	68	86	91	90 (87)
8	82	76	79	87	90 (88)
9	51	76	71	79	92
10	60	54	68	65	73 (72)
11	34	55	46	65	64 (62)
12	41	30	46	39	68 (69)
Total	935	979	1,036	1,095	1,185 (1,178)

MOORHEAD PUBLIC SCHOOLS MINORITY NET MIGRATION Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K-5	15	16	23	22
6-8	-15	16	2	4
9-12	-12	-30	-16	1
Total	-12	2	9	27

MOORHEAD PUBLIC SCHOOLS MINORITY NET MIGRATION BY GRADE Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	10	5	8	1
1 to 2	-1	-2	-4	14
2 to 3	8	8	13	7
3 to 4	5	-3	-1	-1
4 to 5	-7	8	7	1
5 to 6	-6	5	-1	1
6 to 7	-11	0	2	4
7 to 8	2	11	1	-1
8 to 9	-6	-5	0	5
9 to 10	3	-8	-6	-6
10 to 11	-5	-8	-3	-1
11 to 12	-4	-9	-7	3
Total	-12	2	9	27

MOORHEAD PUBLIC SCHOOLS MINORITY SURVIVAL RATES Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	1.123	1.052	1.094	1.010
1 to 2	0.990	0.978	0.961	1.151
2 to 3	1.104	1.082	1.146	1.071
3 to 4	1.068	0.965	0.991	0.990
4 to 5	0.923	1.101	1.085	1.010
5 to 6	0.935	1.060	0.989	1.011
6 to 7	0.861	1.000	1.022	1.047
7 to 8	1.027	1.162	1.012	0.989
8 to 9	0.927	0.934	1.000	1.057
9 to 10	1.059	0.895	0.915	0.924
10 to 11	0.917	0.852	0.956	0.985
11 to 12	0.882	0.836	0.848	1.046

MOORHEAD PUBLIC SCHOOL FREE/REDUCED MEALS ENROLLMENT					
Grade	2010-11	2011-12	2012-13	2013-14	2014-15
K	158	181	200	235	204
1	212	192	216	213	222
2	190	216	194	196	217
3	170	193	235	188	202
4	187	183	203	227	183
5	173	183	184	117	195
6	168	160	190	172	179
7	172	146	173	165	165
8	150	167	166	153	155
9	143	135	152	160	146
10	125	112	123	127	137
11	104	102	110	91	105
12	100	98	100	89	91
Total	2,052	2,068	2,246	2,133	2,201

MOORHEAD PUBLIC SCHOOLS FREE/REDUCED MEALS NET MIGRATION Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K-5	50	67	-107	-40
6-8	-40	40	-57	45
9-12	-75	-31	-84	-52
Total	-65	76	-248	-47

MOORHEAD PUBLIC SCHOOLS FREE/REDUCED MEALS NET MIGRATION BY GRADE Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	34	35	13	-13
1 to 2	4	2	-20	4
2 to 3	3	19	-6	6
3 to 4	13	10	-8	-5
4 to 5	-4	1	-86	-32
5 to 6	-13	7	-12	62
6 to 7	-22	13	-25	-7
7 to 8	-5	20	-20	-10
8 to 9	-15	-15	-6	-7
9 to 10	-31	-12	-25	-23
10 to 11	-23	-2	-32	-22
11 to 12	-6	-2	-21	0
Total	-65	76	-248	-47

MOORHEAD PUBLIC SCHOOLS FREE/REDUCED MEALS SURVIVAL RATES Fall to Fall				
Grade	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	1.215	1.193	1.065	0.945
1 to 2	1.019	1.010	0.907	1.019
2 to 3	1.016	1.088	0.969	1.031
3 to 4	1.076	1.052	0.966	0.973
4 to 5	0.979	1.005	0.576	0.859
5 to 6	0.925	1.038	0.935	1.530
6 to 7	0.869	1.081	0.868	0.959
7 to 8	0.971	1.137	0.884	0.939
8 to 9	0.900	0.910	0.964	0.954
9 to 10	0.783	0.911	0.836	0.856
10 to 11	0.816	0.982	0.740	0.827
11 to 12	0.942	0.980	0.809	1.000

MOORHEAD
ROBERT ASP ELEMENTARY SCHOOL

ENROLLMENT HISTORY					
Grade	2010-11	2011-12	2012-13	2013-14	2014-15
K	116	131	160	135	96
1	131	122	153	164	160
2	117	145	120	152	176
3	118	133	144	130	161
4	146	123	138	147	137
5	142	148	127	141	153
Total	770	802	842	869	883

NET MIGRATION GRADES K-5				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	6	22	4	25
1 to 2	14	-2	-1	12
2 to 3	16	-1	10	9
3 to 4	5	5	3	7
4 to 5	2	4	3	6
Total	43	28	19	59

SURVIVAL RATES				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	1.052	1.168	1.025	1.185
1 to 2	1.107	0.984	0.993	1.073
2 to 3	1.137	0.993	1.083	1.059
3 to 4	1.042	1.038	1.021	1.054
4 to 5	1.014	1.033	1.022	1.041

MOORHEAD
ELLEN HOPKINS ELEMENTARY SCHOOL

ENROLLMENT HISTORY					
Grade	2010-11	2011-12	2012-13	2013-14	2014-15
K	133	144	157	140	114
1	156	135	143	159	167
2	145	153	139	138	160
3	127	141	153	143	136
4	134	126	127	147	131
5	113	134	120	127	141
Total	808	833	839	854	849

NET MIGRATION GRADES K-5				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	2	-1	2	27
1 to 2	-3	4	-5	1
2 to 3	-4	0	4	-2
3 to 4	-1	-14	-6	-12
4 to 5	0	-6	0	-6
Total	-6	-17	-5	8

SURVIVAL RATES				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	1.015	0.993	1.013	1.193
1 to 2	0.981	1.030	0.965	1.006
2 to 3	0.972	1.000	1.029	0.986
3 to 4	0.992	0.901	0.961	0.916
4 to 5	1.000	0.952	1.000	0.959

MOORHEAD
S.G. REINERTSEN ELEMENTARY SCHOOL

ENROLLMENT HISTORY					
Grade	2010-11	2011-12	2012-13	2013-14	2014-15
K	138	153	167		
1	145	147	148	171	172
2	158	138	159	145	179
3	154	150	145	163	163
4	166	156	160	139	174
5	140	161	160	154	146
Total	901	905	939	772	834

NET MIGRATION GRADES K-5				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	9	-5	4	---
1 to 2	-7	12	-3	8
2 to 3	-8	7	4	18
3 to 4	2	10	-6	11
4 to 5	-5	4	-6	7
Total	-9	28	-7	44

SURVIVAL RATES				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1	1.065	0.967	1.024	---
1 to 2	0.952	1.082	0.980	1.047
2 to 3	0.949	1.051	1.025	1.124
3 to 4	1.013	1.067	0.959	1.067
4 to 5	0.970	1.026	0.963	1.050

MOORHEAD
PROBSTFIELD ELEMENTARY SCHOOL

ENROLLMENT HISTORY					
Grade	2010-11	2011-12	2012-13	2013-14	2014-15
K				223	295
1					
2					
3					
4					
5					
Total					

NET MIGRATION GRADES K-5				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1				
1 to 2				
2 to 3				
3 to 4				
4 to 5				
Total				

SURVIVAL RATES				
	2010 to 2011	2011 to 2012	2012 to 2013	2013 to 2014
K to 1				
1 to 2				
2 to 3				
3 to 4				
4 to 5				