Center for Practice Engaged Education Research (C-PEER)

SCHOOL OF EDUCATION & HUMAN DEVELOPMENT

UNIVERSITY OF COLORADO **DENVER**

Teaching and Learning Conditions Colorado Survey 2024 Technical Report

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Introduction

The Teaching and Learning Conditions Colorado (TLCC) Survey is a statutorily mandated assessment conducted biennially to evaluate working conditions in Colorado's public PK-12 Local Education Agencies (LEAs). This anonymous survey targets four key categories of LEA staff: teachers, education support professionals (including teacher assistants and paraprofessionals), school leaders, and special service providers (such as psychologists and social workers). Employing a census administration approach, the TLCC survey is distributed to every eligible respondent across the state, rather than utilizing a random sampling method. This inclusive strategy ensures representation of perspectives from all corners of Colorado's public education system in providing policymakers and other educational leaders data to inform decision-making and improve educational environments statewide.

This technical report is the fourth since 2018 regarding the technical quality of the biennial TLCC survey. It was developed and provided by the Center for Practice Engaged Education Research, C-PEER, (see Appendix A for more information about C-PEER). The report focuses on the 2024 administration of the TLCC survey and includes analyses related to the validity of TLCC results for various uses including public reporting. Following these analyses' description, we provide recommendations for use of the 2024 TLCC results and future TLCC administrations.

Overview of Analyses

This TLCC 2024 technical report includes the following analyses related to the qualities of the instrument and responses that are generally relevant for any use or reporting of the 2024 TLCC results:

1. **Item-level Validity Analysis**
2. **Appropriate Use of TLCC Results at the School, District and State Levels**

Key findings from these analyses include the following:

- The average missing item-level responses was 4.6% and appeared to be "missing at random," thus should not impact use of TLCC results.
- All questions answered in common by different types of respondents (teachers, leaders, ESPs, SSPs) across all but two constructs had very high completion rates; greater than 94% had complete response sets (i.e., all items in the construct were answered). This level of item completion should not introduce statistical error into any use of TLCC construct-level results.
- TLCC construct scales reached Cronbach's alpha near .80 or higher indicating strong internal reliability for all the constructs for each respondent group.
- For a single-site survey (i.e., a school) **response rates of 50% or greater are generally considered adequate**. No bias analyses were needed to determine that non-responses would not introduce bias into the results for schools that met a 50% participation threshold.
- For cross-sectional (capturing a single point in time) response groupings, e.g., schools in the state, schools in a district, target **school-level response rates should be at least 85 percent**.
- To make use of TLCC Results at the district and state levels, nonresponse bias analysis is needed for **school respondents vs. nonrespondents**. For state-level analysis purposes, C-PEER conducted this analysis for school respondent vs. non respondents in districts where

there was significant variation in the characteristics of schools, fewer than 85% of schools responded, and/or the there was a specific interest in potential impactful biases in representation. Variables representing characteristics of students, schools, districts, and state were not statistically significantly different between respondent and nonrespondent schools, or differences were trivial enough to not impact use of the data for analysis at the state level.

The entity administering and publicly reporting results for the TLCC for 2024, Panorama, was different from 2018, 2020, and 2022. District staff noting significant differences in construct-level TLCC results reported for 2024 triggered additional analysis by C-PEER that we did not conduct during prior year TLCC administrations focused on:

    3. Construct-Level TLCC Results Reporting.

Key findings from these analyses include the following:

- Several changes in TLCC instruments (which varied by respondent group) and how Panorama aggregated item-level responses to construct percent favorable ratings for 2024 introduced substantial differences in the public TLCC results reporting from prior years.
- The Panorama approach of calculating an average of the mean percent favorable ratings at the item level, regardless of which group responded to the item, in calculating construct-level percent favorable ratings introduced statistical error into the construct-level ratings. It is not possible to estimate the error in construct-level percent favorable ratings for any given school or district because they depend on factors for which data is not available (i.e., response rates by respondent groups).
- Distortions in *construct-level percent favorable ratings* differ for the following categories, constructs for which 1) all items were unique to a specific respondent group, 2) all categories of respondents received the same items or items that were treated as the same in the Panorama roll-up, or 3) one or more items differed across respondent groups. While all should be interpreted with caution, distortions are likely the most significant for the third category, *constructs for which one or more items differed across respondent groups.*

The remainder of this report is organized by and provides more details about the following topics: Item-level Validity Analysis; Appropriate Use of TLCC Results at the School, District and State Levels; Construct-Level TLCC Results Reporting; Recommendations for Use of TLCC 2024 results and for future survey administrations.

Item-level Validity Analysis

To assess validity of item level TLCC response data we explored the following:
1. Patterns in Missing Data
2. Item Completion Rates (overall and by constructs)
3. Construct Reliability/Internal Validity and
4. Nonresponse Bias (how well the respondents to the TLCC survey in 2024 represent the characteristics of the state)

Patterns in Missing Data

All items from all core constructs were analyzed in SPSS using a Missing Value Analysis, Expectation-Maximization (EM) imputation method[1]. For the items asked of all groups within the core constructs listed below, all observed, and EM estimated means and standard deviations were within 0.02 of each other for analysis of the full Likert scale of 1 to 4 response options. The full-scale responses were used rather than percent favorability to increase the power of the estimation. The percentage of items missing averaged 4.6%, with a minimum of 2.6% and maximum of 7.7%. Less than 20% missing is generally considered acceptable if data are missing at random, as we consider these to be given the EM analysis.

Item Completion Rates

To assess the overall completion rates of items by respondents, the items answered in each of the "core" constructs of the TLCC were reviewed for patterns of the degree to which each person responding answered (or did not answer) specific items. These analyses included items in common among all response groups in the following constructs (see Appendix D for a complete list of items by construct).

- Evaluation
- Leadership Climate
- Staff Leadership
- Managing Student Conduct
- Instructional Practices/Support
- Time
- Facilities and Resources
- Support for Own Wellbeing
- Overall General Reflection

Note that Professional Learning and Community Support and Involvement are not included here. All the constructs listed above had high completing rates, with greater than 94% complete response sets (i.e., all items in the construct were answered).

There were a small number of respondents (433 of 32,873, or 1.32%) for whom all the "Evaluation" items, but none of the "Leadership Climate" items were answered. Since these two constructs are subsets of a larger "Leadership" group of items, it is unusual to see this pattern. It may be coincidental, but the CDE/Panorama team should make sure there are no issues with administration of these items in the future. We checked the distribution of individuals with this unusual response pattern—i.e., were they of a particular role, school or district site, or responding to other TLCC constructs with unusual patterns—and have concluded that the 433 are distributed at random throughout the dataset. We found no reason for this nonresponse to be of concern for the data use or the reporting.

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[1] e.g., see: Therese D. Pigott (2001) A Review of Methods for Missing Data, Educational Research and Evaluation, 7:4, 353-383, DOI: 10.1076/edre.7.4.353.8937

Construct Internal Reliability

Another indicator of data validity is whether the core construct items (listed above) group together as construct scales as they have in previous TLCC administrations. Using Cronbach's alpha measure of internal reliability, all construct scales reached near .80 or higher. A measure of .80 is considered strong. See Appendix B for a chart detailing these findings.

Nonresponse Bias Analysis

Nonresponse bias analysis checks to see if a group of respondents is representative of the whole population of interest, and or if responses vary by subgroups related to how they are to be used in analysis (e.g., National Center for Education Statistics *Survey Standards*, see https://nces.ed.gov/statprog/2002/std2_2.asp).

CDE administers TLCC surveys to every potential respondent in the state, rather than using a random-sampling approach – this is a "census" administration. For a census survey, nonresponse bias analysis compares the collected set of responses with the nonresponse remainder on known population characteristics that are theoretically important to the interpretation of results. For the TLCC this includes for example, Title I classification, school size, or type of community setting. When statistically significant and non-trivial nonresponse differences are found, weighting of responses based on population mismatch may be possible (if an adequate subset of responding schools have the under-represented characteristics) and appropriate (e.g., for those population characteristics considered especially important for policy decisions).

For a single-site survey—a school—**50% or greater response rate is generally considered adequate**. *No bias analyses are needed*. However, actual response rates by respondent groups within the school (teachers, leaders, ESPs, SSPs) should be included where possible as part of school characteristics used in bias analyses conducted at the district and state levels.

For cross-sectional (capturing a single point in time) response groupings—schools in the state, schools in a district—the target **school-level response rates should be at least 85 percent**. This is a higher bar because the variability in respondent units vs. nonrespondent units is likely to be greater (consider similarity of individuals within one school site vs. the variability of as many as 100+ schools in a district, or 1900+ schools in the state).

To make use of TLCC Results, bias analysis was needed for **school respondents vs. nonrespondents in the state**. Including district locations in these analyses made it possible to identify non-response bias among district location types. This analysis was conducted for school respondents vs. nonrespondents **in districts where:**

1. There is great variation across school characteristics (e.g., Jefferson County);
2. Fewer than 85% of schools in the district responded at the >50% required rate; and
3. There is a specific interest/need in examining suspected impactful biases in representation.

For this technical report, bias analyses were conducted only for individuals-in-state and schools-in-state (depending on the comparison variable). Potential district level nonresponse bias analyses can be conducted on request.

Most variables representing characteristics of students, schools, districts, and state were not statistically significantly different (one-sample *t*-tests, two-tailed, alpha = .05) from the 2024 TLCC respondent set of

data. For very few items, such as charter designation and distribution of school type (designated Elementary, Middle, High), there was statistically significant difference, but the effect-size difference (Cohen's *d*) was small (< 0.2) or trivial (< .1) in all cases. For very large datasets like the 2024 TLCC Survey even very small differences can be statistically significant because the relevant calculations include the sample size. See Appendix B for a chart of the findings of the comparison of all variables tested.

Appropriate Use of TLCC Results at School, District, and State Levels

TLCC survey data are typically analyzed and reported at multiple levels; data are collected from individuals anonymously within schools and then are analyzed and reported at various group levels – e.g., school, district, state. The characteristics of these different levels of data must be considered as part of any analysis and reporting of TLCC results.

At the **school level**, TLCC is a "cross-sectional" survey, capturing the point in time when TLCC is administered (Feb-Mar biennially). The same group of individuals within schools are almost certainly *not* the same in any two administrations.

For **districts** with responses from >85% of its schools (given that schools in a district represent its "universe"), TLCC is a "cross-sectional" survey, capturing the point in time when TLCC is administered (Feb-Mar biennially). The same group of individuals within schools are almost certainly *not* the same in any two administrations. Districts with fewer than 85% of schools participating can consider the individual school results and possibly trends (see below) but should consider a nonresponse bias analysis if the criteria presented above are relevant.

If a **school or district** (>85% of schools) takes the TLCC in multiple years, the cross-sectional survey responses may be understood to capture **trend information**. However, <u>two</u> surveys should only be considered as an indicator of change from time 1 to time 2, not a trend.

At the **state level**, schools should be considered "cohort" respondents, and school responses can be used in **longitudinal cohort trend analyses**. Schools not participating every year would be considered missing cohort respondents, the accommodation of which requires appropriate longitudinal analyses. Response rates of fewer than 85% of schools require nonresponse bias analysis to appropriately interpret schools' responses as representative of the state or district.

Data are available for TLCC administrations from four points of time, providing **adequate data for trend analysis**: 2018, 2020, 2022, and 2024. Note that *care must be taken to address the potential impacts of COVID*, occurring between the 2020 and 2022 administrations. Limited but useful sections of the prior TELL Colorado survey add longitudinal data points from 2009, 2011, 2013, and 2015.

Types of errors that may affect accurate interpretation of aggregated TLCC results

The TLCC uses a "census" administration. With the census model, who responds to the TLCC can introduce error or bias into inferences related to the TLCC results representing a school, district or the state. Below we identify two key potential sources of error for analysis and interpretation/reporting of aggregated TLCC results.

Nonresponse Error. This type of error occurs when some of those who were invited to respond to the TLCC survey did not want to or were unable to participate. The key concern with non-responses, is the possibility that individuals who do not respond to the survey are "NOT missing at random." In other words, a missing or dishonest response is directly related to the question(s) asked. For example:

- Missing or dishonest responses about quality of leadership by sites that perceive their leaders to be of poor quality.
- Sites with school/community characteristics that are less likely to trust the state and therefore opt out of answering.

Nonresponse errors are challenging to address, although a comparison with known school, district, and community characteristics makes it possible to estimate whether/how the educators in nonresponse sites are different from responders. This can provide insights for interpretation of TLCC results relevant to many uses. Where differences in important characteristics are large, responses may be adjusted by appropriately weighting results to better represent the population of interest (e.g., district, state) as though most had responded. Longitudinal studies (school level, 3 or more years) using multiple years of the TLCC data will most likely need to weigh responses for each year, depending on the research questions investigated.

Response error. This type of error occurs when survey respondents misinterpret questions because of their characteristics. Examples include:

- *Positions/roles* of respondents within a school or district site vary (e.g., a universal grouping "teacher" that includes a variety of teaching roles may differ within roles or by levels of experience).
- *School and community characteristics* related to interpretation of items vary (e.g., understanding of "community" may be very different across schools).

These types of errors are most likely random in a data set as large as the statewide data set from the TLCC survey, and so would require no adjustments. The TLCC questions have been developed with high accepted standards for creating valid and reliable surveys, and the survey has been analyzed after each of its three prior administrations. Analysis of the 2022 TLCC data identified that the ESP and SSP respondent groups varied significantly from each other and other groups. Modifying questions to be better targeted for the ESP/SSP respondent group considerably reduced variability in the 2024 data that was likely due to role-based response error.

Construct-Level TLCC Results Reporting

Changes in TLCC Results Reporting for 2024

Several changes in the TLCC instrument and how results were aggregated for 2024 introduced substantial differences in the TLCC results reporting from prior years.

First, the 2024 instruments for teachers, leaders and SSP/ESPs were more different from one another than prior years' instruments. Note, while SSPs and ESPs are different respondent groups they received the same survey instrument. Some survey questions were the same or modified only

slightly across these respondent groups (teachers, leaders, SSP/ESPs). However, numerous questions were not asked of one or more groups in 2024. See Appendix D for a detailed list of TLCC survey items by construct and respondent group.

Changes to TLCC questions were made to address concerns from the TLCC Research & Partner Group that SSPs and ESPs were being asked questions that that did not pertain to their roles and because C-PEER analysis found substantial differences in how each group responded to questions in earlier TLCC survey administrations (in 2020 and 2022).

Second, Panorama used a different approach from prior years' TLCC reporting to calculate construct-level percent favorable ratings (scores calculated by aggregating "agree" and "strongly agree" responses across multiple related questions). The Panorama dashboard construct-level visualizations made use of the following steps to "roll-up" question-level responses to construct-level ratings.

- Mean percentage of favorable (agree or strongly agree) ratings were calculated for each question, including questions that were not asked of all respondent groups.
- These question-level means were then averaged to calculate a percent favorable across all the questions included in each construct (e.g., Time, Managing Student Conduct, Instructional Support).
- Each question was weighed the same in calculating the *construct-level percent favorable* ratings.

This approach introduced potentially substantial statistical error into the construct-level ratings. How extreme the distortions in these ratings might be for a particular school or district depends on several factors that vary across sites, including the following: how many questions in the construct were in common across all respondent groups, the proportion of the overall staff (at the school, district, state) in each respondent group, the response rates for each group, and their favorability ratings. Unfortunately, because of how they were calculated, it is not possible to estimate the error in construct-level percent favorable ratings for any given site because they depend on factors for which data is not available (i.e., response rates by respondent groups).

Construct-Level Rating Distortions

Distortions in construct-level percent favorable ratings are most obvious when different types of respondents – teachers, leaders, or ESPs/SSPs – did not respond to the same questions within a construct grouping. Treating questions which not every respondent group answered as separate and weighing them the same means the contribution or "votes" from different respondent groups to the overall construct percent favorable rating depended on the number of questions to which that group responded, without consideration for the proportion of the staff they represented in the school or district. For example, the construct percent favorable rating for Leadership Climate is comprised of the ratings of teachers, leaders, and ESP/SSPs combined for the 4 questions asked of all, plus the ratings of teachers and leaders for two questions, plus the rating from teachers for the one additional question asked only of them.

To further compound the issue, analysis of the question-level response data for 2024 indicates a small but statistically significant differences between the groups, with leaders most favorable, teachers next most favorable, and ESPs/SSPs least favorable on nearly every question asked in

common. Thus, even if using only the questions in common, construct level ratings are significantly different across teachers, leaders, SSPs and ESPs. Providing only combined construct-level percent favorable rating hides those differences. Appendix F illustrates some of these by-group differences using the core items in the Leadership Climate construct, which has been consistently stable over the past 3 TLCC administrations and thus provides a good example.

Distortions in construct-level percent favorable ratings are of particular concern for the use of the TLCC data for leadership decisions. For example, consider actions leaders may take to address a rating that collectively the staff does not have a favorable view Professional Development. The Professional Development construct includes two questions to which only ESPs/SSPs respond. If the 40 teachers who responded view PD favorably but the four ESPs who responded did not, leaders may take actions that are contrary to teacher perspectives and do not address the ESPs concerns. These distortions are also difficult to make sense of when current 2024 construct level ratings are compared to the same ratings in prior administrations (e.g., 2022 and 2020). Although prior years' results are included in the dashboards, construct level ratings for prior years were recalculated using the Panorama roll-up approach without accounting for or appropriately accommodate changes in the questions over time.

Addressing Construct-Level Rating Distortions

The first and best way to address this problem would be to provide visualizations and charts that would allow users to view construct-level percent favorable ratings for different respondent groups separately. This could be accomplished by introducing a "filter" for each visualization that would allow users to select for which respondent group they are viewing results. Filtering would also make it possible to compare perspectives across the different groups.

Even if filters were introduced, it is important for users of the TLCC data to interpret differently the following types of construct-level ratings, constructs for which 1) all items were unique to a specific respondent group, 2) all categories of respondents received the same items or items that were treated as the same in the Panorama roll-up, or 3) one or more items differed across respondent groups.

Constructs for which **all items were unique to a specific respondent group** include the following:
- Support for Student Wellbeing (teachers only)
- Support for Staff (leaders only)
- Roles and Responsibilities (SSP/ESP only)
- Job Satisfaction (SSP/ESP only)

Interpreting these construct-level percent favorable ratings is straightforward if it is clear to the user that the results only apply to that group – teachers, leaders, or SSP/ESP. Note that without a filter on these construct level scores, the combined ESP/SSP ratings still hide differences between those two groups.

Constructs for which **all categories of respondents received the same items** or items that were treated the same in the approach Panorama used to roll them up to calculate construct-level percent favorable ratings. This includes the following constructs:
- Evaluation

- Managing Student Conduct
- Facilities and Resources
- Community Support/Involvement
- Overall General Reflection

For these constructs, responses to items across all respondent groups (teachers, leaders, ESPs, SSPs) were added together and then divided by the total number of responses to calculate question level percent favorable responses; question-level means were then averaged to get to a construct-level percent favorable rating. Ratings for these constructs will be the most comparable to the previous year TLCC construct-level ratings. For these constructs it will still be important to consider how responses varied by group. Sites with 100% participation can be assured that the entire staff is represented proportionately. However, since response rates aren't separated by the proportion of types of respondents, the nearer a site is to the minimum 50% response rate required for reporting, the less sure one can be about which group's views are most strongly represented.

Constructs for which one or more **items differed across respondent groups,** include the following:
- *Leadership Climate*: Leaders did not get one item that both teachers and SSPs/ESPs did. SSP/ESPs did not get two items that teachers and leaders did.
- *Staff Leadership*: SSP/ESPs did not get two items that teachers and leaders did.
- *Instructional Support*: Teachers got 3 items that no other respondent group got. SSP/ESPs had 10 fewer items than teachers.
- *Professional Development*: Teachers and leaders got the same items. SSP/ESPs got two unique items and did not get 5 of the items that teachers and leaders did.
- *Time*: Teachers got two unique items. SSP/ESPs had five fewer items than teachers and three fewer items than leaders.

It is not possible to determine the degree to which percent favorable ratings for these constructs were distorted by the inaccuracies in how they were calculated. **As a result, the average percent favorable ratings in the Panorama dashboards for constructs for which one or more items differed across respondent groups should NOT be used**. At this time, all Professional Development construct-level ratings have been removed from the dashboards. We recommend that localities calculate separate construct-level ratings by respondent group for all other constructs in this group. for which one or more items differed across respondent groups. Given their widespread use, construct-level percent favorable ratings for Leadership Climate and Instructional Support may be the highest priority.

Recommendations

Based on the analyses reported above, we make several specific recommendations. Some of these relate to current use of the 2024 TLCC – reporting dashboards, how specific district and/or school users should work with their findings. Some relate to working with CDE, Panorama, and the Research & Partners group in the coming year to adjust in preparation for the 2026 administration, as is usual.

- The nonresponse bias analysis confirms that **use of the TLCC 2024 data for statewide policy considerations is appropriate to do**. **Districts with fewer than 85%** of schools participating can consider the individual school results and possibly trends (see below) but **should consider conducting a nonresponse bias analysis.**
- Where differences in important respondent characteristics are large, responses may be adjusted by appropriately weighting results to better represent the population of interest (e.g., district, state) as though most had responded. **Longitudinal studies (school level, 3 or more years) using multiple years of the TLCC data will most likely need to weigh responses for each year**, depending on the research questions investigated.
- Analysis of the 2022 TLCC data identified that the ESP/SSP respondent groups were extremely variable. Splitting those groups and modifying their questions to be more appropriate to each group's work has reduced that variability considerably in the 2024 data. **We recommend keeping the more "customized" versions of the survey for these groups for 2026 but addressing how the results are reported at the construct and school-wide levels.**
- Constructs for which one or more items differed across respondent groups, include the following: *Leadership Climate, Staff Leadership, Instructional Support, Professional Development, and Time.* It is not possible to determine the degree to which percent favorable ratings for these constructs were distorted by the inaccuracies in how they were calculated. As a result, **the average percent favorable ratings in the Panorama dashboards for these constructs should NOT be used**.
- We recommend that **localities calculate separate construct-level ratings by respondent group for all these constructs.** Given their widespread use, construct-level percent favorable ratings for Leadership Climate and Instructional Support may be the highest priority.

To address challenges with inaccuracies in construct-level ratings in the future:

- Results dashboards should provide visualizations and charts that would allow users to view construct-level percent favorable ratings for different respondent groups separately. This could be accomplished by introducing a "filter" for each visualization that would allow users to select for which respondent group they are viewing results. Then users could view both overall results and respondent group results and compare them.
- Use a different approach for rolling-up question-level percent favorable to construct level percent favorable ratings. The approach used should NOT unpredictably weigh some responses more than others in ways that distort those construct level ratings – ensuring they are not representative of folks within the school or district that answered the questions let alone the all the potential respondents.
- Capture data that would make it possible to calculate and provide the response rates by respondent group as well as the total number of responses from each respondent group that makes up any rating which combines data across respondent groups.

Appendix A: Center for Practice Engaged Education Research (C-PEER)

Kent Seidel, Founding Co-Director & Associate Professor
Julie Oxenford O'Brian, Co-Director & Associate Research Professor

The Center for Practice Engaged Education Research (C-PEER) was established at UC Denver in 2014 to extend the partnership orientation of UC Denver School of Education and Human Development (SEHD) preparation programs more intentionally into the school's research efforts. C-PEER merged with the Center for Transforming Learning and Teaching in 2017 under the C-PEER name. C-PEER also became a cornerstone of the SEHD response to increased state attention to PK-12 data security, and school districts' changing response to research during and after the COVID pandemic.

C-PEER facilitates and conducts Applied Partnered Educational research that reflects:
- *Commitment to Equity Diversity and Inclusion*, through a "research with" stance with particular attention to diverse stakeholders and systemic equity/diversity/inclusion.
- *Research in Context*, conducted with educational practice partner sites to be practically useful addressing persistent problems or opportunities of practice.
- *Participants as Partners*, prioritizing partners gaining value from research (which is different from most historical district IHE research experiences).
- *Immediately Useful Results*, partnered involvement and often the researcher's role with site leadership ensure research findings have quick application and influence.

C-PEER provides a variety of supports for applied partnered research for SEHD faculty, staff and students including the following, C-PEER:
- Maintains SEHD research partnerships with the Colorado Department of Education, Denver metropolitan area districts, and rural districts within Colorado and across the country (contacts/regular meetings/structures).
- Annually updates district research contacts/review processes.
- Established and maintains a secure data infrastructure for partnered research (how SEHD meets federal/state data security requirements).
- Maintains a Data Sharing Agreement with CDE.
- Maintains expertise and advises as requested on access to and analysis using extant PK-12 data sources (e.g., state, district).
- Tracks policy changes in PK-12 that drive district research needs.
- Established and supports the SEHD Quality Improvement (QI) Review (now faculty committee) in collaboration with COMIRB.

Appendix B: Internal Reliability of Constructs

Construct:	Cronbach's alpha, by group version:			
	Teachers	SSP	Leaders	ESP
Evaluation	0.875	0.907	0.865	0.926
Leadership Climate *(each scale includes group specific items)*	0.931	0.850	0.864	0.867
Staff Leadership *(each scale includes group specific items)*	0.897	0.854	0.836	0.852
Managing Student Conduct	0.862	0.857	0.832	0.801
Instructional Practices and Supports *(each scale include group specific items)*	0.922	0.875	0.909	0.906
Professional Development *(each scale includes group specific items)*	0.926	0.879	0.893	0.908
Time *(each scale includes group specific items)*	0.909	0.869	0.901	0.867
Facilities and Resources	0.741	0.704	0.770	0.818
Community Support and Involvement	0.815	0.824 [*]	0.755	0.850 [*]
Support for Own Wellbeing	0.829	0.835	0.857	0.834
Overall Reflection	0.870	0.863	0.826	0.856
Support for Student Wellbeing *(teachers only)*	0.836			
Support for Staff *(leaders only)*			0.817	
Roles and Responsibilities *(ESPs only)*				0.379 *or* 0.589 [†]
Job Satisfaction *(ESPs only)*				0.646 *or* 0.828 [‡]

[*] for ESPs/SSPs, only given if they said they work directly with families

[†] if "take role of teacher" reverse coded, α = .589

[‡] if "work is stressful" and "changes are stressful" are reverse coded, α = .828

Appendix C: Comparisons of Demographic/Descriptive Variables

	DATASETS USED:					
#1	2023-24_FRL_Race_Gender_bySchoolandSchoolFlags - Suppressed					
#2	2023-24_IPST_bySchool - Suppressed					
#3	2023-24 Pupil Teacher Ratio by School					
#4	2022-23_TruancyData					
#5	SEY 2023_Graduation and Completion Combined Release Privacy Applied (only schools reporting specific rates included)					
#6	School Building Codes-in-use (school year 2024/25, pulled CDE Schoolview front page, 08/01/2024)					
#7	SPF 2023_Final Ratings Over Time_12.4.23					
#8	Title I List_2023-24_2023.11.04 update					

School characteristics *(all based on percents of reported @ state level)*

Data	*Variable*	*State*	*TLCC* (valid n's)	*n of variable*	*1-sample t-test*	*Cohen's d (<.20 is small effect)*
#1	Charter classification	13.7%	7.0%	106	p < .001	.265 small
#7	Alternative Education Campus	5.0%	5.1%		n.s.	
#6	Elementary (E) designation *(does not include ECE)*	53.7%	54.1%	857	p < .001	.097 trivial
#1	Elementary pupil count avg	391	392		n.s.	
#6	Middle (M) designation	8.9%	15.3%	232	p < .001	.176 small
#1	Middle pupil count avg	474	504		n.s.	
#6	Secondary (H) designation	21.6%	28.9%	384	p < .001	.242 small
#1	Secondary pupil count avg	627	679		n.s.	
#3	Teacher FTE - Elementary	25.4	25.5		n.s.	
#3	Teacher FTE - Middle	29.8	31.3		n.s.	
#3	Teacher FTE - Secondary	35.7	38.8		n.s.	
#3	Pupil-teacher ratio - Elementary	15.6	15.3		n.s.	
#3	Pupil-teacher ratio - Middle	15.5	15.8		n.s.	
#3	Pupil-teacher ratio - Secondary	15.8	16.0		n.s.	
#8	Title I status: Schoolwide *(of reported - valid n)*	23.6%	16.3%	244	p < .001	.207 small
#8	Title I status: Targeted *(of reported - valid n)*	4.2%	1.7%	26	p < .001	.193 small
#7	State rating: Green	60.7%	60.2%	918	n.s.	
#7	State rating: Yellow	20.9%	21.3%	325	n.s.	
#7	State rating: Orange/Red	8.8%	9.7%	135	n.s.	

Appendix C, cont'd

Student body characteristics *(all based on percents of reported @ state level)*						
Data	*Variable*	*State*	*TLCC* (valid n's)	*n of data = 1,525*	*1-sample t-test*	*Cohen's d (<.20 is small effect)*
#2	% special education	14.8%	15.16%		n.s.	
#2	% Section 504	4.6%	4.59%		n.s.	
#2	% English learners	15.7%	14.95%		n.s.	
#2	% Homeless	3.4%	3.05%		n.s.	
#2	% Gifted/talented	7.2%	7.99%		n.s.	
#2	% Immigrant	4.2%	3.7%		n.s.	
#2	% Migrant	2.8%	1.8%		n.s.	
#1	Gender: %male for analysis	51.5%	51.6%		n.s.	
#1	% AANHP *(Asian Amer, Pac Islander, Nat Hawaiian)*	2.7%	3.3%		n.s.	
#1	% Black or African American	4.1%	3.9%		n.s.	
#1	% Hispanic/Latino	36.2%	36.5%		n.s.	
#1	% White	51.4%	50.6%		n.s.	
#1	% Free lunch	45.4%	43.0%		n.s.	
#1	% Reduced-price lunch	6.8%	6.4%		n.s.	
#4	Attendance rate	90.5%	90.5%		n.s.	
#4	Truancy rate	3.6%	3.5%		n.s.	

District level characteristics *(all based on percents of reported @ state level)*						
Data	*Variable*	*State*	*TLCC* (valid n's)	*n of variable*	*1-sample t-test*	*Cohen's d (<.20 is small effect)*
#7	Congressional District 1	10.7%	9.4%	137	n.s.	
#7	Congressional District 2	11.3%	13.1%	190	*p* = .046	.05 trivial
#7	Congressional District 3	17.8%	19.0%	276	n.s.	
#7	Congressional District 4	16.2%	14.2%	207	*p* = .032	.06 trivial
#7	Congressional District 5	12.2%	9.8%	142	*p* = .002	.08 trivial
#7	Congressional District 6	9.2%	10.2%	148	n.s.	
#7	Congressional District 7	11.4%	11.9%	173	n.s.	

#7	Congressional District 8	11.3%	12.4%	181	n.s.	
#6	Setting: BOCES	6.0%	4.0%	6	n/a	n too small
#6	Setting: Denver metro	41.8%	47.6%	726	p < .001	.116 small
#6	Setting: Urban/suburban	23.0%	23.7%	362	n.s.	
#6	Setting: Outlying city	6.6%	6.2%	94	n.s.	
#6	Setting: Outlying town	11.2%	13.5%	206	p = .008	.068 trivial
#6	Setting: Remote	7.9%	2.9%	113	n.s.	

Appendix D: TLCC 2024 Questions by Construct and Respondent Group

Key: red text -- item specific to that respondent group ONLY
       Light red shading -- question absent for respondent group

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
Evaluation	I receive informal feedback that helps me to improve my instruction.	Teachers are provided with informal feedback to improve their instruction.	I receive informal feedback that helps me to improve my work performance.
	My effectiveness is accurately assessed through the school's teacher evaluation process.	Teachers' effectiveness is accurately assessed through the school's teacher evaluation process.	My effectiveness is accurately assessed through the school's evaluation process.
	The teacher evaluation process provides me with actionable feedback for improvement.	The teacher evaluation process provides teachers with actionable feedback for improvement.	The evaluation process provides me with actionable feedback for improvement.
Leadership Climate	This school is led by an effective team.	This school is led by an effective team.	This school is led by an effective team.
	Our work together is guided by a shared vision that is student focused.	Our work together is guided by a shared vision that is student focused.	My work at this school is guided by a shared vision that is student focused.
	School staff show respect for each other.	School staff show respect for each other.	School staff show respect for each other.
	I regularly engage with colleagues at my school.		I regularly engage with colleagues at my school.
	I feel comfortable raising important issues with school leadership.	Staff feel comfortable raising important issues with school leaders.	I feel comfortable raising important issues with school leadership.
	School leadership puts suggestions made by staff into operation.	School leadership puts suggestions made by staff into operation.	
	School leadership works to build trust among staff	School leadership works to build trust among staff.	
Staff leadership	Teachers' professional expertise is valued.	Staff professional expertise is valued.	

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
	There is a process in place for collaborative problem solving in this school.	There is a process in place for collaborative problem solving in this school.	There is a process in place for collaborative problem solving in this school.
	I have had leadership opportunities in this school.	Staff have leadership opportunities in this school.	I have had leadership opportunities in this school.
	Teachers have an adequate level of influence on important school decisions.	Staff have an adequate level of influence on important school decisions.	Staff have an appropriate level of influence on important school decisions.
	School staff participate in the school's improvement planning process (e.g., Unified Improvement Plan, school-based improvement) in a meaningful way.	School staff participate in the school's improvement planning process (e.g., Unified Improvement Plan, school-based improvement) in a meaningful way.	
Managing Student Conduct	Students know how they are expected to act in the school.	Students know how they are expected to act in the school.	Students know how they are expected to act in the school.
	Students have the behavioral supports needed to focus on learning.	Students have the behavioral supports needed to focus on learning.	Students have the supports needed to focus on learning.
	Rules for student behavior are enforced in a consistent manner.	Rules for student behavior are enforced in a consistent manner.	Rules for student behavior are enforced in a consistent manner.
	This school is a safe place for students to learn.	This school is a safe place for students to learn.	This school is a safe place for students to learn.
	Students at this school have at least one adult on staff they can trust to support them with social, emotional, or personal concerns.	Students at this school have at least one adult on staff they can trust to support them with social, emotional, or personal concerns.	Students at this school have at least one adult on staff they can trust to support them with social, emotional, or personal concerns.
Instructional Practices/Support	Staff in this school consistently seek new and improved ways of providing instruction.	Staff in this school consistently seek new and improved ways of providing instruction.	
	Staff in this school hold themselves accountable for the academic growth of every child.	Staff in this school hold themselves accountable for the academic growth of every child.	
	The school provides opportunities for me to learn from other teachers.	The school provides opportunities for me to learn from other teachers.	

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
	Students understand how class activities relate to learning objectives.	Students understand how class activities relate to learning objectives.	
	Instruction in this school encourages different cultural viewpoints.	Instruction in this school encourages different cultural viewpoints.	Academic programming in this school encourages different cultural viewpoints.
	The diverse academic needs of our students are met by this school's current curriculum.	The diverse academic needs of our students are met by this school's current curriculum.	The diverse academic needs of our students are met by this school.
	English Learners are adequately supported in this school.	English Learners are adequately supported in this school.	English Learners are adequately supported in this school.
	Students with disabilities are adequately supported in this school.	Students with disabilities are adequately supported in this school.	Students with disabilities are adequately supported in this school.
	Gifted students are adequately supported in this school.	Gifted students are adequately supported in this school.	Gifted students are adequately supported in this school.
	Students' social and emotional learning is adequately supported in this school.	Students' social and emotional learning is adequately supported in this school.	Students' social and emotional needs are adequately supported in this school.
	I have the autonomy to make important decisions for my classroom (e.g., pacing, materials, and/or pedagogy).	Teachers have the autonomy to make important decisions in their classrooms (e.g., pacing, materials, and/or pedagogy).	I have the appropriate autonomy to carry out my job responsibilities.
	I feel supported in trying new instructional strategies.	Teachers are supported in trying new instructional strategies.	
	I use formative assessment data to improve my students' learning.	Teachers use formative assessment data to improve their students' learning.	
	Our school provides effective academic supports to students who need them.		
	Our school provides effective social emotional supports to students who need them.		

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
	Our school's system of supports for students (e.g., MTSS, Student Intervention Teams, Response to Intervention) helps me to support all of my students' needs effectively.		
Professional development	The school improvement plan (e.g., Unified Improvement Plan) influences teachers' professional learning choices.	The school improvement plan (e.g., Unified Improvement Plan) influences teachers' professional learning choices.	
	Professional learning opportunities are personalized and aligned to teachers' needs and strengths.	Professional learning opportunities are personalized and aligned to teachers' needs and strengths.	
	The effectiveness of professional development is assessed regularly.	The effectiveness of professional development is assessed regularly.	The effectiveness of professional development is assessed regularly.
	Professional learning opportunities are reinforced through coaching (e.g., knowledge building over time).	Professional learning opportunities are reinforced through coaching (e.g., knowledge building over time).	
	I receive ongoing support and coaching to improve my practice.	All teachers receive ongoing support and coaching to improve their practice.	
	I receive adequate professional development to effectively use student data (e.g., assessments, surveys).	Teachers receive adequate professional development to effectively use student data (e.g., assessments, surveys).	
	I receive adequate professional development to support my students' social and emotional learning.	Teachers receive adequate professional development to support their students' social and emotional learning.	I receive adequate professional development to support my students' social and emotional learning.
			I receive adequate professional development to carry out my job responsibilities.
			I am appropriately compensated for professional development.
			I feel that my employer invests in my career.

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
Time	I have adequate time to prepare for instruction.	Teachers have adequate time to prepare for instruction.	I have adequate time to prepare for my primary duties.
	My time is protected from duties that take time away from teaching.	Teachers' time is protected from duties that take time away from teaching.	My time is protected from tasks that take time away from my primary duties.
	I have adequate time to analyze and respond to student assessment data.	Teachers have adequate time to analyze and respond to student assessment data.	
	I have adequate time to support my students' social and emotional learning.	Teachers have adequate time to support their students' social and emotional learning.	I have adequate time to support my students' social and emotional learning.
	I have adequate time to communicate with my students' families.	Teachers have adequate time to communicate with their students' families.	
	I have adequate time to engage in professional learning (e.g., attend trainings, refine new techniques, collaborate with grade level teams).	Teachers have adequate time to engage in professional learning (e.g., attend trainings, refine new techniques, collaborate with grade level teams).	I have adequate time to engage in professional learning (e.g., attend trainings, refine new techniques, collaborate).
	New initiatives (e.g., curriculum, assessments, instructional approach) are given enough time to determine their effectiveness.	New initiatives (e.g., curriculum, assessments, instructional approaches) are given enough time to determine their effectiveness.	
	I am able to meet the expectations of my position within my contracted work hours.		
	It is easy for me to secure a substitute for personal leave.		
Facilities and Resources	My class size(s) is reasonable.	Class size(s) are reasonable.	The number of students I serve is reasonable.
	Instructional resources are adequate to support student learning.	Instructional resources are adequate to support student learning.	I am provided with adequate resources to support student learning.
	I have adequate physical space to work productively.	Teachers have adequate physical space to work productively.	I have adequate physical space to work productively.

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
	Our school is a safe place to work.	Our school is a safe place to work.	Our school is a safe place to work.
Community support/ involvement	The school's efforts to engage families are individualized based on student needs.	The school's efforts to engage families are individualized based on student needs.	The school's efforts to engage families are individualized based on student needs.
	The school provides interactive strategies that families can use at home to support their children's learning.	The school provides interactive strategies that families can use at home to support their children's learning.	The school provides interactive strategies that families can use at home to support their children's learning.
	The school utilizes two-way communication methods (e.g., text app, email, call) in families' home language to share what is happening in the school.	The school utilizes two-way communication methods (e.g., text app, email, call) in families' home language to share what is happening in the school.	The school utilizes two-way communication methods (e.g., text app, email, call) in families' home language to share what is happening in the school.
	The broader community is supportive of the school.	The broader community is supportive of the school.	The broader community is supportive of the school.
Support for Own Wellbeing	I feel like I belong at my school.	I feel like I belong at my school.	I feel like I belong at my school.
	My work at this school makes me feel satisfied.	My work at this school makes me feel satisfied.	My work at this school makes me feel satisfied.
	I have at least one colleague at my school that I trust.	I have at least one colleague at my school that I trust.	I have at least one colleague at my school that I trust.
	If I was concerned about my mental health, I would have access to the support I need.	If I was concerned about my mental health, I would have access to the support I need.	If I was concerned about my mental health, I would have access to the support I need.
Overall General Reflection	I would recommend this school as a good place to work.	I would recommend this school as a good place to work.	I would recommend this school as a good place to work.
	I would recommend this school as a good place for students to learn.	I would recommend this school as a good place for students to learn.	I would recommend this school as a good place for students to learn.
	I feel satisfied with the recognition I get for doing a good job.	I feel satisfied with the recognition I get for doing a good job.	I feel satisfied with the recognition I get for doing a good job.
Support for Student	I feel comfortable discussing life skills with my students.		

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
Wellbeing (Teacher)			
	I feel comfortable discussing resilience strategies with my students		
	I feel comfortable discussing mental health with my students.		
	I feel comfortable discussing suicide with my students.		
Support for Staff (Leader)		I often do things to respectfully show an interest in the personal needs of individual staff.	
		I do things to show individual staff that I respect their professional judgment.	
		My leadership style improves teacher job satisfaction.	
		It is important that I understand the day-to-day reality of teachers' roles and responsibilities.	
		I often do things that show I trust teachers to make their own decisions about instructional practices.	
		I create ways for teachers to have direct influence on choices of curriculum and related resources.	
Roles & Responsibilities (ESPs only)			ESPs: I am comfortable with the tasks I am asked to perform.
			ESPs: I am not asked to work more hours than I am compensated for.
			ESPs: I am sometimes asked to take on the role of a licensed teacher. *
			ESPs: I receive adequate guidance about my role.

Construct	Teacher Questions	Leader Questions	ESP & SSP Questions
Job Satisfaction (ESPs only)			ESPs: I feel respected by teachers in my school.
			ESPs: I feel respected by school leaders in my school.
			ESPs: I feel respected by students in my school.
			ESPs: My work schedule fits my personal needs.
			ESPs: My work is very stressful. *
			ESPs: I feel I am part of a team working towards the same goal.
			ESPs: I feel adequately compensated for my work.
			ESPs: My work duties reflect my initial expectations of the role.
			ESPs: Frequent changes in my work duties make my job more stressful. *
			ESPs: I have ways to advance my career in education.

[*] Note that these two items should be reverse scored, as they are negatively worded. An "agree/strongly agree" rating is NOT favorable.

Appendix E: Example of Statistically Significant Differences by Respondent Groups

| Item Detail | PERCENT FAVORABLE (common items) N sizes based on all respondents, not >50% sites | | | | | ANOVA | | |
	Teacher valid n=30,916	SSPs valid n=3,760	ESPs valid n=6,695	Leaders valid n=1,894	ALL together valid n=43,321	F value	p value	post-hoc
This school is led by an effective team.	0.790	0.843	0.872	0.964	0.815	193.56	p < .001	all distinct
Our work together is guided by a shared vision that is student focused.	0.835	0.893	0.917	0.961	0.858	180.15	p < .001	all distinct
School staff show respect for each other.	0.857	0.871	0.876	0.933	0.864	33.40	p < .001	leaders different from others
Staff feel comfortable raising important issues with school leaders.	0.756	0.819	0.803	0.935	0.776	138.38	p < .001	all distinct
Teachers and support personnel are provided with informal feedback to improve their instruction/work performance.	0.824	0.798	0.820	0.978	0.828	107.40	p < .001	Teachers/ESPs same, all other pairings distinct
Teachers' and support personnels' effectiveness is accurately assessed through the school's evaluation process.	0.775	0.716	0.977	0.925	0.780	106.99	p < .001	all distinct
The evaluation process provides teachers and support personnel with actionable feedback for improvement.	0.762	0.710	0.791	0.933	0.769	124.54	p < .001	all distinct
There is a process in place for collaborative problem solving in this school.	0.775	0.799	0.806	0.939	0.789	100.87	p < .001	all distinct
Teachers and support personnel have leadership opportunities in this school.	0.853	0.819	0.629	0.978	0.824	707.87	p < .001	all distinct
Teachers and support personnel have an adequate level of influence on important school decisions.	0.688	0.780	0.735	0.950	0.714	236.14	p < .001	all distinct

	PERCENT FAVORABLE (common items) N sizes based on all respondents, not >50% sites					ANOVA		
I would recommend this school as a good place to work.	0.844	0.872	0.905	0.965	0.861	114.13	p < .001	all distinct
I would recommend this school as a good place for students to learn.	0.870	0.888	0.918	0.963	0.883	79.82	p < .001	all distinct
I feel satisfied with the recognition I get for doing a good job.	0.733	0.770	0.775	0.902	0.750	99.44	p < .001	all distinct