



*Accelerating decision-making with dynamic group processes and state of the art systems*

## ***Frontier Analyst<sup>®</sup> : Benchmarking as a School Improvement Tool***

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Our passion is to maximize the human potential of client groups to make and implement decisions that achieve their preferred future.

# ***Benchmarking Services***

- **For each New York State school, Prism can**
  - **Identify its unique set of benchmark schools that could be the source for best practices in**
    - **Curriculum and instructional practice**
    - **Scheduling and organization**
    - **Assessment and professional development**
    - **Special education, etc.**
  - **Calculate realistic improvement targets for each school, based on the actual performance of its benchmark peers**

## ***What is a benchmark school?***

- **The benchmark schools represent the top 7% to 8% of nearly 4000 New York State schools in all demographic profiles**
- **These schools define the current frontier of performance**
- **They are identified by a sophisticated ratio analysis, using Frontier Analyst<sup>®</sup>**

# ***Frontier Analyst***<sup>®</sup>

- **Benchmarking analysis methodology**
- **In more than 30 countries**
- **Across many sectors: education, finance, retail, manufacturing, service, law enforcement, and energy, to name a few**
- **Performance management approach “spec” for government organizations in UK**
- **UK law enforcement integrates into their national performance management system**

# ***Frontier Analysis (FA): What it Does***

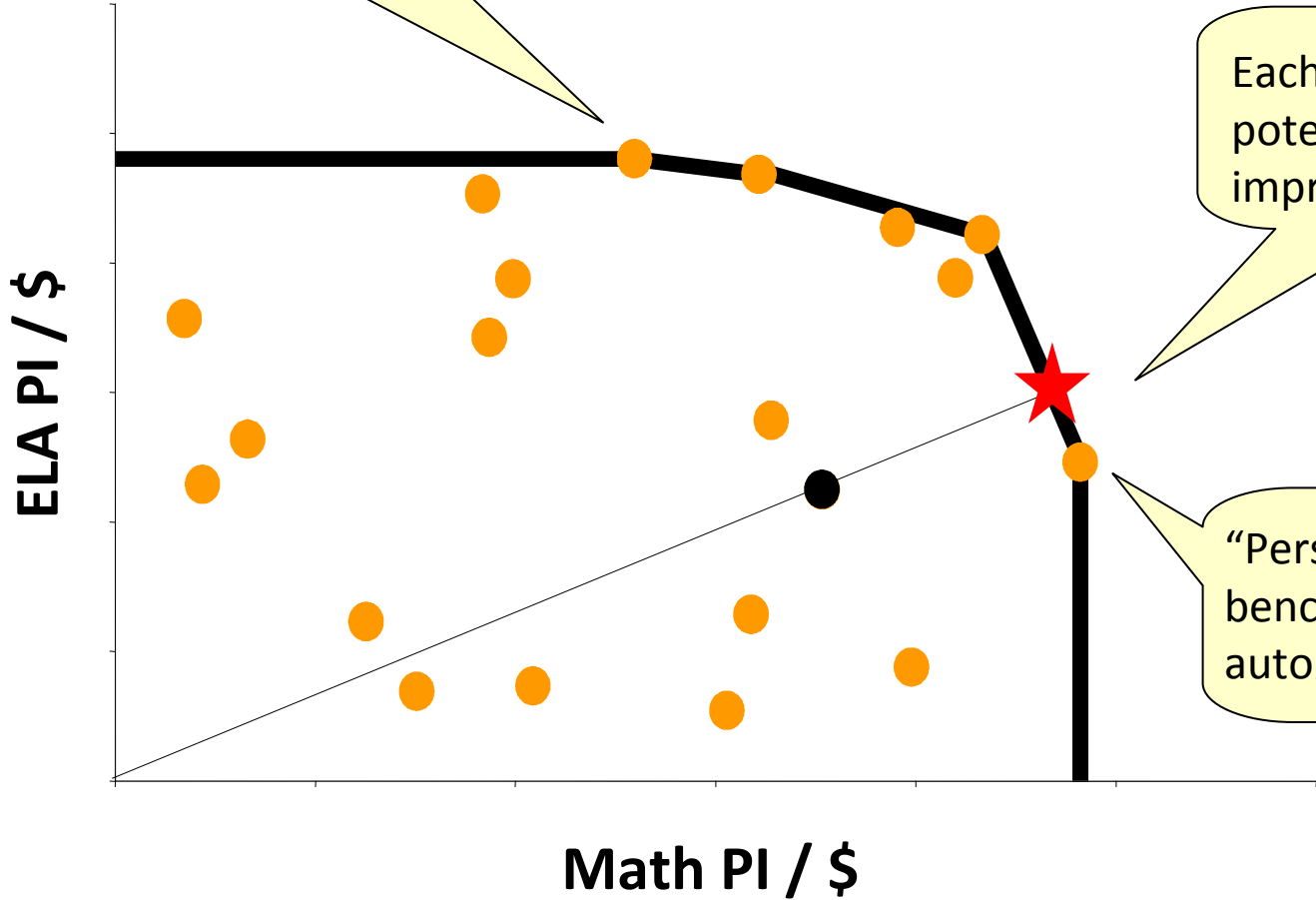
- **FA is a ratio technique that converts a school's multiple inputs (resources) and outputs (results) into a comprehensive assessment of performance**
- **Identifies benchmark schools in all demographic profiles and highlights their specific strengths**
- **Sets realistic performance targets for all other schools by comparing them to their unique set of benchmark schools**
- **Also known as data envelopment analysis (DEA)**

# ***FA: The Analysis Process***

- **FA defines efficiency as**  
**Efficiency = Outputs ÷ Inputs**
- **Assume we are measuring the efficiency of schools by using**
  - **Input: Dollars per pupil unit**
  - **Outputs: the % of students performing at or above Level 3 for Grade 8 ELA and Math**

**Frontier analysis is a formal mathematical process that provides a comprehensive assessment of each school including its unique set of benchmark peers and its potential improvement based on the actual performance of those peers**

Achievable performance highlighted, rather than "averaged out"



Each school sees its potential for improvement

"Personalized" benchmark schools automatically identified

# ***The Efficiency Frontier: Defined***

- **The efficiency frontier 'envelops' the less efficient units**
- **Any school on the frontier is considered 100% efficient and a benchmark unit. Any school below it is relatively less efficient and has an efficiency rating of less than 100%**
- **FA generates peer-based performance targets that show how much inefficient schools need to increase outputs to become 100% efficient, benchmark peers**



# *Study Design: Grade 4 and 8*

## **Inputs: 3-year average**

- Expenditure per pupil (\$/pupil)
- Combined wealth ratio (CWR)
- Advantaged student ratio (ASR):  
( $100 \div \% \text{ free lunch}$ )
- English speaker ratio (ESR):  
( $100 \div \% \text{ English language learners}$ )

## **Outputs: 3-year average**

- ELA
- Performance index (SASS score)
- % at Level 4
- Math
- Performance index (SASS score)
- % at Level 4

Data primarily from New York State Report Card  
(3/2002): src2002.mdb

# *High School Inputs and Outputs*

- **Inputs\***
  - Same as grades 4 and 8
- **Outputs\***
  - Percentage of 2002 cohort at or above 65% on ELA, math, U.S. history and global history regents exams in report year 2001

\* Note: High school study based on one year's data

# ***Frontier Analyst<sup>®</sup> : Benefits***

- **Lets school leaders know**
  - **How well their schools are doing**
  - **How much they can improve**
  - **Where they can go to find out how**

# Sample Results for a Long Island (LI) Middle School

# ***The Benchmark Set***

- **Each New York State school is benchmarked against the set of efficient schools to which it has been most directly compared when calculating its efficiency ratings**
- **A school's reference set can help provide insight into why it is under performing and show clearly its weak areas**

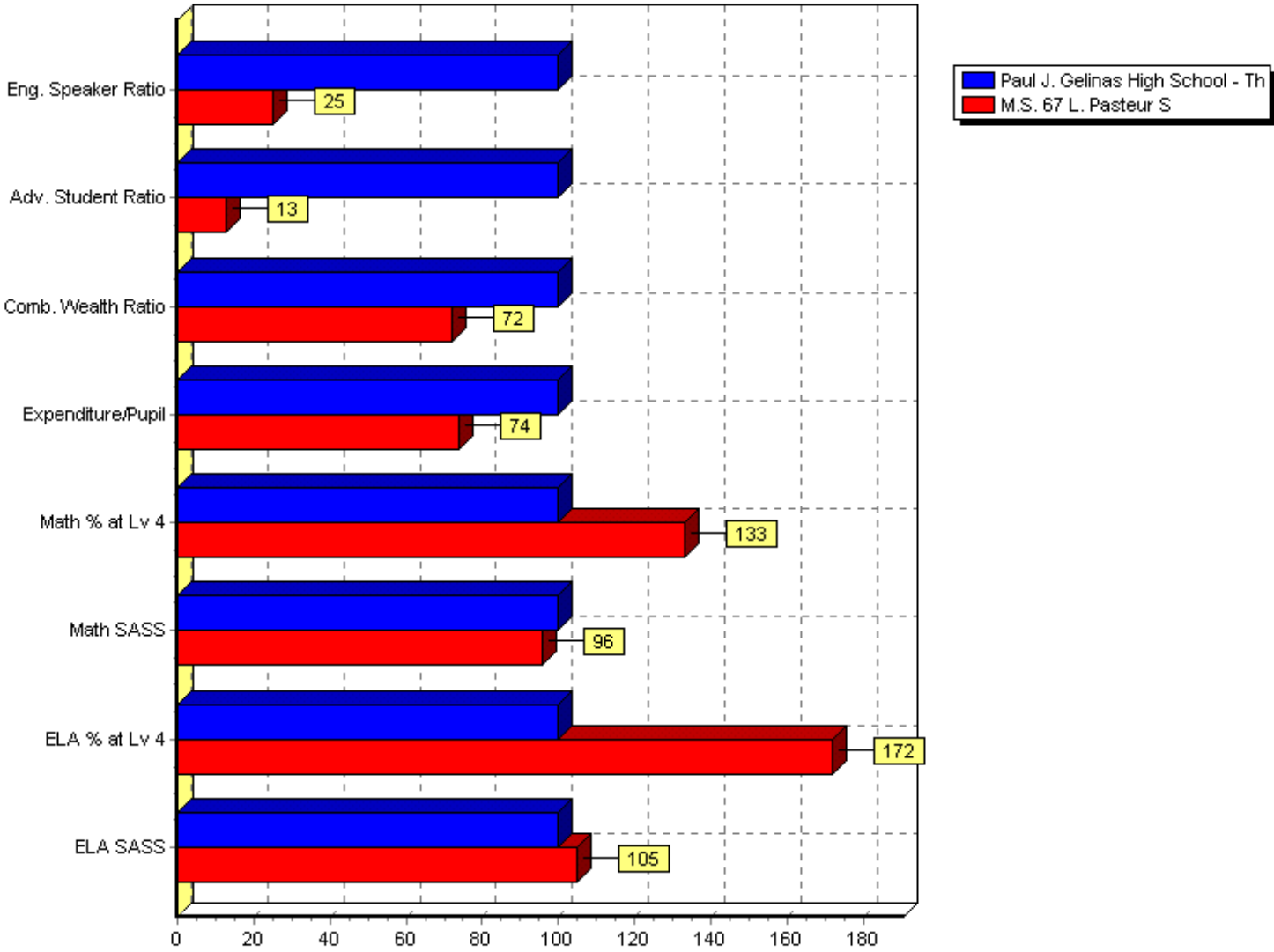
# ***Benchmark Comparison***

**The graph following displays various input and output bars to represent the LI middle school and each benchmark school. So that the relative difference in input and output levels is obvious, the values of the LI middle school are displayed as blue bars and always set to 100%. The benchmark school is shown as red bars.**

## *LI middle school's benchmark peers*

- **Fayetteville-Manlius: Eagle Hill Middle**
- **NYC District #26: M.S. 67 L. Pasteur**

# LI middle school: M.S. 67 L. Pasteur

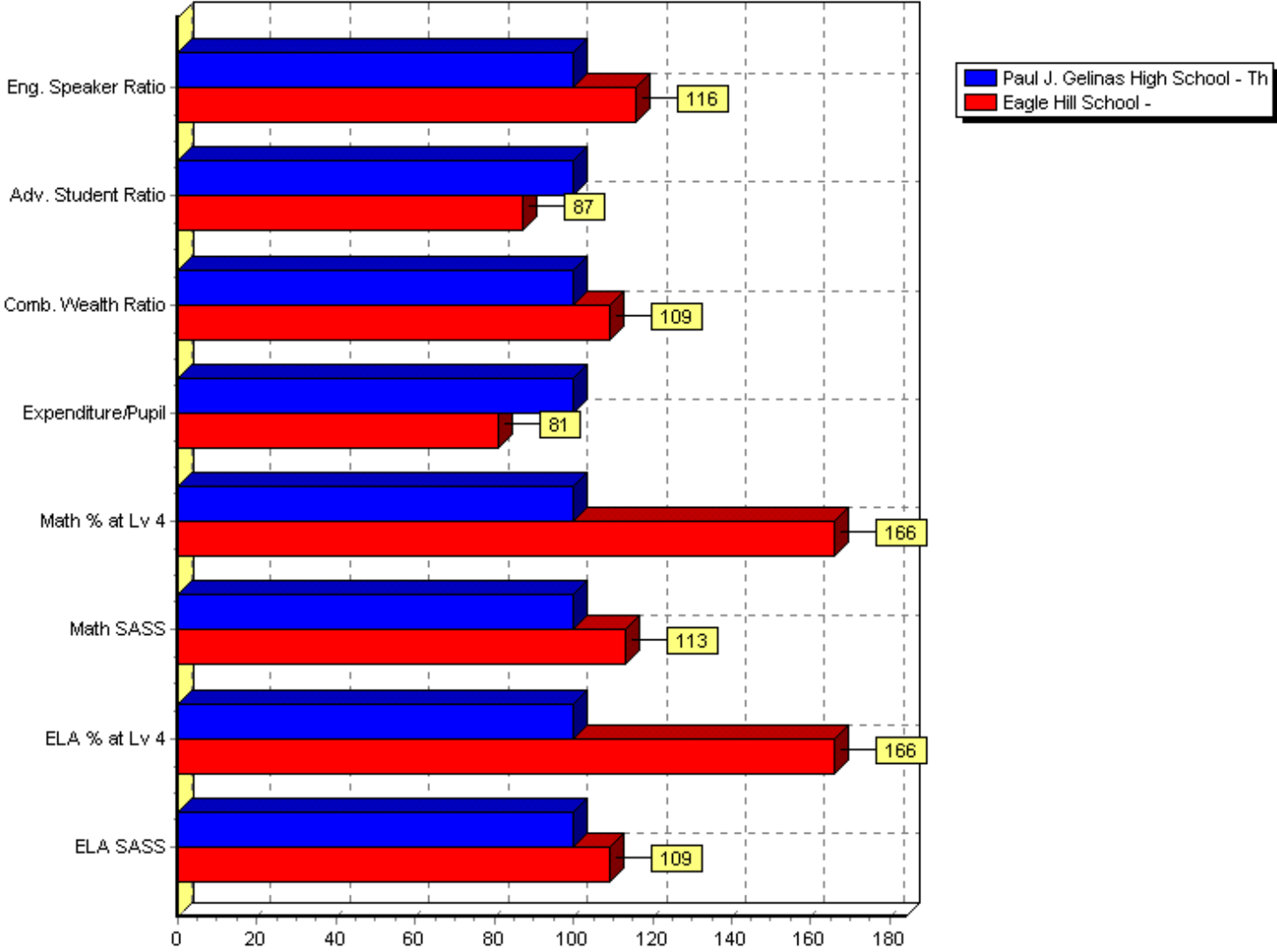




## *Why is M. S. 67 a peer?*

- **Despite a much lower Advantaged Student Ratio (ASR) and English Speaker Ratio (ESR), and a lower Combined Wealth Ratio (CWR) and expenditure per pupil, M. S. 67 out performs the LI middle school:**
  - **33% more students at level 4 Math**
  - **72% more students at level 4 ELA**
  - **5% higher ELA SASS**

# LI middle school: Eagle Hill



## *Why is Eagle Hill a peer?*

- **Despite a lower Advantaged Student Ratio (ASR) and expenditure/pupil, Eagle Hill outperforms the LI middle school:**
  - **66% more students at level 4 Math**
  - **13% higher Math SASS**
  - **66% more students at level 4 ELA**
  - **9% higher ELA SASS**

# *LI middle school's targets*

Below is a summary of the results the LI middle school would have to achieve to become a benchmark peer.

Input / Output	Actual	Target	Potential Improvement
Math % at Lv 4	18	28.41	57.82
Math SASS	162	176.57	8.99
ELA % at Lv 4	18	30.27	68.14
ELA SASS	167	181.14	8.47

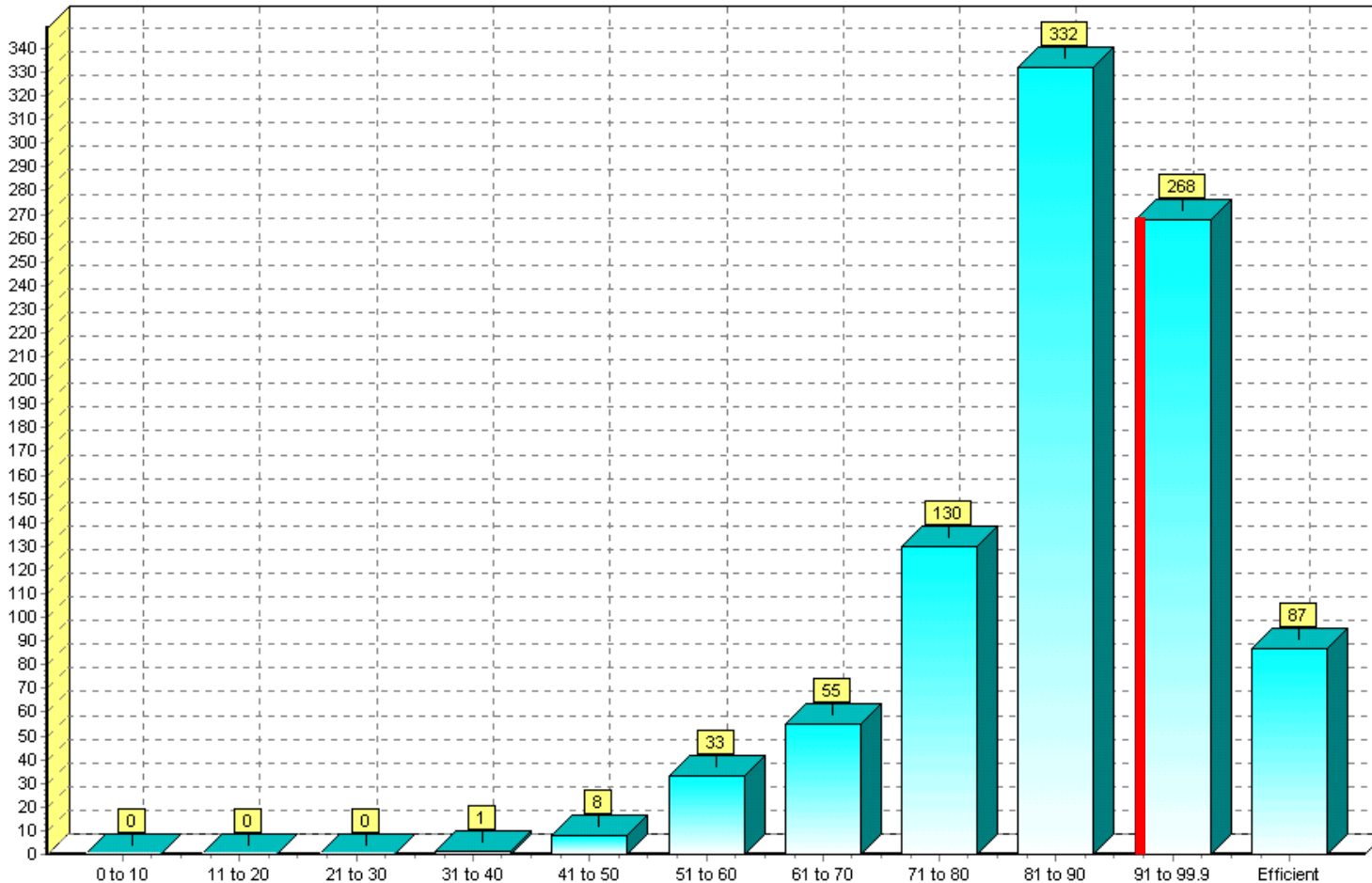
## *LI middle school's targets*

- **The analysis suggests these targets are achievable:**
  - **28% of students at level 4 Math**
  - **176 Math SASS**
  - **30% of students at level 4 ELA**
  - **181 ELA SASS**
- **It does not suggest they are achievable in one year**

# LI middle school's efficiency: 92.2%

This graph shows the distribution of efficiency scores for 914 schools reporting grade 8 results.

Distribution of scores



# *Questions begged*

- **In each case, what is the benchmark school doing to distinguish its performance?**
  - **Curriculum, instruction, assessment**
  - **Professional development**
  - **Scheduling and organization**
  - **Special education**
  - **Etc.**
- **Which of the benchmark school's best practices could be transferred to the LI middle school?**

# **Data *to* knowledge *to* action**

- **FA identifies benchmark institutions, highlights their specific strengths**
- **FA uncovers innovation**
- **FA sets demonstrably attainable performance targets**
- **FA positions schools to effectively collaborate to identify and exchange best practices**