

Tyler Pulse

Empowering schools
with information

School Districts | PAGE 6

Business Offices | PAGE 12

Transportation | PAGE 14

Evolution

of Data
Management

PAGE 4

Case Study

Ozark R-VI School
District, Missouri

PAGE 8

Information:

The Key to Effective
Management


PAGE 10

A close-up photograph of three children smiling warmly. The image is bathed in a soft, warm orange light, creating a positive and hopeful atmosphere. The children are of diverse backgrounds, and their expressions are joyful and confident.

Advance

student achievement
with Tyler Pulse

Information Warehouse



School districts are inundated with data from dozens of sources including, student assessments, state, local and national requirements, discipline data, demographics and more. The reality is that local and state school budgets are under pressure today, and schools are often required to make cuts in curriculum, departments and staff to stay solvent — yet, must deliver student achievement results. The question becomes, “How can we use our data to advance student achievement?”

Tyler Pulse Information Warehouse is the answer to your needs.

Developed **specifically for the decision makers in a school district**, Tyler Pulse is a specialized information delivery system for K-12 district management such as, superintendents, principals, teachers, transportation directors and finance directors. From student achievement, to identifying at-risk students and evaluating teacher effectiveness, to transportation management and balancing the budget, Tyler Pulse delivers information you can use.

How? Tyler Pulse takes the underlying data available to districts, simplifies and automates the process of aggregating the data, and computes changes over time to deliver the information stakeholders need. It aggregates data from Tyler SIS, Schoolmaster® or your current SIS data, with financial data from Tyler’s Munis® Financial and Human Capital Management solution, and transportation data from Tyler’s Versatrans® Student Transportation solution, to allow for the blended look at the entire student experience — in one place. With this information schools can make decisions that move education forward.

The Evolution of Data Management

Schools have always managed student data, but as requirements and expectations have increased, so has the amount of data schools generate. Today, schools spend more time generating data than using it to accomplish achievement goals. In fact, schools are overwhelmed with data generated by various application systems and dozens of student assessments but have very little information they can use to make decisions.

Data Warehouses promised to solve this problem. They offered vast repositories for data. As they grew and expanded to accommodate more and more data, they also became so complex that they were very difficult to use. They often required a dedicated resource, a super user, to first learn about the system and how to extract data, and then develop the reports and models that delivered data into the hands of educators who relied on it to make decisions. However, data was often delivered late, and in a format that was not useful or helpful. Additionally, the high cost was prohibitive for most school districts, and they were cumbersome and took years to implement. It is easy to see why they did not work for everyone.

The new generation of data management is actually an information warehouse — Tyler Pulse information warehouse. For every barrier and complexity inherent to a data warehouse, Tyler Pulse offers a simple effective solution.

Tyler Pulse acts as a central information warehouse, and combines and transforms data into highly usable information that is easily accessible and delivered in a useful format. The dynamic result? Stakeholders are empowered by information—not overwhelmed by data.

The advantages of Tyler Pulse over a data warehouse

Very low cost per student —
no cost over-runs

Set up and use in weeks —
not years

Models include NCLB, standard, benchmark and district designed assessment; student grades, discipline, attendance and numerous others

Easy to use —
very little training required

Offers hundreds of pre-built models ready-to-use from day one, with more in constant development

Delivers specific information

Benefits of Pulse

Affordable

A highly cost effective information warehouse specifically designed for school districts

Scalable

Designed to work for organizations of any size

Dynamic Charts

Easy to read charts with links to allow for further drill down and analysis

Year-to-Year Comparison

Archive historical periods that can be used as benchmarks for NCLB testing results

Easy Deployment

Web-based system for easy deployment and minimal maintenance

Pulse Integration

Create bridges between products to product integrated information

The Next Generation

Information — Key to Effective Management

Schools need information. They need it fast, timely and accurate. They need it for informed analytical decision making to deliver on their mission to educate students and help them reach their potential. Tyler Pulse can do all that — and does every day, day after day.

Tyler Pulse empowers all district staff — superintendents, assistant superintendents, curriculum directors, teachers, IT directors, business managers, transportation directors, finance directors and HR directors with the information they need to advance student achievement.

Tyler Pulse integrates data from multiple disparate systems into singular dashboards, advanced graphics and reports, providing an enterprise-wide view of consolidated, meaningful, management-level information to help make informed decisions. This data interface between application systems and assessment results can eliminate the need for more expensive and labor-intensive interface tools.

Fast

Tyler Pulse produces consistent sub-second response times, and delivers information via Web browsers, spreadsheets, e-mail, text messaging, PDF and other graphic types, analytical evaluation tools and data interfaces. Tyler Pulse:

- Implements significantly faster, and for one third the cost of the most inexpensive alternative.
- Requires less than 10% of the staffing needs of other alternatives
- Operates at considerably faster runtime speeds
- Requires less than half of the computer resources of any other comparable system

Efficient

The home page or “information board” keeps access to information at users’ fingertips. It is comprised of Tyler Pulse objects that contain key information about the district, school, classroom or student. Pointing and clicking on key data drills into supporting detail information. Additionally, information board views can be configured to fit each user’s need, and pages can be dynamically adjusted for each user, providing maximum security.



How Pulse Works for School Districts

Whether you are a teacher, superintendent, assistant superintendent, principal or perform another district role, Tyler Pulse can reliably and accurately deliver the information you need, when you need it, to make informed decisions for student needs and achievement. This information can be used for budget projections, grant responses, curriculum planning, discipline analysis and other school district management functions.

Pulse Produces Results For:

- **Superintendents and District Staff** — interactively use statistical data and analysis to manage district business and provide strategic leadership by using the information at their fingertips
- **Principals** — see and track achievement by student, by classroom, by teacher and by student group, with simple point and click access to school information and in-depth awareness of operational trends
- **Teachers** — proactively review all records of students entering their class for a new year, and understand the needs of every student and the classroom as a whole by learning objectives
- **Parents** — review their child's class work and progress with teachers, see how it compares with classmates and use this information to help their child become a better student
- **Finance Directors** — analyze management tasks such as student expenditures and budget vs. actual cost of school and district
- **Transportation Professionals** — monitor their Key Performance Indicators (KPIs) to ensure they are running an efficient operation, and to spot trends and identify anomalies in data that otherwise might go unnoticed and unmanaged

To advance student learning and classroom success, Tyler Pulse securely delivers data-driven information to anyone in the school district who needs to access it — in an easy-to-use format. This rich information provides the school system valuable insight into each student and classroom, as well as the school's needs and strengths in developing appropriate curriculum and lesson plans.

Integration Expands the Reach of Tyler Pulse

Tyler Pulse easily integrates unlimited student assessment with your current student SIS transactional data, and provides a blended view of the entire student experience — in one place. Student achievement goals are now within reach with Tyler Pulse.

*Student achievement goals
are now within reach with Tyler Pulse.*

Tyler Pulse Integrates With:

- Student assessment with current student SIS transactional data
- State and district assessment and grade data with financial data
- Tyler's Munis Financial and Human Capital Management solutions
- Tyler's SIS, Schoolmaster and other widely used student information systems
- Other data sources, such as Special Education, Cafeteria and more
- Tyler's Versatrans Student Transportation solution



TOTAL TYLER CLIENT

Ozark R-VI School District, Missouri

Years as a Tyler Client: 5

Products Used: Tyler Pulse, Tyler SIS, Munis Financial Management, Versatrans Routing & Planning®

Schools: 7, K-12

Students: 5,400

“Teachers want to do the best for each child, and if we can get the data into their hands — in real time — it just facilitates that goal.”

— Dr. Chandra Clayman, Assistant Director of Special Services

Challenges:

- Data captured in multiple spreadsheets and kept on desktops throughout the district
- Access and use state and local assessment data to advance student achievement
- Provide access to real-time, consistent information to all who need it
- Use data to advance district initiatives and goals

Solutions:

- Data is available by using a common resource — Tyler Pulse
- Move from paper files to the repository of information
- Assessment analysis shows a complete picture of each student
- Aggregated data is refreshed each night and is available from a personalized home landing page
- Drill down to the student level to effectively develop education action plans

Benefits:

- Easily access and use assessment data to develop a stronger curriculum to meet a child's individual need
- Quick response to issues or challenges
- Facilitate district student achievement initiatives such as, response to intervention and instruction
- Ability to look at multiple factors that contribute to student success or lack of success
- Act proactively — essential information is now available for use by teachers before students enter their classroom for the first time
- Access information — useful information is readily available for teachers, building superintendents and central office staff
- Returns a good ROI — reduces time spent searching for and disseminating data and information
- Positive working relationship with Tyler

How Pulse Works for School Districts (cont.)

Complete Management Information

Discipline, GPA, employee evaluations, student enrollment, attendance, cohort analysis, and school and district student and grade distribution data are now easy to collect and use. Tyler Pulse is an assessment-agnostic application, meaning it can display any assessment result data from any assessment the district chooses to deliver. Regardless of the source, Pulse combines data and delivers management information.

Assessment

Current and accurate assessment is the backbone of realizing student achievement. Most assessment management systems concentrate on assessment and a few demographic elements that are hand entered or downloaded from a student management system. Tyler Pulse is designed to look at the totality of a student's learning experience. Administrators can view each student and simultaneously evaluate:

- Demographics
- Performance based on NCLB State Testing
- Performance on District Specified Benchmark Testing
- Grades
- Discipline Activity
- YTD Attendance Summary

Tyler Pulse also supports an infinite number of historical periods of assessment data. It groups student testing results into categories, such as "Below Basic", "Basic", "Proficient" and "Advanced", to determine school compliance and performance.

Staff Performance

Evaluating staff performance is a complex task, requiring a great deal of information. Pulse is the perfect tool to provide some of the necessary information. Models show: Student Responses, Teacher Performance, School/Principal Performance, District performance

- **Students/Employee & Students/teacher** displays information for each district school, as student and staff levels change, graphs reflect each data change
- **Teacher/Student Detail** examines the student by student performance in a specific teacher's class. Student performance is tracked and averaged over a period of time, and compared to a year of instruction by a specific teacher
- **Question Analysis** response item analysis evaluates how students answered each question or strand, each question category, and allows overall evaluation of test results, and why the student got those results
- **School & Teacher Evaluation** provides numerous evaluations comparing the performance of various schools and teachers such as, student performance averages compared by school and by various teachers

Grades & GPA

Tyler Pulse models provide detailed views of changes in student grades and grade point averages from term to term, semester to semester, within one year, year to year, or whatever the district chooses to measure.

- **Benchmark Comparisons Group** overview of district performance on recent benchmark testing including local and national assessment
- **Grades Assessment Comparison** displays student discipline, attendance, state assessment, grade point average, and local benchmark assessment scores for a number of students. Categories for several local assessment allows an administrator to assess the student in many categories at one time, rather than focusing on only scores, or grades, or behavior

Risk Analysis

Identify students and take corrective action before problems surface. Tyler Pulse uses the entire student experience, considering the detail of a student's various risk areas, to support risk management and projections. The Risk Analysis Model is a highly customizable analysis of student data used to track academically at-risk students and those at risk of dropping out of school.

Districts select and weight various factors such as attendance, discipline, demographics, GPA, state and national assessment results, parent involvement and more. Districts may establish their own "rules" governing these calculations. Examples of the areas that are available include:

- Absence & tardy — consecutive, missing parent contacts
- Discipline activity — days suspended, discipline event types, history
- GPA comparison — student's GPA to the Average GPA in their school
- NCLB results — student's result compared to the average NCLB performance of all students in school
- Demographic considerations — "is the student homeless?"

Student ID	Student	Risk Factor	Absent %	Missing Marks	Consecutive Abs	Tardies	Total Disciplinary	Action Plan	Suspended/Exclusion	Homeless
1000000001	John Doe	High	15.2%	12	3	15	10	10	5	0
1000000002	Jane Smith	Medium	8.5%	5	1	8	5	5	2	0
1000000003	Mike Johnson	Low	2.1%	1	0	2	1	1	0	0

GPA	GPA Improvement	NCLB Math-CA Improvement	NCLB Results	LFP	SpecEd	Gifted	Title I	Immigrant	Homeless	504 Student
3.50	0.00	0.00	0	0	0	250	0	0	0	0
2.85	0.00	0.00	0	0	0	250	0	0	0	5,000
-38.75	0.00	0.00	0	0	0	250	0	0	0	5,000
17.88	0.00	0.00	0	0	0	250	0	0	0	5,000
-51.25	0.00	0.00	0	0	0	250	0	0	0	5,000
-35.63	0.00	0.00	0	0	0	250	0	0	0	5,000
-62.25	62.41	0.00	0	0	0	1,000	0	0	0	0
18.68	0.00	0.00	0	0	0	0	0	0	0	0
18.29	0.00	0.00	0	0	0	250	0	0	0	0
-18.75	0.00	0.00	0	0	0	1,000	0	0	0	0

Cohort Analysis

Cohort analysis compares the performance of similar students across multiple testing years of assessment periods. Cohorts are students that have been continuously taught in a specific school district for the term of a selected review period. Groups can be calculated and compared for the multi-year history of a test by grade level, gender and ethnicity and so on.

Assessment Type	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Math	85.00	86.00	87.00	88.00	89.00	90.00	91.00	92.00	93.00	94.00	95.00	96.00	97.00	98.00	99.00	100.00	100.00	100.00
Reading	80.00	81.00	82.00	83.00	84.00	85.00	86.00	87.00	88.00	89.00	90.00	91.00	92.00	93.00	94.00	95.00	96.00	97.00
Writing	75.00	76.00	77.00	78.00	79.00	80.00	81.00	82.00	83.00	84.00	85.00	86.00	87.00	88.00	89.00	90.00	91.00	92.00



Discipline

The frequency and type of discipline events are strong risk indicators for low achievement and for dropping out of school. Tyler Pulse provides information that gives the total discipline picture of a student, school and district, as well as the referring teachers. An analysis of the information can help pinpoint areas that show patterns or need attention.

Models support:

- Average Discipline Actions by Month
- Percentage — monthly events out of total
- Discipline Event Types Detail — users filter and examine aggregate discipline data
- Discipline Event Types by School — summarizes all individual records by school or district, and provides quick totals and drill-down detailed information
- Teacher Referrals by Ethnicity and Gender — shows teacher referral patterns by pulling together underlying data that provides an administrator with information to better manage staff

Demographic Analysis

Analyzing demographic information is one strategy to evaluate student performance and existing programs, and assess district effectiveness. For example, a homeless or title one student faces daunting circumstances that make it difficult to achieve academic success, as well as for teachers to motivate or inspire them toward a goal. Demographic information from Tyler Pulse can give a complete snapshot of the student and the school, empowering administrators and teachers with information to develop programs that address student need.

Demographic factors include: Disability, Ethnicity, Gender, Family status, Homelessness, Gifted or Special Education, Title One, Migrant and ELL.

Tyler Pulse for Business Offices

Tyler Pulse for Munis Financial and Human Capital Management provides a standard model designed to deliver management information from Tyler applications. Tyler Pulse also provides a statistics website or Web components for both top business office management as well as public access.

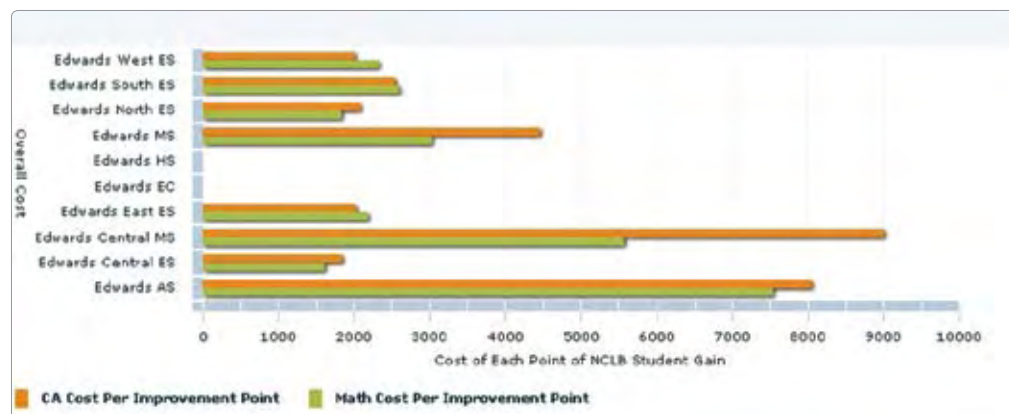
Tyler Pulse empowers business managers, human resource directors, finance directors, and so on with information to perform duties that keep school business offices running smoothly and efficiently.

- **City & County Managers and Board Members** — interactively use statistical data and analysis to manage business and provide strategic leadership by using information at their fingertips
- **Departmental Managers** — see and quickly track operational trends with the ability to drill to and review the data that is generating those trends. See data from all centralized and departmental systems as a part of a single management view
- **Citizens** — build interactive citizen websites where they can access up-to-date information
- **End Users** — access to operational data in a format that allows for fast evaluation, error checking and greater overall control

Contain Cost While Advancing Student Achievement

Balancing a school budget, while delivering services, can be a challenging task. With the Tyler Pulse Cost of Student Improvement graph, it is easy to compare how much it costs each school to improve student test scores by one percent in each assessed content area.

Cost of Student Improvement



Tyler Pulse provides basic operational statistics and information, and can easily expand to include unique data from the city, county and state, including data from other non-Tyler data sources, and formats for very quick review. It highlights trends, exceptional areas of the organization, operational statistics and general access to information. Extensive drilling to detail and supporting data is provided for more extensive research. Since this data is automatically updated from all of the current systems in use in the organization, very little day-to-day support is required for its use and implementation.

Integration with Student Information Systems

Tyler Pulse gathers data from a district's financial and student information applications to enable users to examine budgeted versus actual cost per student for each school and district wide. You will see total, and salary only expenditures by student for all for all schools and the district.

Description	School	Total Expenditures	Expenditures by Student	Total Budget	Budget by Student	Total Students Enrolled
Total Expenditures by Student						
Edwards AS		4,201,965.62	25,815.81	4,000,000.00	20,000.00	193
Edwards Central ES		4,607,903.39	8,300.69	4,007,320.39	6,813.21	730
Edwards Central MS		5,098,048.26	13,106.49	9,859,269.26	15,261.89	427
Edwards East ES		5,013,940.44	8,460.49	5,837,888.89	9,523.12	592
Edwards EC		3,096,360.11	16,071.13	4,389,437.30	16,049.23	230
Edwards HS		10,727,713.94	7,088.74	14,080,527.95	6,307.43	1,511
Edwards MS		5,446,488.78	5,071.89	5,438,832.92	6,081.13	897
Edwards North ES		4,420,740.71	7,674.80	4,420,798.71	7,675.06	570
Edwards South ES		5,274,527.71	7,057.58	5,085,940.66	6,106.58	884
Edwards West ES		4,222,496.46	8,879.33	4,718,018.40	7,788.36	495
Other District Costs		87,248,028.08	14,842.84	120,321,172.18	18,406.88	5,889
District Wide		190,556,106.49	23,134.01	283,138,713.63	27,670.51	8,482
Salary Expenditures by Student						
Edwards AS		2,280,292.62	11,458.76	2,772,911.62	13,929.26	193
Edwards Central ES		3,120,493.79	4,299.79	3,376,479.27	4,567.81	730
Edwards Central MS		3,817,064.70	8,002.64	4,718,958.43	11,050.37	427
Edwards East ES		3,506,787.66	5,823.63	4,183,830.28	7,086.77	592
Edwards EC		2,965,127.63	11,152.73	3,260,856.66	14,188.07	230
Edwards HS		5,248,128.23	3,471.98	7,371,807.39	4,878.56	1,511
Edwards MS		3,368,814.19	3,774.80	4,070,707.09	4,538.13	897
Edwards North ES		2,668,819.87	4,869.41	3,267,863.96	5,688.84	570
Edwards South ES		3,660,645.73	5,351.62	3,636,267.33	5,608.48	884
Edwards West ES		2,667,069.46	4,441.44	3,329,081.38	5,515.85	495
Other District Costs		48,957,677.26	7,814.87	62,842,479.30	8,610.00	8,889
District Wide		87,983,631.15	12,643.46	102,621,734.67	15,277.86	8,482

Expenditures by Student

The standard module is also designed for quick integration with other Tyler application data for consolidated management.



Tyler Pulse for Student Transportation

Tyler Pulse empowers transportation directors, business managers and superintendents to monitor and evaluate transportation efficiency and effectiveness with point and click ease. Tyler Pulse combines data from Tyler's Versatrans applications, compiles it and publishes information to Web pages hosted on the district's intranet, in an easy to learn and use format.

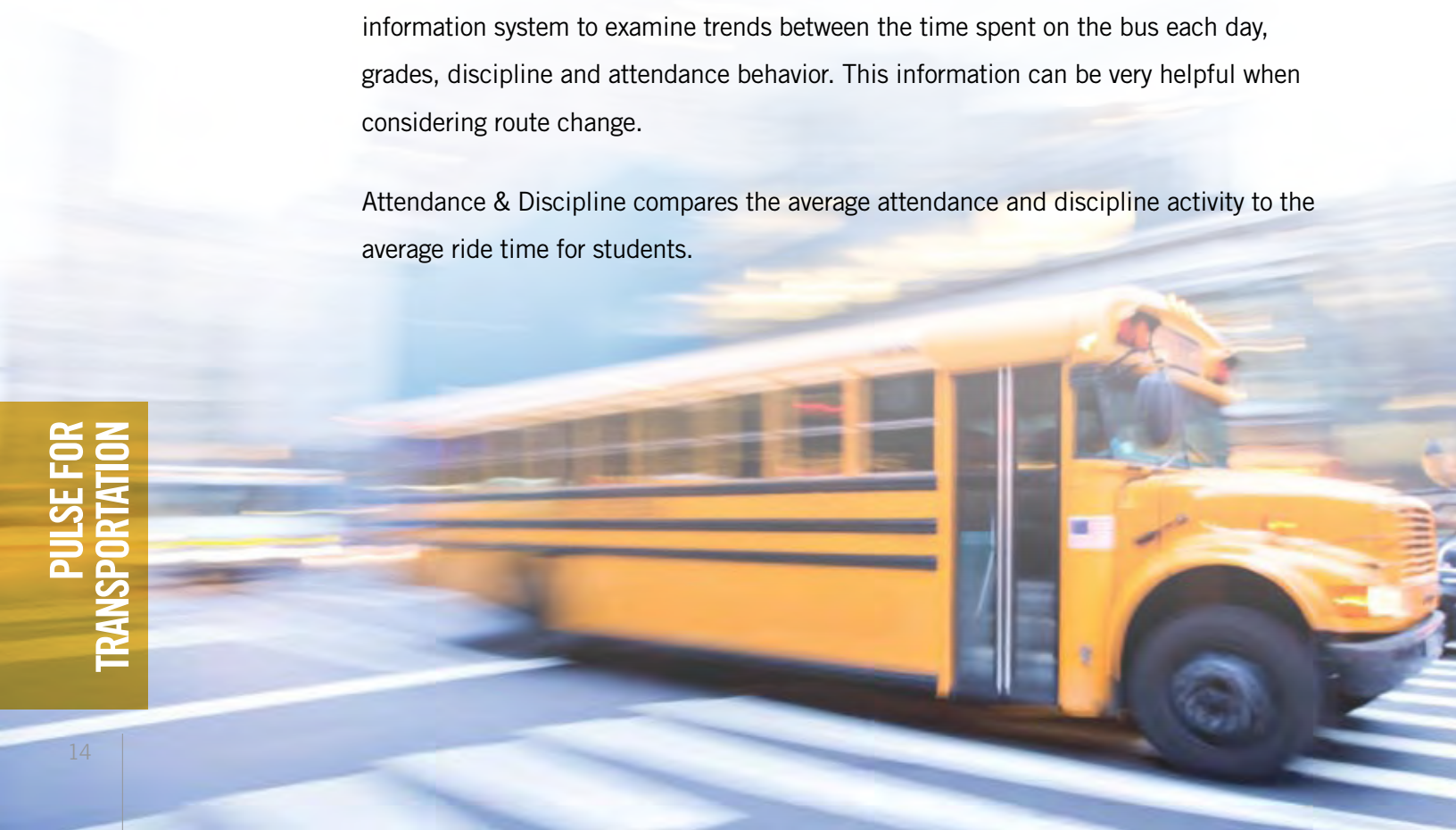
Tyler Pulse allows transportation professionals to:

- Compare performance against previous years, months, days
- Identify issues or trends with specific vehicles, drivers, students, etc.
- Spot trends and anomalies in data
- Review charts and graphs to see current performance

Integration within the School District Produces Student Achievement Results

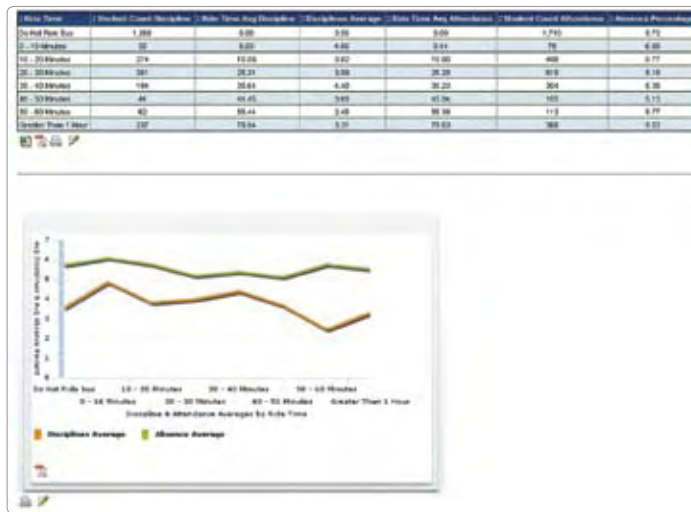
Tyler Pulse combines student data from the student transportation and student information system to examine trends between the time spent on the bus each day, grades, discipline and attendance behavior. This information can be very helpful when considering route change.

Attendance & Discipline compares the average attendance and discipline activity to the average ride time for students.



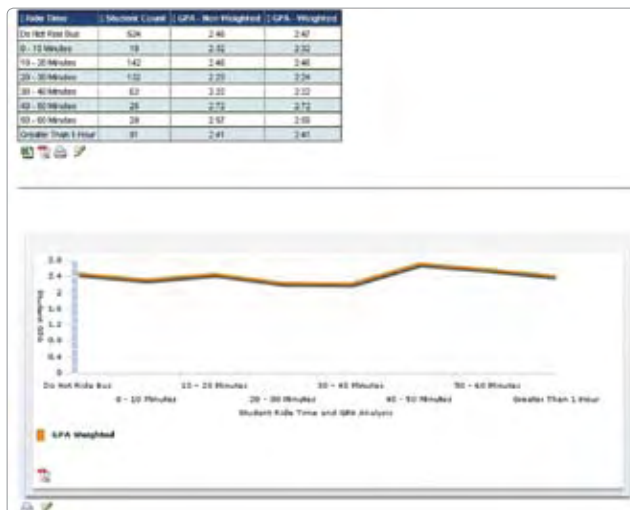
Pulse Produces Results:

- **Cost per student per year & per day** — identify, track and compare transportation budgets
- **Cost per vehicle per day & per mile** — balance miles among multiple vehicles
- **Average fuel costs per vehicle per year & day** — spot excessive fuel consumption
- **Percentage of routes departing and arriving on time** — confirm route completion within a predetermined time frame
- **Total number, miles & cost of field trips per year** — gain insight to the total cost of field trips
- **Total maintenance, repair, part & fuel costs** — retire a vehicle based on cost rather than age
- **Total & percentage of live & dead miles & hours per year** — compare miles to ensure vehicles and drivers are spending more time transporting students



Ride Time - Attendance & Discipline Analysis

Ride Time & Grade Point Average compares the duration of time that students ride the bus to the current year GPAs earned by those students in various time length categories.



Ride Time - Grades Analysis

Users can gain valuable insight with as few as two Versatrans applications. Two Tyler Pulse models maximize a district's efficiency and effectiveness.

- Versatrans users in the transportation department
- Extended outside transportation department — blends student data with Versatrans data (available after a district has implemented both models)

Software that thinks like you do.

At Tyler Technologies (NYSE: TYL), we have a single mission: enable the public sector to be more efficient, more accessible and more responsive to the needs of citizens. That's what we do. And that's all we do—in partnership with more than 9,000 clients, including local government and school offices throughout all 50 states, Canada, Puerto Rico, the U.S. Virgin Islands and the United Kingdom.

Tyler Technologies is a leading provider of information management solutions and services for the public sector—and Tyler is the largest company in the country solely dedicated to providing software and IT services to the public sector market.

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