Mastering Student Enrollment Projections for Strategic Planning

Updated methodology for projecting enrollment and how projections can assist your district in decision-making in the short and long run.

Presenters: Peter Spadafore and Colby Spencer Cesaro

What are enrollment projections?

Mathematical models that project future enrollment based in past data.

If additional metrics are included (building starts, new factory in town, etc.) the model can become predictive. Projecting and predicting are different but are often used interchangeably.

Forecasting is another term often associated with projections and predictions.

What are enrollment projections?

Projections can be done in aggregate or with a lot of detail. For example, a projection can be made for an entire district, or a single grade, grade band, building, or program.

The more information available often allows the mathematical model to become more precise.

General ranges are sufficient for planning unless a major economic or population disruption is anticipated or already occurring.

Why use enrollment projections at all?

- Planning - FTEs, facilities, budgets

- Responsible use of public dollars

- Better communication with staff during times of district change

- Evidence-based decision making using data

MICHIGAN ALLIANCE FOR STUDENT OPPORTUNITY

Why use enrollment projections at all?

- **FTEs** - how many teachers/staff will we need to plan for?

  - Example: if the previous year's kindergarten class was large but the prior year's 1st and 2nd grades were not, additional staffing will be needed in next year's 1st grade and for 2nd grade in two years

  - Example: if the current middle school classes are large there will likely be a greater need for high school teachers and counselors, possibly even coaches, etc. in the coming years

  - Example: if more building space is needed, additional support staff will also be needed to maintain the new facilities
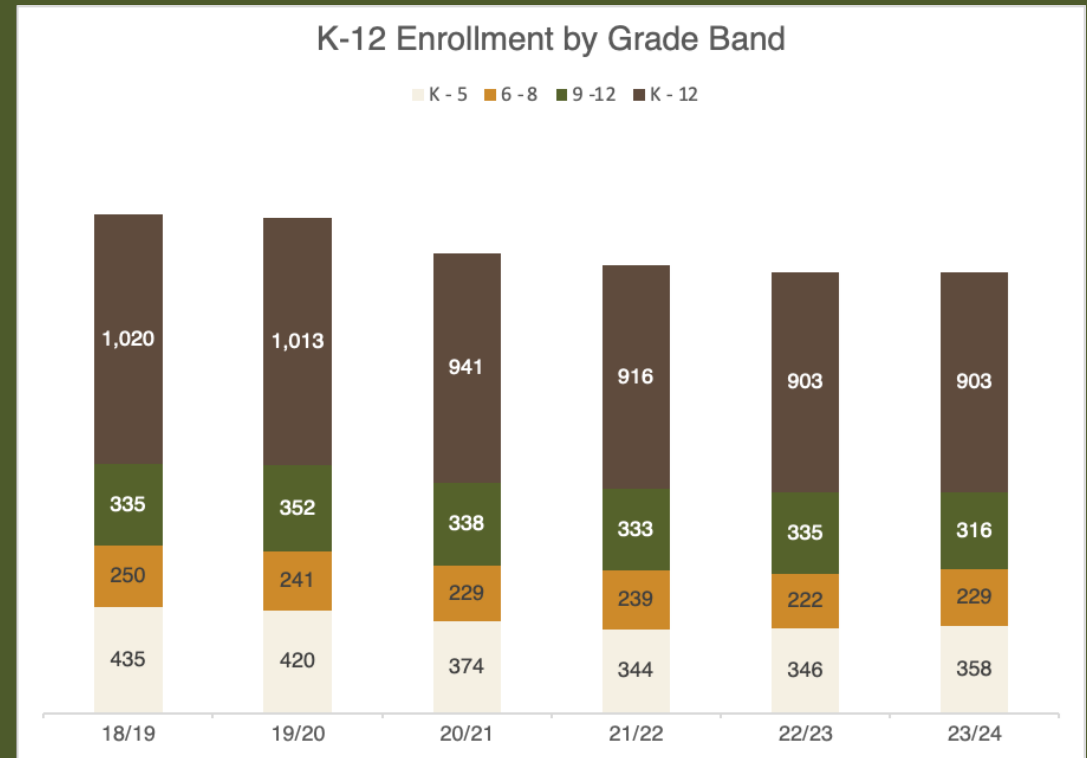
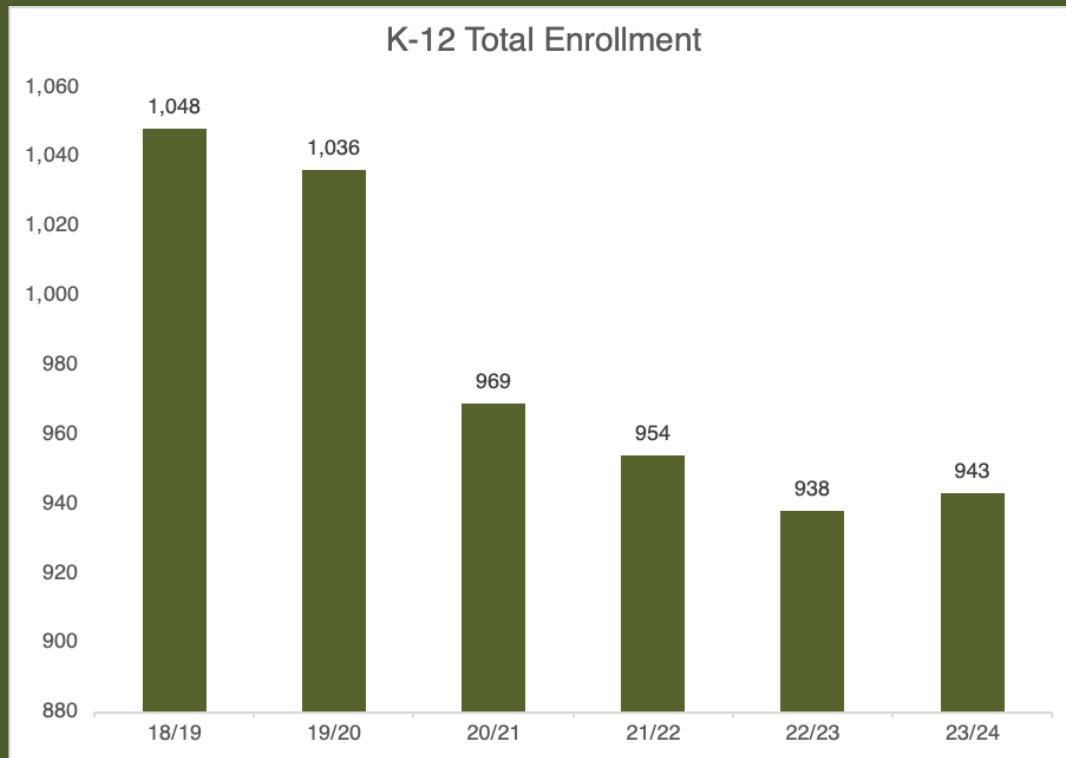MICHIGAN ALLIANCE FOR STUDENT OPPORTUNITY

Why use enrollment projections at all?

- **Facilities** - will the buildings we have be sufficient for our students? Do we have too much space?

  - Example: large upper elementary population but smaller kindergarten means five years down the road the district will likely need more space for high school but less in middle school

  - Example: declining elementary population means repurposing an overly large middle/high school or eliminating buildings

What do reports look like?

Projections should always compare to past information and provide context.

K-12 Total Enrollment

Year	Enrollment
18/19	1,048
19/20	1,036
20/21	969
21/22	954
22/23	938
23/24	943

K-12 Enrollment by Grade Band

Legend: K - 5, 6 - 8, 9 - 12, K - 12

Year	K-5	6-8	9-12	K-12
18/19	435	250	335	1,020
19/20	420	241	352	1,013
20/21	374	229	338	941
21/22	344	239	333	916
22/23	346	222	335	903
23/24	358	229	316	903

MICHIGAN ALLIANCE FOR STUDENT OPPORTUNITY

What do reports look like?

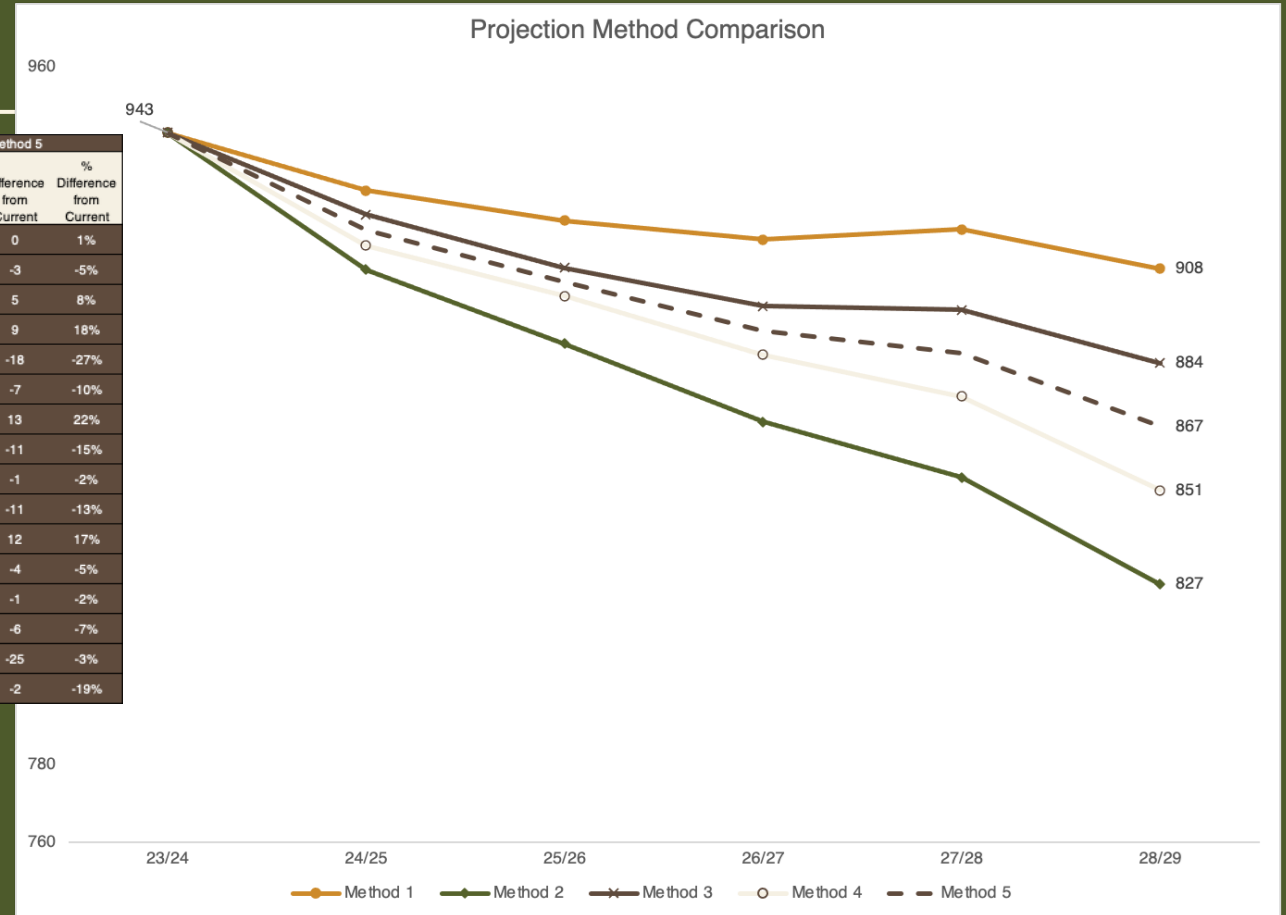Projections should be provided in multiple formats for easy analysis and sharing.

	Current & Past Enrollment as reported						Projected Enrollment - Method 2					Overall Projected 5-year Change	Avg Annual Projected % Change 5-year	Overall Projected 5-year % Change
	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29			
Pre-K	27	21	23	33	30	31	28	29	30	30	29	-2	-1%	-5%
K	66	53	51	44	52	55	51	51	51	52	52	-3	-1%	-6%
1	69	72	52	58	50	57	63	58	58	57	59	2	1%	3%
2	63	70	64	54	59	48	56	61	57	56	56	8	3%	17%
3	78	66	62	59	62	66	47	55	60	56	56	-10	-3%	-16%
4	80	84	67	62	56	72	65	47	54	60	55	-17	-5%	-23%
5	79	75	78	67	67	60	72	65	47	55	60	0	0%	0%
6	79	82	75	80	69	72	61	74	67	48	56	-16	-5%	-23%
7	86	76	79	73	80	72	70	60	72	65	47	-25	-7%	-35%
8	85	83	75	86	73	85	74	72	61	74	67	-18	-4%	-21%
9	87	85	84	74	82	71	84	73	71	60	73	2	0%	2%
10	89	87	82	88	82	79	74	87	76	74	63	-16	-4%	-21%
11	87	92	82	81	86	78	77	72	84	73	72	-6	-2%	-8%
12	72	88	90	90	85	88	81	80	75	88	76	-12	-3%	-13%
Total	1,048	1,036	969	954	938	943	908	889	868	854	827	-116	-2%	-12%
Alt Ed	1	2	5	5	5	9	5	6	6	6	6	-3	-6%	-28%

MICHIGAN ALLIANCE FOR STUDENT OPPORTUNITY

What do reports look like?

Projections should also use multiple methods to ensure a range of possibilities.

	23/24	Method 1			Method 2			Method 3			Method 4			Method 5		
	Current Enrollment	1-Yr Projection	Difference from Current	% Difference from Current	1-Yr Projection	Difference from Current	% Difference from Current	1-Yr Projection	Difference from Current	% Difference from Current	1-Yr Projection	Difference from Current	% Difference from Current	1-Yr Projection	Difference from Current	% Difference from Current
Pre K	31	35	4	13%	28	-3	-11%	35	4	13%	28	-3	-11%	31	0	1%
K	55	53	-2	-3%	51	-4	-7%	53	-2	-3%	51	-4	-7%	52	-3	-5%
1	57	61	4	7%	63	6	10%	63	6	10%	61	4	7%	62	5	8%
2	48	57	9	19%	56	8	17%	56	8	17%	57	9	19%	57	9	18%
3	66	49	-17	-25%	47	-19	-28%	47	-19	-28%	49	-17	-25%	48	-18	-27%
4	72	64	-8	-10%	65	-7	-9%	65	-7	-9%	64	-8	-10%	65	-7	-10%
5	60	74	14	23%	72	12	20%	72	12	20%	74	14	23%	73	13	22%
6	72	61	-11	-15%	61	-11	-15%	61	-11	-15%	61	-11	-15%	61	-11	-15%
7	72	71	-1	-1%	70	-2	-2%	70	-2	-2%	71	-1	-1%	71	-1	-2%
8	85	74	-11	-13%	74	-11	-13%	74	-11	-13%	74	-11	-13%	74	-11	-13%
9	71	83	12	17%	84	13	18%	84	13	18%	83	12	17%	83	12	17%
10	79	76	-3	-4%	74	-5	-7%	74	-5	-7%	76	-3	-4%	75	-4	-5%
11	78	77	-1	-1%	77	-1	-2%	77	-1	-2%	77	-1	-1%	77	-1	-2%
12	88	82	-6	-7%	81	-7	-8%	81	-7	-8%	82	-6	-7%	82	-6	-7%
Total	943	928	-15	-2%	908	-35	-4%	922	-21	-2%	914	-29	-3%	918	-25	-3%
Alt Ed	9	9	0	4%	5	-4	-42%	9	0	4%	5	-4	-42%	7	-2	-19%

Projection Method Comparison

Changing Methodology

THEN

Reliance on birthrates

- Accurate in areas with little migration or population shift
- Before school choice became as widespread
- Harder to adapt and customize for known upcoming changes

NOW

Focused on most recent data

- Accounts for population changes in the most recent years
- Considers prior year enrollment as a predictor for Kindergarten
- Easily adjusted to account for major economic shifts

Updating the model at the Alliance

In 2023 the Michigan Alliance for Student Opportunity worked to update their projection methodology so that reports were more accurate and accounted for changing demographics and trends.

Terminology

Persistence rate (ratio): the % of students who persist from one grade to the next (survival rate is often used as well)

Moving average: an average that adjusts year-to-year to account for recent changes

Weighted average: an average calculation with more emphasis placed on certain values

Exponential smoothing: similar to weighted average but with another level of statistical analysis included to level out outlier data (one year with a large jump that is not characteristic) and place emphasis on recent data

Updating the model at the Alliance

In 2023 the Michigan Alliance for Student Opportunity worked to update their projection methodology so that reports were more accurate and accounted for changing demographics and trends.

How is the new model different?

2 methods for Kindergarten

- exponential smoothing
- 5-year moving average

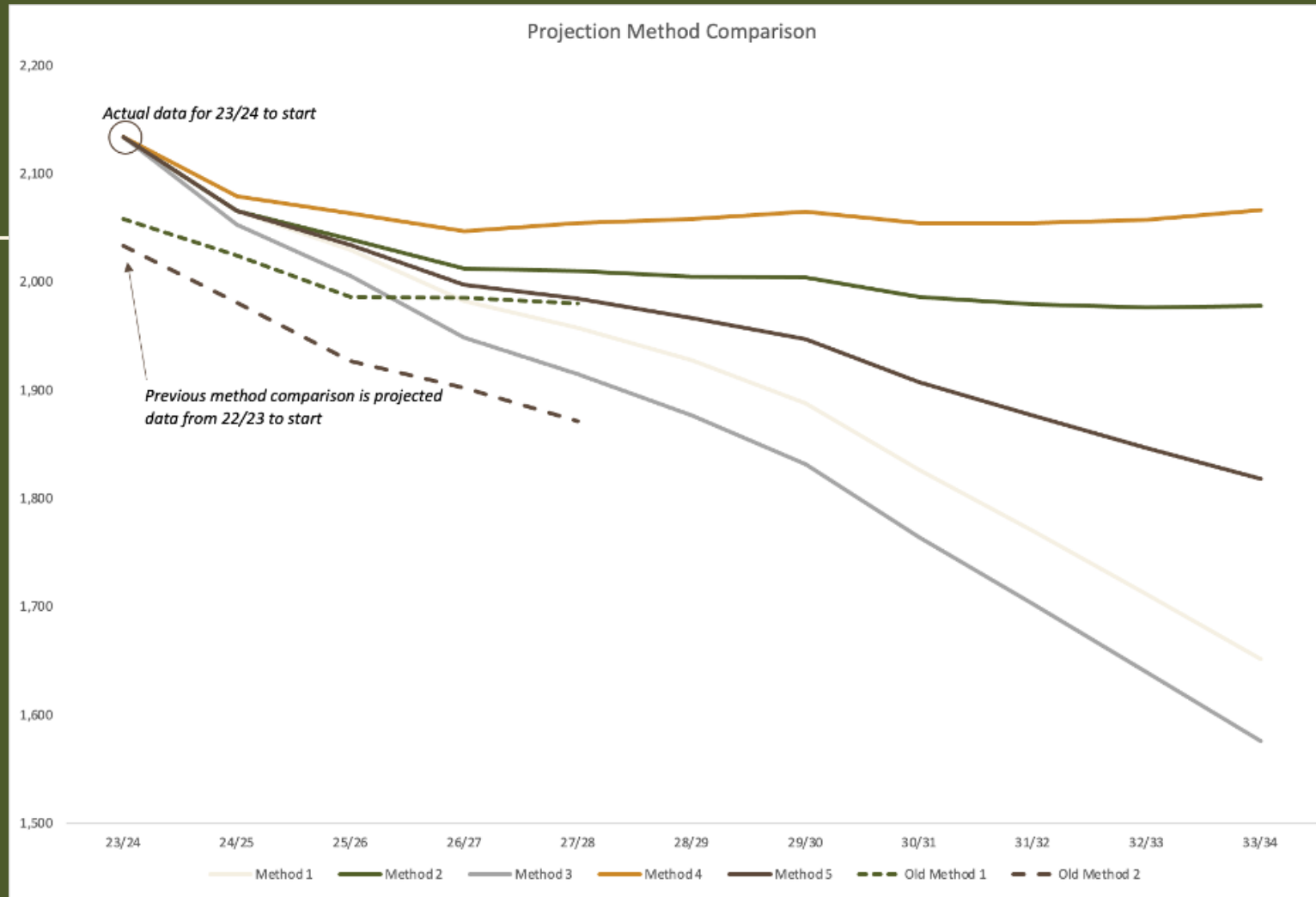**2 methods for grade-to-grade progression:**

- 2-year average persistency ratio
- 3-year weighted average persistency ratio with greater weight on most recent year

5 total options for enrollment projections

Each Kindergarten formula coupled with each of the grade formulas (4 methods)

Plus a 5th method that averages the other four

New and Old Model comparison

Projection Method Comparison

Actual data for 23/24 to start

Previous method comparison is projected data from 22/23 to start

Method 1 — Method 2 — Method 3 — Method 4 — Method 5 — Old Method 1 — Old Method 2

Frequently Asked Questions

How is school choice accounted for?

Why is special/alternative ed separated out?

How does Pre-K differ from Kindergarten?

What about special circumstances?

Are birth rates accurate at all?

Can we use the reports for bonding purposes?

Is there a shorter version of the report?

MICHIGAN ALLIANCE FOR STUDENT OPPORTUNITY