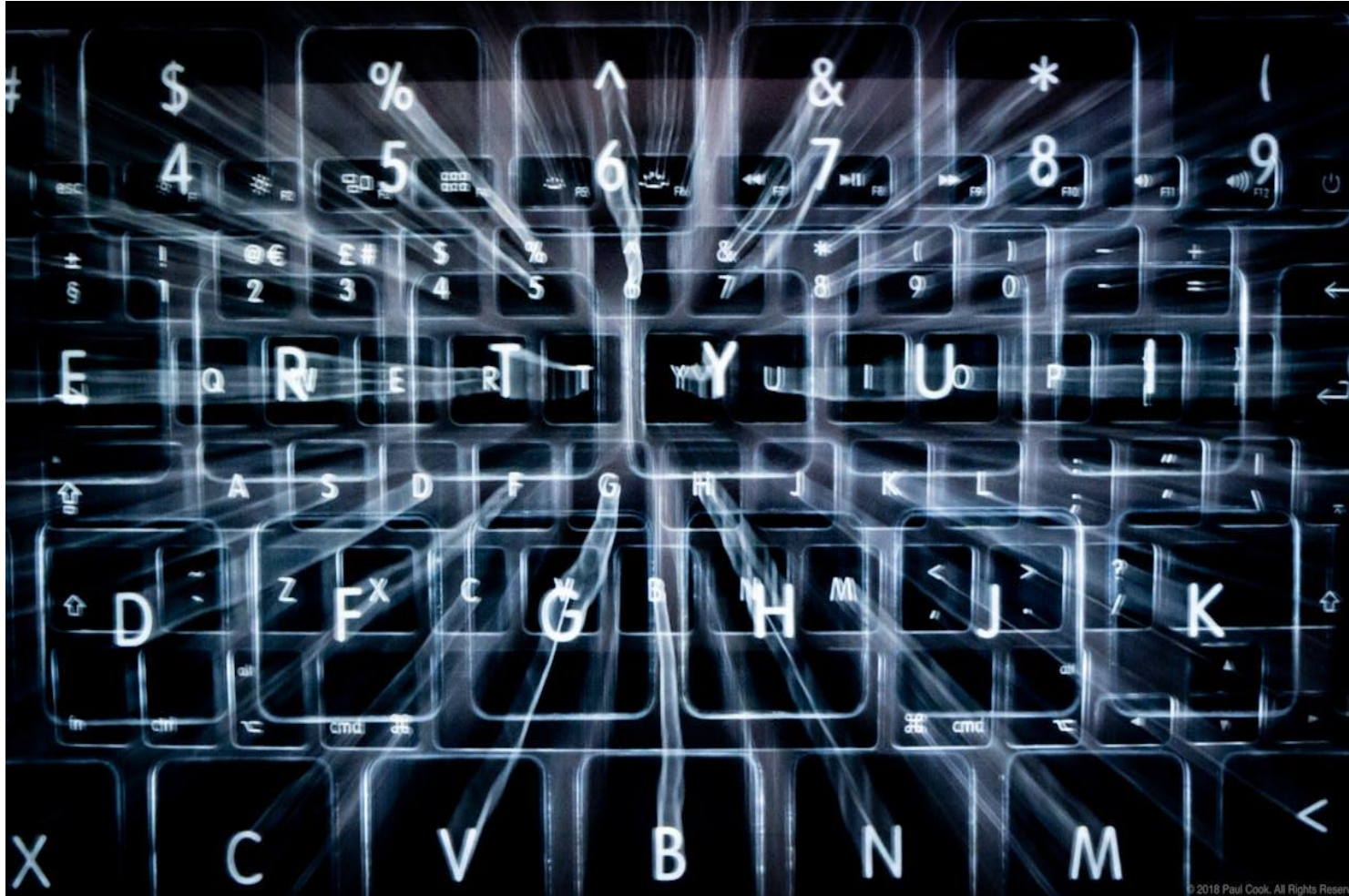


Matrix Approaches in Accountability



Accountability Problems of Practice

1. Our accountability system for schools is **not criterion-based**

→ Set clear criteria for categorization (e.g., it should be simple to understand what performance places you in each category)

2. **Misleading data** (e.g., 70% of schools labeled “commendable”) **prevents us from directing resources to where they are needed most**

→ The categories should represent defensible differences in performance

3. The system tells schools that there is a problem (it sorts) but does **not indicate what strategies or supports might be most helpful** in addressing the problem (informs)

→ Schools will receive a supplemental report driven by questions about school practices & programming featuring helpful metrics that don't make good ESSA indicators

Advantages and Disadvantages of a Matrix

Advantages

- A matrix is used to **show relationships** among metrics or variables that can have categorical or ordinal ranges of variance
- Can be **visually easy to understand**
- Can be **tabular or graphic** (grid), chained or independent

Disadvantages

- **Limited to two dimensions**, except insofar as you place formulae in as the matrix values or create chained matrices
- **Missing values are highly problematic**
- Fundamentally just a way of representing data

Matrices are more often used as part of a larger accountability system (decision tree or index) rather than as the system

Tabular and Graphic Matrices

Lookup or Value Table

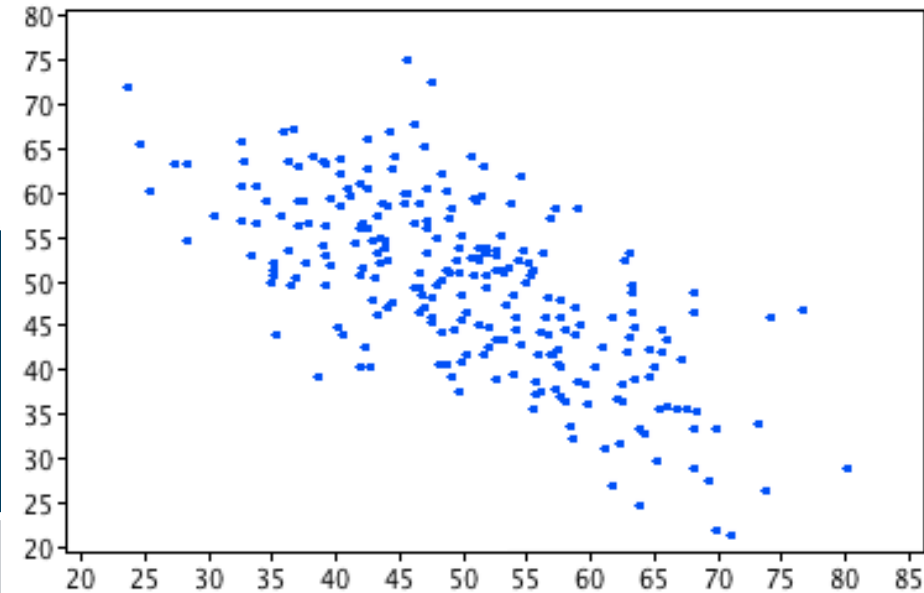
Current Year Proficiency

	1	2	3	4	5
1	1	1.5	2	2.5	2.5
2	0	1	1.5	2.5	2.5
3	0	.75	1	2.5	2.5
4	0	.5	.75	2	2.5
5	0	.25	.5	1	2

Prior Year Proficiency

	Growth	Proficiency	ELPtP	Absenteeism
Exemplary	60	80	8	9
Commendable	50	60	6	7
Approaching	40	40	2	6
Comprehensive	25	10	1	5

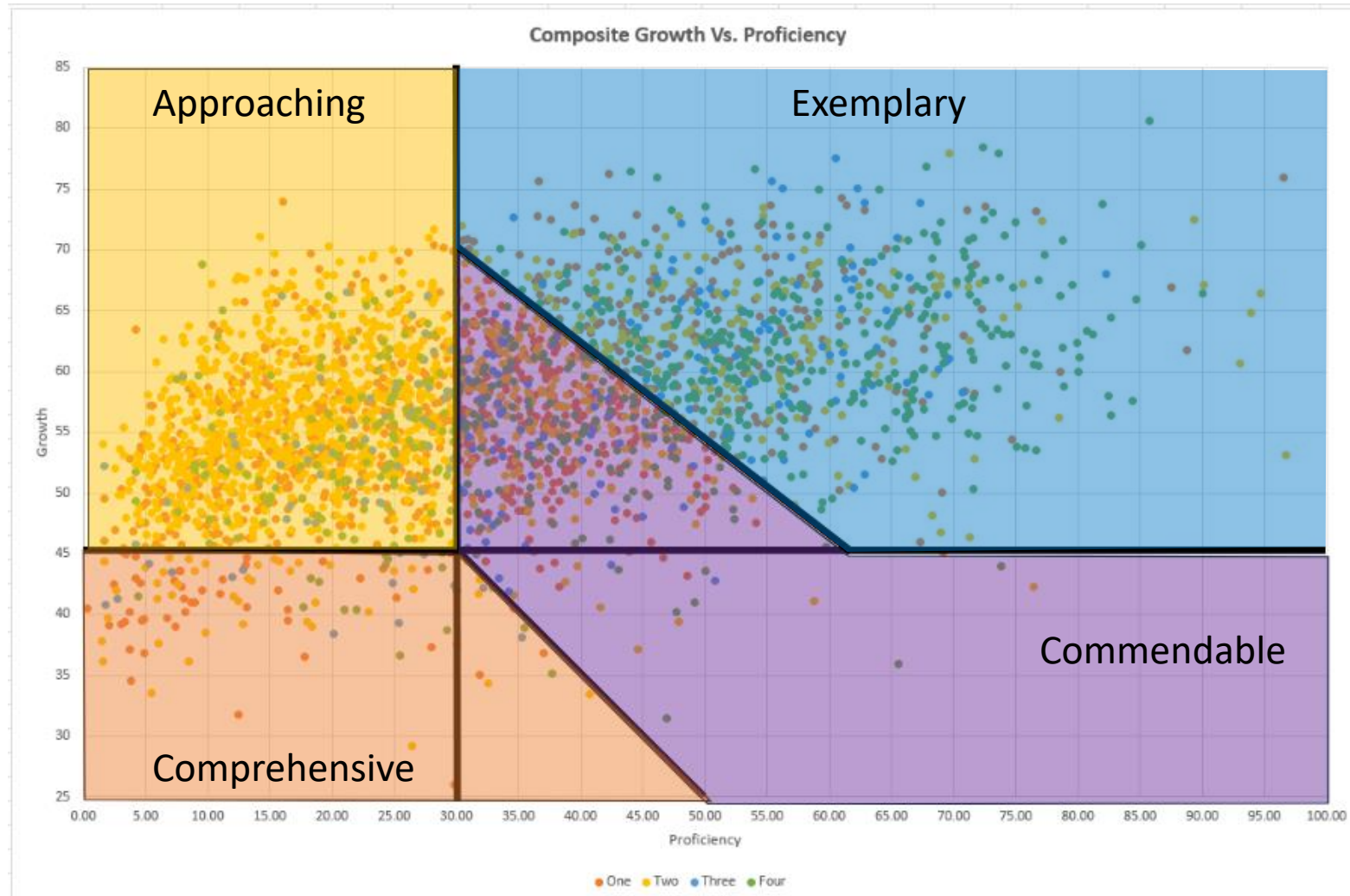
Scatterplot



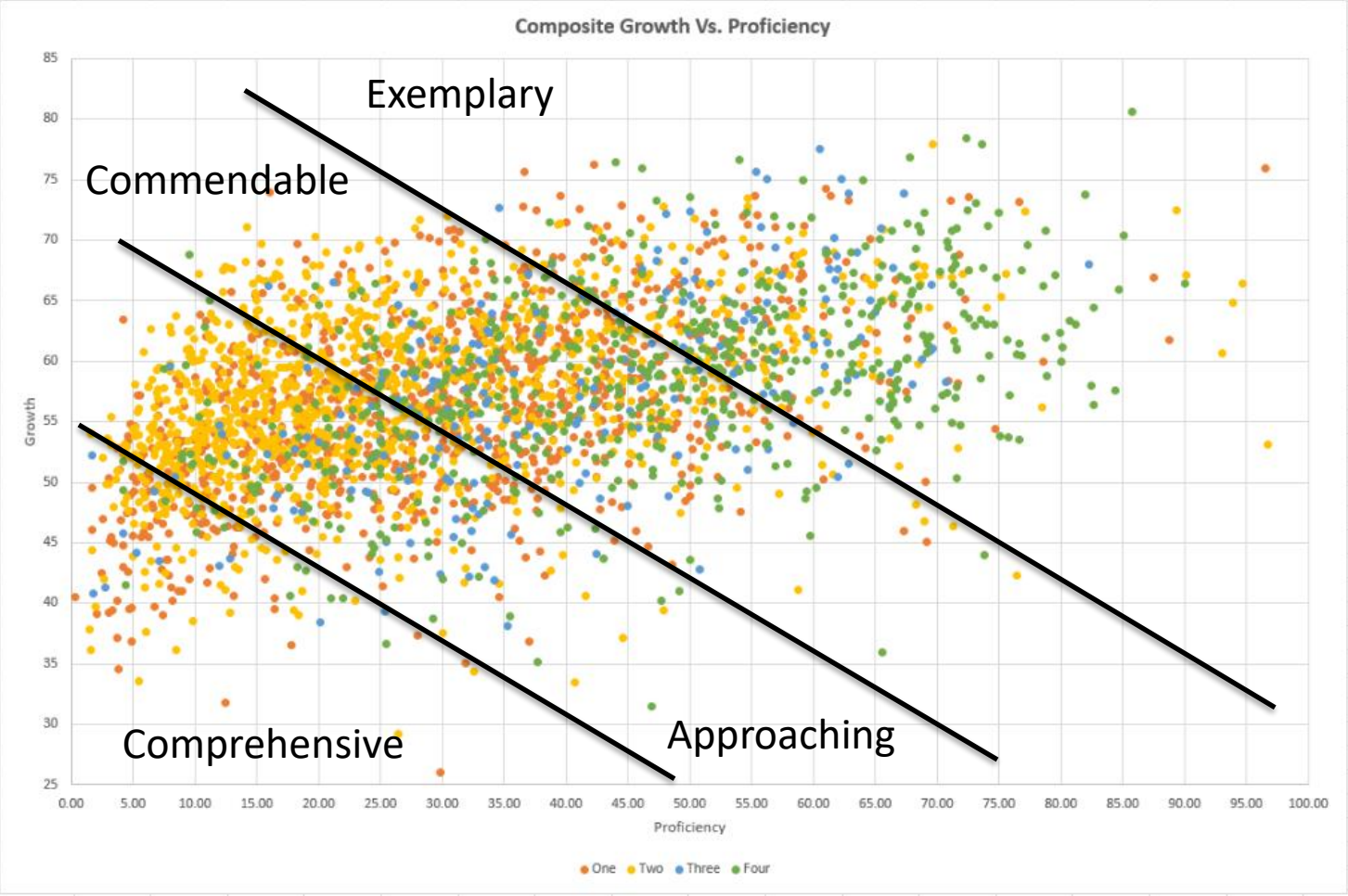
Model 1. Square Grid



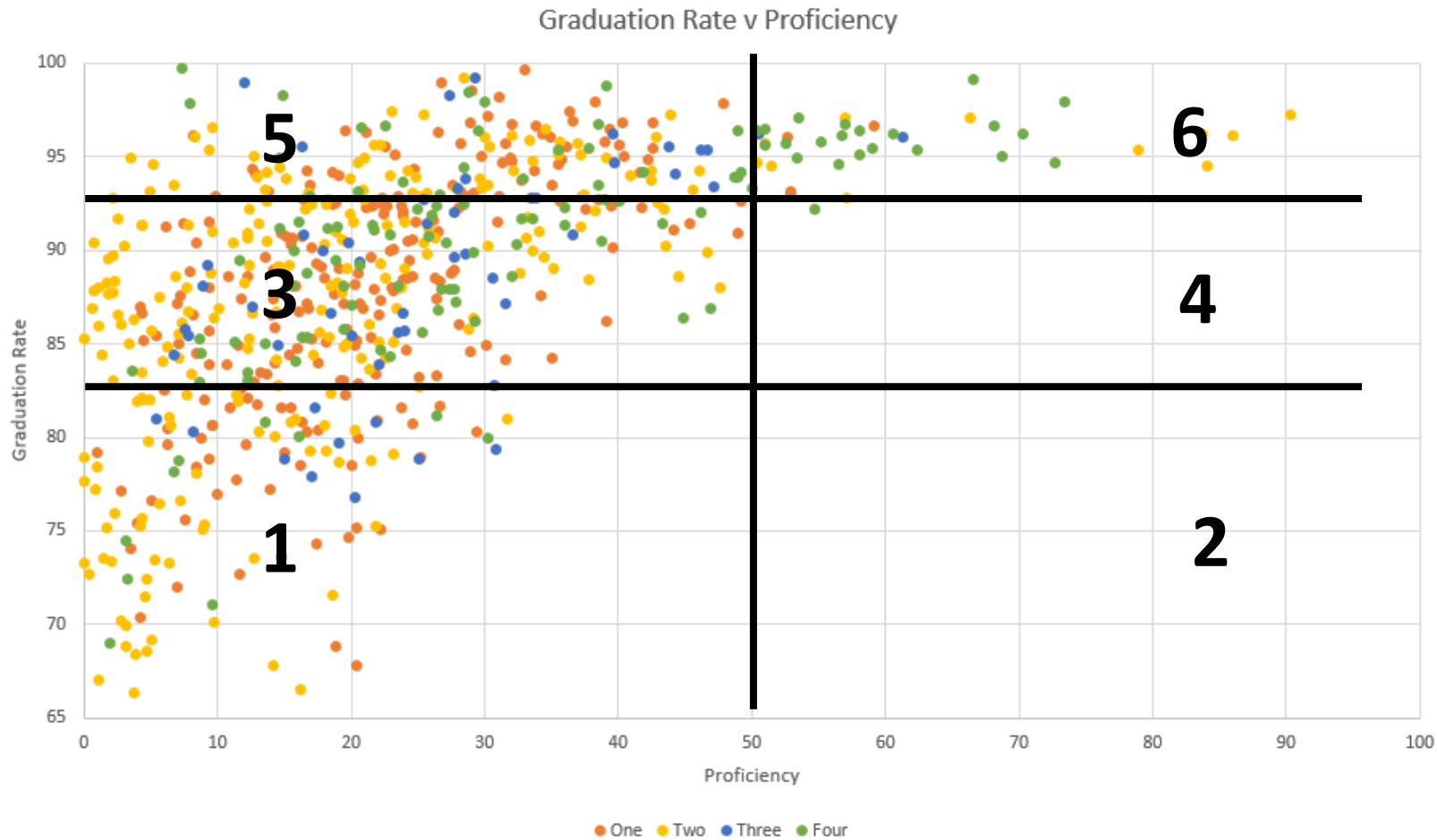
Model 2. Tangram



Model 3. Linear Relationship Slices



Model 4. Rectangular / Diagonal Matrix (2 x N)

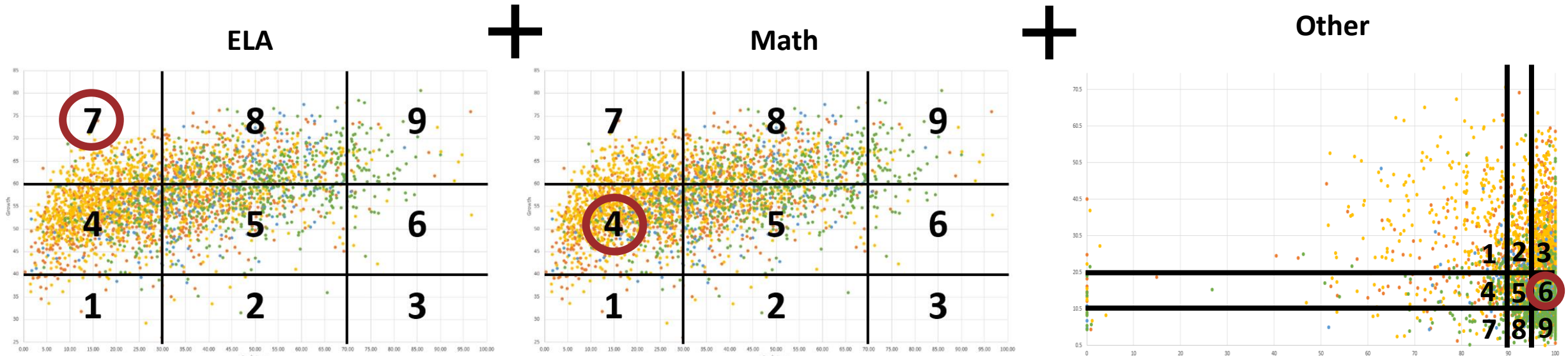


The utility of a matrix depends on the strength and directionality of the relationship between the axes.

Matrix as Part of an Index

- Multiplicative total gives a much broader range.
- Summative total may be easier to understand and calculate for all stakeholders.
- Schools with missing indicators are advantaged or penalized more with a multiplicative total.

Model 5. Square Matrices Summed to an Index



Simple Index = $7 + 4 + 6 = 17$ out of $27 = 62.96\% \rightarrow$??Commendable??

Weighted Index = $(7 \times 2) + (4 \times 2) + 6 = 28$ out of $45 = 62.2\% \rightarrow$??Approaching??

Adjusting weights doesn't much change where a school falls in a distribution. It only changes the shape of the distribution.

Sample 6. Simple Index Table - Additive

Growth	Proficiency	Total	Designation
1	7	8	Exemplary
2	6	8	Exemplary
3	5	8	Exemplary
4	4	8	Exemplary

Conclusion

- It may be a useful way to display some of the data from an accountability system.
- It is too vulnerable to issues of missing data to be a viable option for IL without also being paired with a multi-measures index of some kind.
- In which case, we should simply focus on creating a better index.