Executive Summary: Health Impact Review of SHB 1680
On Closing the Educational Opportunity Gap

> **Evidence from the literature indicates that, overall, SHB 1680 has potential to decrease health disparities in Washington state.**

This health impact review found the following evidence regarding the provisions in SHB 1680:

Student Discipline
- Some evidence that closing discipline gaps would decrease student perceptions of discrimination.
- Strong evidence that closing discipline gaps would decrease discipline recidivism and curb the school-to-prison pipeline.
- Very strong evidence that closing discipline gaps would decrease educational opportunity gaps.

Educator Cultural Competence
- Some evidence that cultural competence training would increase the cultural competence of educators.
- Strong evidence that educator cultural competence would decrease educational opportunity gaps.

English Language Learners
- Some evidence that increasing the number of educators with special education, bilingual education, and English language learner endorsements would decrease educational opportunity gaps.
- Strong evidence that the development of a new accountability system for the Transitional Bilingual Instructional Program, if grounded in evidence, would decrease educational opportunity gaps.

Data Disaggregation
- Strong evidence that disaggregating data could provide a better picture of educational opportunity gaps, thereby improving understanding of and the ability to decrease educational opportunity gaps.

Recruitment of Educators of Color
- Strong evidence that modifying the model framework for high school Career and Technical Education courses related to careers in education, creating articulated pathways to teacher certification, and ensuring that paraeducator apprenticeship/certificate programs meet standards of cultural competency would decrease educational opportunity gaps.

The Relationship between Education, Income, and Health
- Very strong evidence that decreasing educational opportunity gaps would decrease gaps in educational attainment.
- Very strong evidence that decreasing gaps in educational attainment would both decrease health disparities directly and indirectly through decreasing income gaps.

For more detailed pathways, strength-of-evidence analyses, and citations of empirical evidence refer to the full health impact review which can be found at:

http://sboh.wa.gov/Portals/7/Doc/HealthImpactReviews/HIR-2013-01-SHB1680.pdf

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Health Impact Review of SHB 1680
On Closing the Educational Opportunity Gap

January 3, 2014

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Contents

Introduction and Methods

A health impact review is an analysis of how a proposed legislative or budgetary change will likely impact health and health disparities in Washington state (RCW 43.20.285). For the purpose of this review 'health disparities' have been defined as the differences in disease, death, and other adverse health conditions that exist between populations (RCW 43.20.270). This document provides summaries of the evidence analyzed by State Board of Health staff during the health impact review of Substitute House Bill 1680 (SHB 1680).

Note that, as of the writing of this review, the most recent version of the bill is Second Substitute House Bill 1680 (2SHB 1680), but the legislator request was for a review of SHB 1680. Therefore this review analyzes the potential impacts of SHB 1680—and, unless otherwise noted, all bill references and section numbers throughout the report apply to this version of the bill. Footnotes within the review provide further information on components of the bill that were modified or removed in 2SHB 1680.

Staff analyzed the content of the six main components of SHB 1680 and created logic models for each component depicting possible pathways leading to health outcomes. Staff consulted with experts on education and health and conducted objective reviews of the literature for each pathway. Staff used databases including ERIC, PubMed, and Google Scholar to search the literature.

The following pages provide:
- A broad overview of the bill and possible short-, intermediate-, and long-term outcomes (Table 1).
- A more detailed analysis of each of the six components of the bill including summaries of the bill and a presentation of potential pathways leading from the bill to decreased health disparities.
- Annotated references with summaries of the findings for each research question.

The logic models depicting potential pathways between the bill and health impacts are presented both in text and through flowcharts. The flowcharts include information on the strength of the evidence for each relationship. The strength-of-evidence has been defined using the following criteria:
- **Minimal evidence:** the literature review yielded only one study supporting the association.
- **Some evidence:** the literature review yielded several studies supporting the association, but a large body of evidence was not established.
- **Strong evidence:** the literature review yielded a large body of evidence on the relationship (a majority of which supported the association) but the body of evidence contained some contradictory findings, did not incorporate the most robust study designs or data analysis, had significant but not meaningful results, or some combination of these. Any relationship where the language of the bill explicitly indicated that the work must be evidence-based was considered a strong connection.
- **Very strong evidence:** the literature review yielded a very large body of robust evidence supporting the association with few if any contradictory findings. The evidence indicates that the scientific community largely accepts the existence of the association.

Although future reviews may have even shorter timelines for completion, this review was still subject to time constraints which allowed for only a preliminary search of the evidence. The annotated references are only a representation of the evidence and simply provide examples of current research. In many cases only a few review articles or meta-analyses are included in the references. One article may cite or provide analysis of dozens of other articles. Therefore the number of references included in the bibliography does not necessarily reflect the strength-of-evidence. In addition, some articles provide evidence for more than one research question so they appear more than once in the reference list.

Table 1. Logic Model: SHB 1680 Potential Health Impacts				
Bill Components	**Bill Goals**	**Short-Term Outcomes**	**Intermediate-Term Outcomes**	**Long-Term Outcomes**
Ensure educational services for students under disciplinary action Prevent indefinite length of exclusionary discipline* Standardize definitions of causes for discipline§ Collect disciplinary data§ Expand data sharing with the Department of Social and Health Services and the Administrative Office of the Court	Decrease disproportionate representation of students of color in disciplinary action in schools	Decreased educational opportunity gaps Decreased discipline recidivism and curbed school-to-prison pipeline Decreased student experiences of discrimination	Decreased gaps in educational attainment	Decreased income gaps Decreased health disparities
Require/provide cultural competence training for educators	Enhance the cultural competence of current and future educators			
Provide scholarships and create requirements for special education, bilingual education, and English language learner endorsements	Provide English language learner and second language acquisition endorsements for all educators			
Create a new Transitional Bilingual Instructional Program accountability system	Create new English language learner accountability benchmarks			
Provide tools for student data disaggregationᵗ	Provide tools for deeper data analysis and disaggregation of student demographic data to inform instructional strategies to close the opportunity gap			
Update the framework for high school career courses in education Create articulated pathways for teacher certification Require cultural competence standards for articulated pathways and paraeducator certifications	Invest in the recruitment and retention of educators of color			

* RCW 28A.600.015 mandates that an expulsion or suspension may not be for an indefinite period of time.
§ RCW 28A.600.490 requires the creation of a task force to develop standard definitions for causes of student disciplinary actions taken at the discretion of the school district and to develop data collection standards for disciplinary actions that are discretionary or result in exclusion.
ᵗ This component of SHB 1680 on data disaggregation was removed from 2SHB 1680.

Part I: Disproportionality in Student Discipline

Summary of SHB 1680

SHB 1680 aims to decrease racial/ethnic discipline gaps in schools through:

- **Standardizing definitions[a]**: develop standard definitions for causes of discretionary student discipline (section 101)
- **Prohibiting undefined length of exclusionary discipline and ensuring educational services[b]**: suspension/expulsion cannot be for an indefinite period of time and a school district may not suspend educational services to students in connection with disciplinary measures (sections 102-104)
- **Collecting and using discipline data[a]**: develop data collection standards for disciplinary actions that are discretionary or result in exclusion; prepare regular reports on youth involved in the justice system using disaggregated data; and expand data sharing and research agreements to include the Department of Social and Health Services and the Administrative Office of the Court (section 105)

Health impact of SHB 1680

Data indicate that these components of SHB 1680 have the potential to decrease disproportionate representation of students of color in disciplinary action in schools. If this is achieved, the literature strongly supports that this would work toward decreasing health disparities in Washington.

Pathways to health impacts

The potential pathways leading from SHB 1680 to decreased health disparities are depicted in Figure 1. The evidence strongly indicates that students of color are disproportionately subject to school discipline.[1-8] Students of color in Washington are more likely to miss days of school due to discipline and less likely to receive educational services when suspended or expelled.[9] Missed school days and not being provided with educational services during disciplinary action can lead to poor academic outcomes.[10-14] Therefore, although these components of SHB 1680 would impact all students involved in disciplinary action, they would likely have a greater positive impact on students of color thereby helping to narrow discipline and educational opportunity gaps.

In addition, students of color are more likely to be disciplined for discretionary reasons or for more subjective behaviors (e.g. disrespect).[15-17] This suggests that standardizing definitions for causes of discipline, if the definitions make discipline more objective, could help decrease discipline gaps. Data sharing agreements that provide information on the relationship between discipline, academic outcomes, health, and involvement in the justice system may also decrease discipline gaps, as researchers indicate that a lack of understanding of these relationships is a barrier to addressing these gaps.[18-20]

Closing discipline gaps would likely: a) decrease the negative academic impacts of exclusionary discipline on students of color,[21-25] (which would likely decrease gaps in educational attainment, income, and health[76-96]), b) ameliorate student perceptions of discrimination at school,[38-40] and c) help to curb discipline recidivism and the school-to-prison pipeline for students of color.[26-30] Evidence indicates that mitigating feelings of discrimination and slowing the school-to-prison pipeline can have direct positive impacts on education, income, and health.[31-37,41-46] The narrowing of educational opportunity gaps would likely decrease gaps in educational attainment,[76-77] which in turn may directly decrease income and health disparities.[78-89] Decreases in income gaps would also likely help decrease health disparities.[90-96]

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[a] RCW 28A.600.490 requires a task force to develop standard definitions for causes of disciplinary actions taken at the discretion of the school and to develop data collection standards for discipline that is discretionary or results in exclusion. The law does not mandate reporting on youth involvement in the juvenile justice system.
[b] RCW 28A.600.015 mandates that an expulsion or suspension may not be for an indefinite period of time.

Part I: Disproportionality in Student Discipline
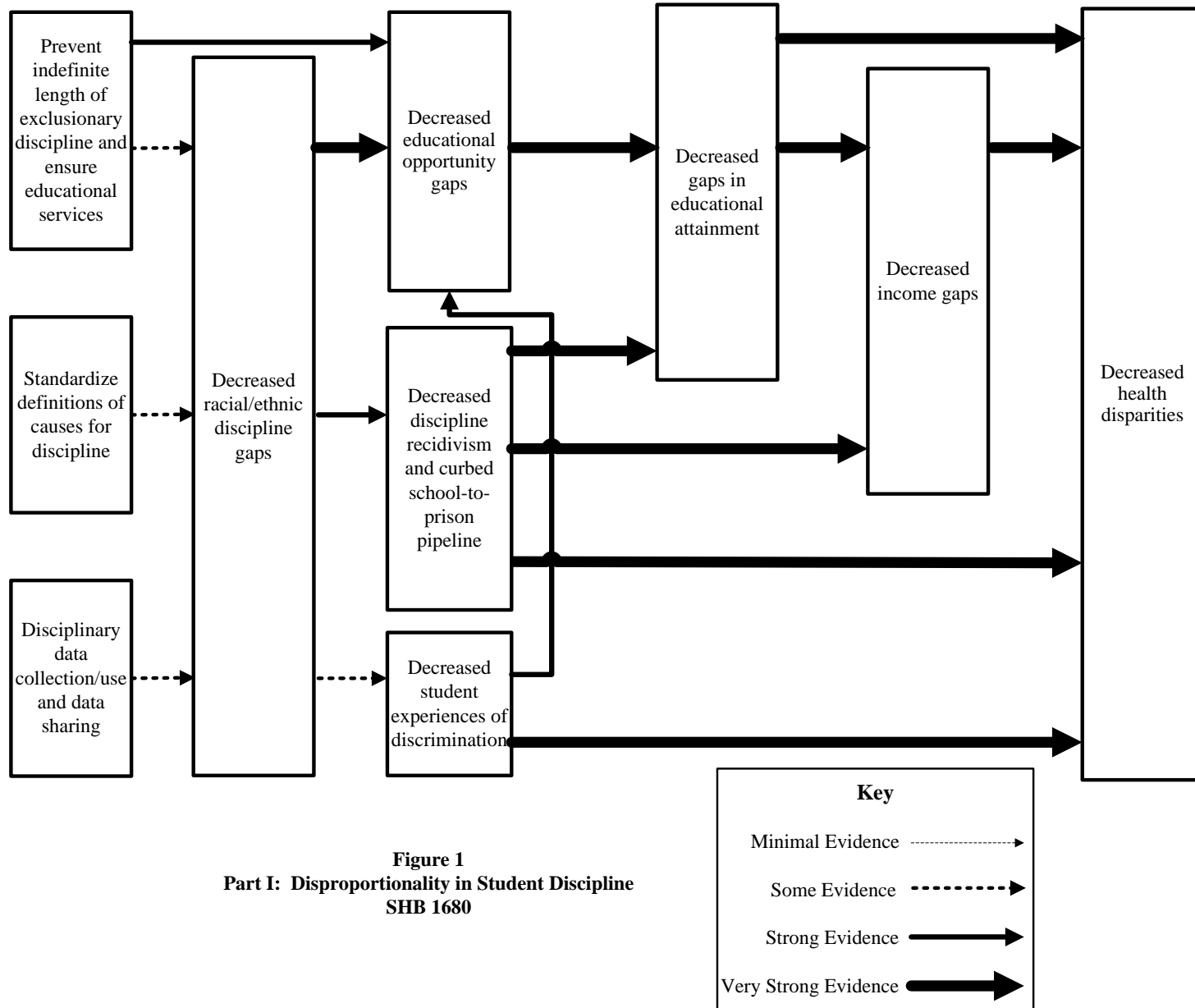

Figure 1
Part I: Disproportionality in Student Discipline
SHB 1680

Key

Minimal Evidence	┈┈┈┈┈▸
Some Evidence	┅┅┅┅▸
Strong Evidence	──────▸
Very Strong Evidence	━━━━▶

Part II: Educator Cultural Competence

Summary of SHB 1680

SHB 1680 would:
- Require training on the evaluation systems for school staff to include cultural competence (section 201)
- Require the training for supervisory personnel who will be evaluating teachers and principals to include cultural competence (section 202)[c]
- Require the Office of Superintendent of Public Instruction (OSPI) to collaborate to develop a training on cultural competence for school staff—and recommends that schools use this training, and this training would be required for any school that is mandated to implement a plan for improvement (sections 203-204)[d]

Health impact of SHB 1680

Empirical evidence suggests that cultural competency training among school staff would likely have a positive impact on student health now and in adulthood—if the training is evidence-based. In addition this training would likely have greater positive impacts on students from diverse cultural backgrounds or students who have unique educational needs, thereby working to decrease health disparities.

Pathways to health impacts

The potential pathways leading from cultural competence training to decreased health disparities are depicted in Figure 2. These pathways summarize evidence indicating that cultural competence training for school staff has potential to increase cultural competence among educators.[47-51] Educator cultural competence, in turn, often increases educational opportunity and outcomes for students, particularly for students who are from cultural backgrounds different than that of the majority culture.[52-58] The literature indicates that increased educational opportunities and outcomes are very strongly linked to increased educational attainment,[76-77] which is in turn strongly associated with both improved health[78-87] and increased income[88-89] (which is also linked to improved health).[90-96]

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[c] A section was added to the 2SHB (section 504 in 2SHB 1680) and qualifies that if specific funding for this purpose is not provided by a set date than this component of the bill would become null and void.
[d] The component of the bill requiring cultural competency training for any school that is required under state or federal accountability measures to implement a plan for improvement (section 204 in SHB 1680) is not included in 2SHB 1680.
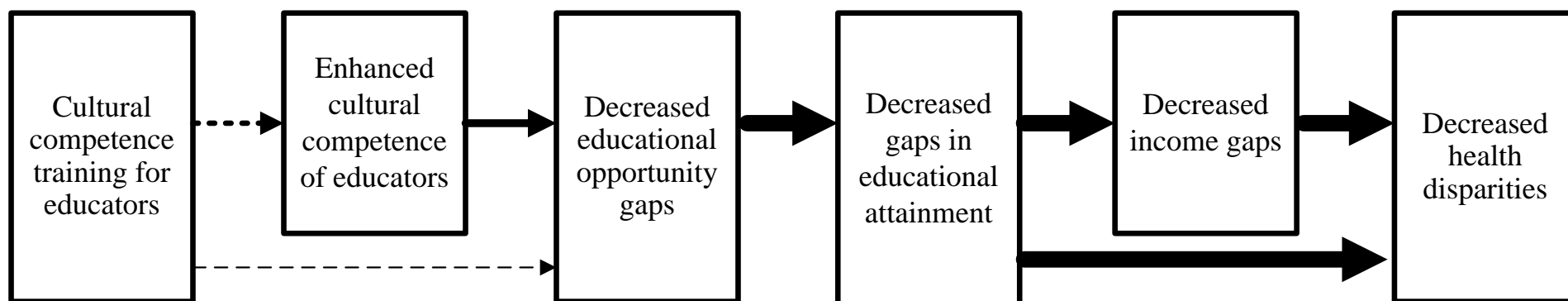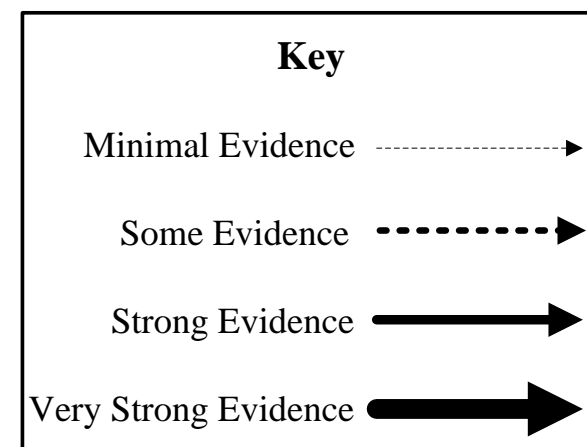
Part II: Educator Cultural Competence

Figure 2
Part II: Educator Cultural Competence
SHB 1680

Key

Minimal Evidence - - - - - - - - - ▸

Some Evidence ▪ ▪ ▪ ▪ ▪ ▪ ▸

Strong Evidence ━━━▸

Very Strong Evidence ━━▶

Part III: Instructing English Language Learners

Summary of SHB 1680

SHB 1680 would:

- Extend the Retooling to Teach Mathematics and Science Conditional Scholarship Program (Educator Retooling Program) to fund special education, bilingual education, and English language learner (ELL) education endorsements (sections 301-302)
- Require that when allocating scholarship awards to support bilingual education, preference be given to teachers seeking endorsements in order to be assigned to a Transitional Bilingual Instructional Program (TBIP), to teachers assigned to schools required to implement a plan for improvement, or teachers assigned to schools where the proportion of ELL students has increased in recent years (section 302)
- Require regular reports on the status of scholarship recipients (section 302)
- Require all classroom teachers assigned using funds for TBIP to hold an endorsement in bilingual education, ELL, or both (section 303)

Health impact of SHB 1680

Empirical evidence suggests that increasing the number of educators who have special education, bilingual education, and ELL education endorsements would likely have a positive impact on student health—if the training is evidence-based. In addition this training would likely have greater positive impacts on ELL students and students in special education courses, thereby working to decrease health disparities.

Pathways to health impacts

Evidence indicates that providing scholarship incentives for educator endorsements in special education, bilingual education, and ELL education may increase the number of educators with these endorsements.[59-60] Mandating these endorsements for certain teachers would also increase the number of teachers with these endorsements. The literature indicates that if these endorsements are evidence-based, then they would likely lead to improvement in academic outcomes for ELL students and students with disabilities, thereby decreasing educational opportunity gaps.[61-64] Increased educational opportunities and outcomes for these populations would likely lead to higher educational attainment,[76-77] which is directly linked to improved health outcomes.[78-87] In addition, higher educational attainment is linked to higher future income,[88-89] which in turn leads to improved health outcomes (Figure 3).[90-96]
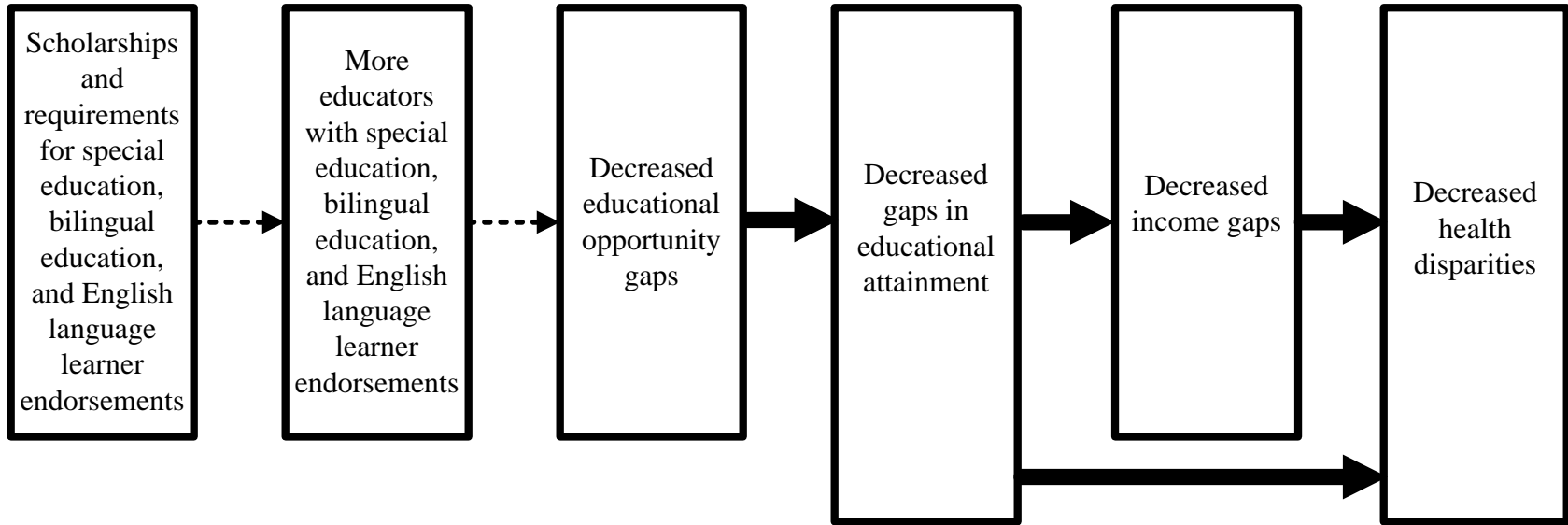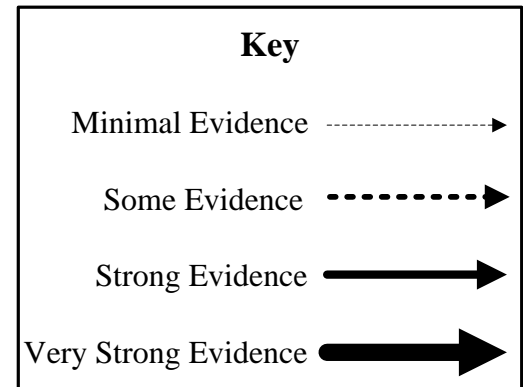
Part III: Instructing English Language Learners

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┌──────────────┐     ┌──────────────┐     ┌──────────────┐     ┌──────────────┐     ┌──────────────┐     ┌──────────────┐
│ Scholarships │     │     More     │     │              │     │              │     │              │     │              │
│     and      │     │   educators  │     │              │     │              │     │              │     │              │
│ requirements │     │ with special │     │              │     │  Decreased   │     │              │     │              │
│ for special  │     │  education,  │     │  Decreased   │     │   gaps in    │     │  Decreased   │     │  Decreased   │
│  education,  │ ··> │  bilingual   │ ··> │ educational  │ ══> │ educational  │ ══> │ income gaps  │ ══> │    health    │
│  bilingual   │     │  education,  │     │ opportunity  │     │  attainment  │     │              │     │ disparities  │
│  education,  │     │ and English  │     │    gaps      │     │              │     │              │     │              │
│ and English  │     │   language   │     │              │     │              │     │              │     │              │
│   language   │     │   learner    │     │              │     │              │     │              │     │              │
│   learner    │     │ endorsements │     │              │     │              │     │              │     │              │
│ endorsements │     └──────────────┘     └──────────────┘     │              │══════════════════════════>│              │
└──────────────┘                                               └──────────────┘                          └──────────────┘
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Figure 3
Part III: Instructing English Language Learners
SHB 1680

Key	
Minimal Evidence	·······>
Some Evidence	·· ·· ·· >
Strong Evidence	───>
Very Strong Evidence	━━━▶

Part IV: English Language Learner Accountability

Summary of SHB 1680
SHB 1680 would require OSPI to:
- Convene an English Language Learner accountability Task Force to (section 401):
    - Design a performance-based accountability system for TBIP
    - Identify evidence-based program designs and instructional strategies for ELLs
    - Identify performance benchmarks for transitional bilingual instructional programs
    - Design an accountability system for ELL programs that includes reporting and monitoring of benchmark performance
- Identify schools with recent increases in enrollment of ELLs and these schools/districts must provide cultural competence training (section 403)[e]
- Provide school districts with assistance and support in selecting research-based models, materials, and professional development (section 402)[f]

Health impact of SHB 1680
The development of a new accountability system for the TBIP using evidence-based benchmarks and instructional strategies (as would be required by SHB 1680) would likely have positive impacts on the health of students involved in these programs, thereby working to decrease health disparities.

Pathways to health impacts
The bill stipulates that the accountability benchmarks, instructional strategies, and program designs must be grounded in evidence, so it would therefore be expected to have a positive impact on the educational opportunities of ELLs, thereby working to close educational opportunity gaps. This, in turn, would help decrease gaps in educational attainment,[76-77] which would then likely decrease income gaps[88-89] and health disparities.[78-87] A decrease in income gaps would also likely lead to a direct decrease in health disparities (Figure 4).[90-96]

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[e] A section was added to the 2SHB (section 505 in 2SHB 1680) and qualifies that if specific funding for this purpose is not provided by a set date than this component of the bill would become null and void.
[f] The component of the bill requiring OSPI to provide school districts with assistance and support in selecting research-based models, materials, and professional development (section 402 in SHB 1680) is not included in 2SHB 1680.

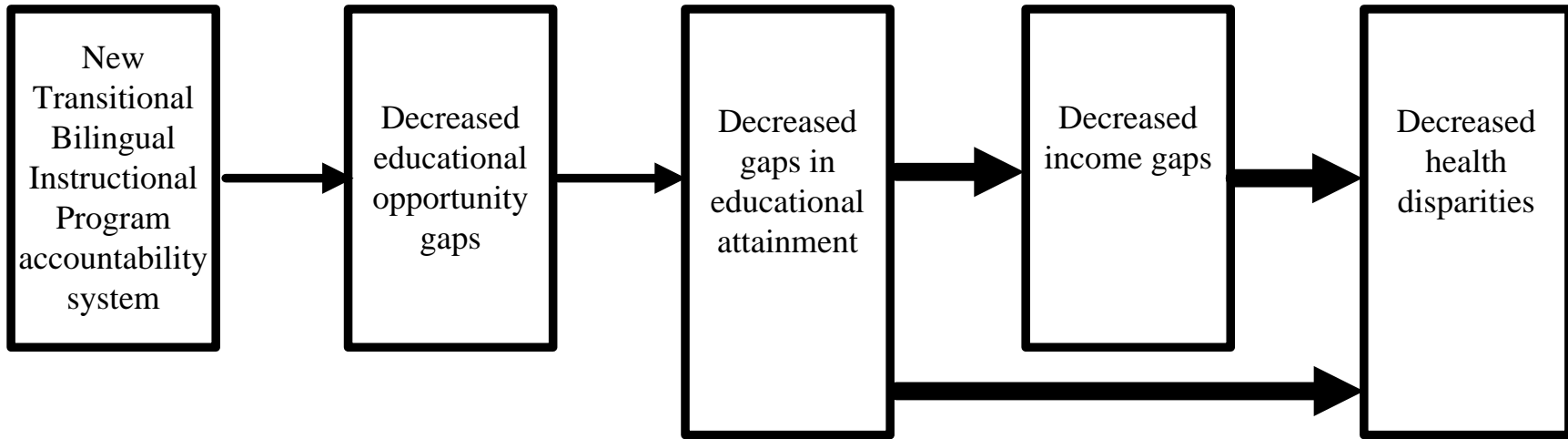**Part IV: English Language Learner Accountability**

| New Transitional Bilingual Instructional Program accountability system | → | Decreased educational opportunity gaps | → | Decreased gaps in educational attainment | ⇒ | Decreased income gaps | ⇒ | Decreased health disparities |

**Figure 4
Part IV: English Language Learner Accountability
SHB 1680**

Key

Minimal Evidence - - - - - - →

Some Evidence ▪ ▪ ▪ ▪ ▪ ➤

Strong Evidence ——→

Very Strong Evidence ━━➤
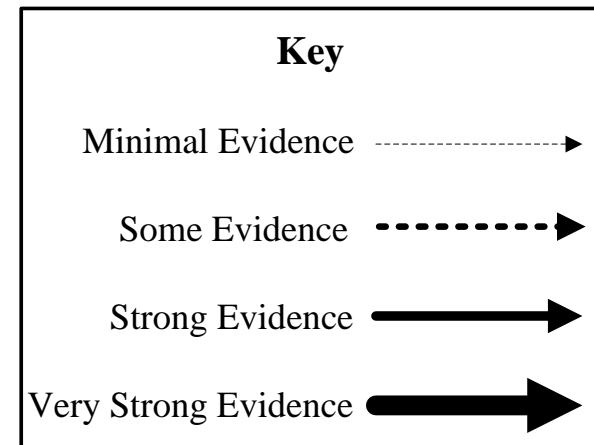
Part V: Disaggregated Student Data[g]

Summary of SHB 1680

SHB 1680 would require OSPI to:

- Collect data using the United States Office of Management and Budget 1997 Race And Ethnicity Reporting Guidelines, including the subracial and subethnic categories, and also further disaggregation of the black category, countries of origin for Asian students, the white category, and the category for students who report as multiracial (sections 501-502)
- Prepare all student data-related reports using additional disaggregation of data if analysis of the data indicates significant differences among subcategories of students (sections 501-502)

Health impact of SHB 1680

Collection and reporting of student data disaggregated by racial/ethnic subpopulations and countries of origin could inform the development of educational programs for unique populations thereby working to decrease health disparities.

Pathways to health impacts

A large body of evidence indicates that when populations made up of diverse subpopulations are aggregated during data collection or analysis important distinctions between the subpopulations are masked. Researchers have indicated that it becomes difficult to meet the educational needs of subpopulations who have unique needs and academic outcomes that are often left unaddressed due to a lack of data disaggregation. Disaggregating student data could provide a better picture of educational opportunity gaps, thereby providing information to help address them.[65-68] This in turn would likely help decrease gaps in educational attainment,[76-77] which would likely directly impact income gaps[88-89] and health disparities.[78-87] The decrease in income gaps would also likely lead to a decrease in health disparities (Figure 5).[90-96]

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[g] This component of SHB 1680 on data disaggregation was removed from 2SHB 1680.

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Part V: Disaggregated Student Data

| Collection and use of disaggregated data | → | Improved understanding of and ability to address educational opportunity gaps | → | Decreased educational opportunity gaps | ⇒ | Decreased gaps in educational attainment | ⇒ | Decreased income gaps | ⇒ | Decreased health disparities |
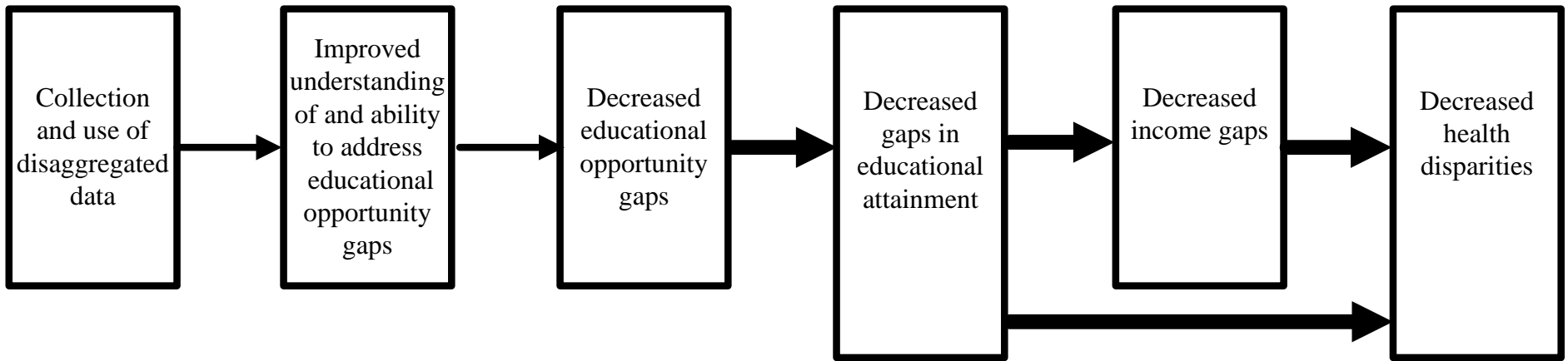
Figure 5
Part V: Disaggregated Student Data
SHB 1680

Key

Minimal Evidence ┈┈┈➤

Some Evidence ▪▪▪▪▪➤

Strong Evidence ───➤

Very Strong Evidence ━━━▶
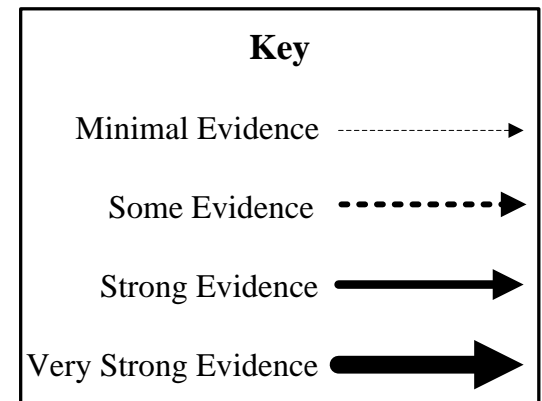
Part VI: Recruitment and Retention of Educators

Summary of SHB 1680
SHB 1680 would:
- Require OSPI and the Professional Educator Standards Board (PESB) to convene a work group to revise and update the model framework and curriculum and the program of study for high school Career and Technical Educational courses related to careers in education to include (section 601):
  - Standards for cultural competency
  - The most recent competency standards developed by PESB and new research on best practices for educator preparation and development
  - Curriculum and activities used by the Recruiting Washington Teachers program
- Require PESB to convene a work group to design an articulated pathway for teacher preparation and certification that includes standards of cultural competence (section 602)[h]
- Require any community or technical college that offers an apprenticeship program or certificate program for paraeducators to provide transferrable course credits and incorporate the standards for cultural competence (section 603)

Health impact of SHB 1680
Evidence indicates that modifying the model framework for high school Career and Technical Education courses related to careers in education, creating articulated pathways to teacher certification, and ensuring that paraeducator apprenticeship/certificate programs meet standards of cultural competency would likely decrease health disparities.

Pathways to health impacts
Updating the framework of high school career courses for careers in education as defined in SHB 1680 to include standards in cultural competence would likely lead to narrowing of educational opportunity gaps.[69-70] Requiring paraeducators to meet cultural competency standards would also likely narrow the gaps.[52-58] In addition, creating articulated pathways for teacher certification has strong potential to increase the recruitment and retention of teachers of color if evidence-based pathways are utilized.[71-72] An increase in the number of teachers of color in Washington would likely decrease educational opportunity gaps as well.[73-75] A narrowing of the opportunity gaps would likely decrease gaps in educational attainment[76-77] which would then likely decrease income gaps[88-89] and health disparities.[78-87] The decrease in income gaps would also likely lead to a decrease in health disparities (Figure 6).[90-96]

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[h] 2SHB 1680 added a clause to this section indicating that the convening of this work group is subject to funds appropriated specifically for this purpose.
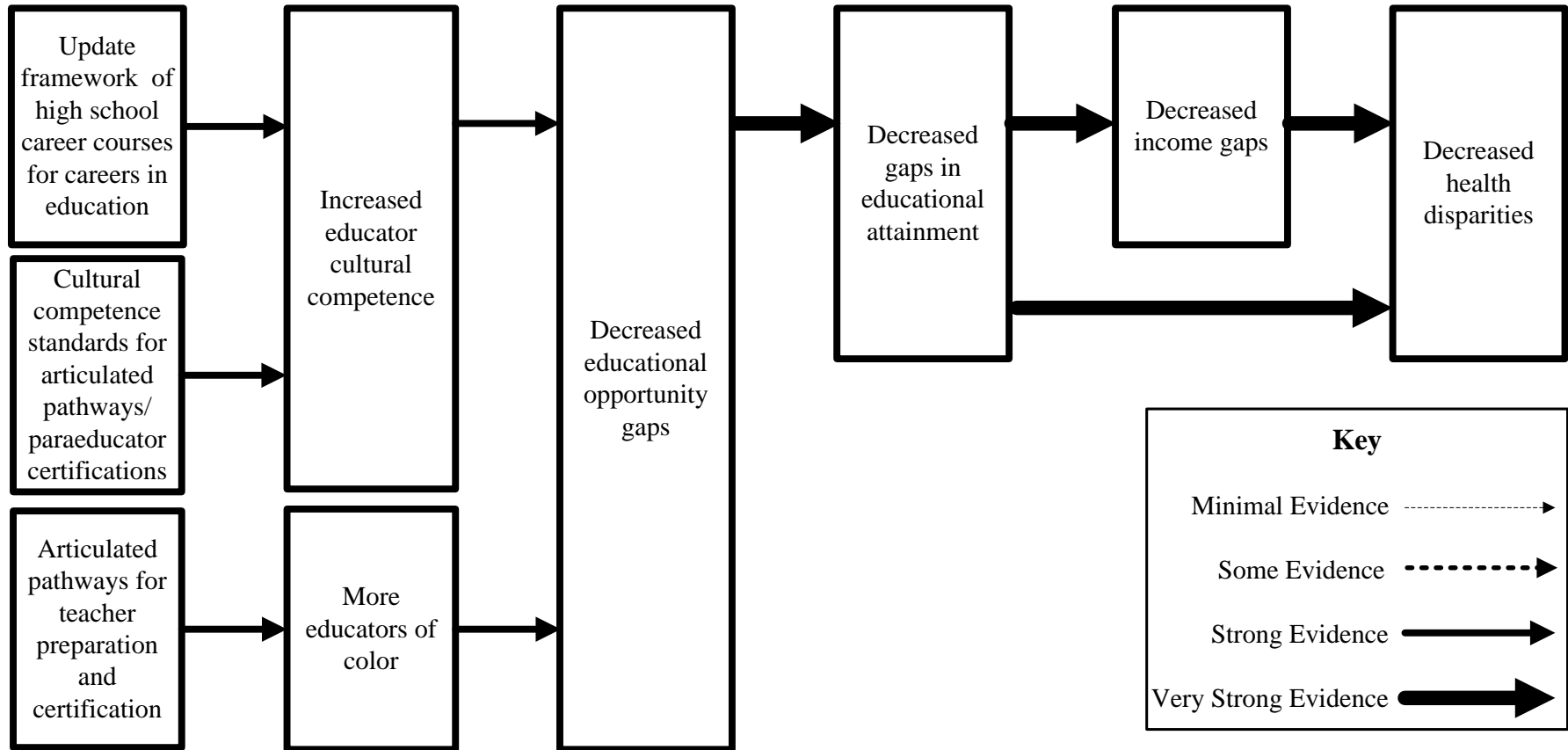
Part VI: Recruitment and Retention of Educators

Figure 6
Part VI: Recruitment and Retention of Educators
SHB 1680

Annotated References and Summaries of Findings

Part I: Disproportionality in Student Discipline

**Evidence of disproportionate representation of students of color and students with
learning disabilities in disciplinary action ('discipline gaps')**

Summary of findings

Nationally, very strong empirical evidence indicates that students of color and students with disabilities
are overrepresented in school disciplinary action. In many studies this trend is still observed even after
controlling for potential confounding factors such as aggressive behavior or rates of misbehavior. This
indicates that these populations are not misbehaving at higher rates but **are** being disciplined at higher
rates. This disparity is sometimes referred to as the discipline gap. Washington state data reveal that
American Indian/Alaska Natives (AI/AN), African American, Hispanic, and Native Hawaiian and Other
Pacific Islander (NHOPI) students are disproportionately represented in exclusionary discipline.
Washington state data indicate that students of color were 1.5 times more likely to be disciplined than
their white peers, and that NHOPI, AI/AN, and African American students were more than twice as
likely to be disciplined. A few studies have been listed here as examples of the evidence. These example
articles include one in-depth review of the literature as well as studies with strong literature reviews that
cite further evidence.

Annotated references

1. **Brown C, Tillio C. Discipline disproportionality among Hispanic and American Indian
   students: Expanding the discourse in U.S. research.** *Journal of Education and Learning*. **2013;
   2(4): 47-59.**
Brown and Tillio analyzed 2010-2011 data collected by the Arizona Department of Education. This
included data for all 589 districts in the state with a total of 285,329 reported discipline incidents. The
researchers found disproportionately high rates of discipline referrals for students with disabilities as
well as for American Indian and African American students. Latino student referrals were proportional
to the percent of the student population they made up, and white and Asian students were under-referred.

2. **Horner SB, Fireman GD, Wang EW. The relation of student behavior, peer status, race, and
   gender to decisions about school discipline using CHAID decision trees and regression
   modeling.** *Journal of School Psychology*. **2010; 48(2): 135-61.**
Horner et al. analyzed data from 537 third-, 470 fourth-, and 486 fifth-grader student surveys that
employed a modified version of Crick and Grotpeter's peer-nomination. These were students from an
urban public school district in the Southwest. The researchers found that African American students
were more likely than students of any other race/ethnicity to be disciplined. In addition, the data
indicated that this trend was true even after controlling for aggressive behavior (as classified based on
peer survey questions that delved into student behavior).

3. **Losen DJ. Discipline policies, successful schools, racial justice, and the law.** *Family Court
   Review*. **2013; 51(3): 388-400.**
Losen outlines a review of the literature related to school discipline. This review sites research
indicating that disproportionally high numbers of black students were removed from class on
discretionary grounds while white students had higher rates of punishment for nondiscretionary
offenses. In addition, Losen indicates that researchers have found no evidence that overrepresentation of
black students in school suspensions is due to higher rates of misbehavior—but rather that numerous
empirical studies have indicated that black students are more likely to be unfairly signaled out for

misbehavior that requires a subjective evaluation (e.g. disrespect). Losen also highlights research that reveals that black students are also more likely to receive harsher punishments for the same behavior as their white peers.

4. **Rocque M, Paternoster R. Understanding the antecedents of the "school-to-jail" link: The relationship between race and school discipline.** *Journal of Criminal Law and Criminology*. **2011; 101(2).**
Rocque et al. analyzed data from 19,645 students in kindergarten through 5th grade as well as data from 990 teachers in a school district in a mid-Atlantic state. The researchers found that students were more likely to get a discipline referral if they were male, in special education, older, less affluent, or African American. In addition they found that African American children receive more disciplinary infractions than children from other racial categories even after controlling for factors such as their grades, attitudes, sex, special education or language program involvement, and conduct in school as perceived by teachers.

5. **Shirley ELM, Cornell DG. The contribution of student perceptions of school climate to understanding the disproportionate punishment of African American students in a middle school.** *School Psychology International.* **2012; 33(2): 115-134.**
Shirley and Cornell analyzed survey data from 400 middle school students in Virginia as well as school discipline data. Compared to Caucasian students, African American students were referred to the office for discipline three times as frequently and received five times as many suspensions. This difference remained significant even after controlling for aggressive attitude.

6. **Skiba RJ, Horner RH, Chung CG, Rausch MK, May SL, Tobin T. Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline.** *School Psychology Review*. **2011; 40(1): 85-107.**
Skiba et al. analyzed data generated by the School-wide Information System, which tracked 2005-2006 data for over 4,000 schools. The researchers selected 436 schools that met their inclusion criteria (which included that the school collected racial/ethnic demographic information). Data indicated that students from African American families were significantly more likely to be referred to the office for problem behavior than their white peers. In addition, African American and Latino students were more likely than white students to receive expulsion or out of school suspension for the same or similar behavior.

7. **Vincent CG, Sprague JR, Tobin TJ. Exclusionary discipline practices across students' racial/ethnic backgrounds and disability status: Findings from the Pacific Northwest.** *Education and Treatment of Children*. **2012; 35(4): 585-601.**
Vincent et al. analyzed 2009-2010 disciplinary data from the State Department of Education from a state in the Pacific Northwest. This sample included 147,850 disciplinary exclusions involving 64,088 unique students. Researchers found that among students with disabilities, AI/AN, Hispanic, and African American students were all overrepresented in exclusionary discipline—with AI/AN students being most severely overrepresented in removal to alternative education. Among students without a disability Hispanic, African American, and AI/AN students were over-represented in discipline involving exclusion from school. White and Asian or Pacific Islander students were underrepresented in exclusionary discipline. African American students with and without disabilities missed significantly more days of school than white students as a result of discipline. They found that students of color were significantly overrepresented in most exclusionary practices and that both race and disability status significantly impacted the length of exclusionary discipline, though these variables explained only a small part of the variance in length of exclusion. Note that the researchers did not control for potential confounding factors.

8. **Washington Appleseed and TeamChild. Reclaiming Students: The Educational & Economic Costs of Exclusionary Discipline in Washington State. 2012. Available from http://media.wix.com/ugd//4569ed_e44ccb42cff21777ea479f4125d347df.pdf. Accessed December 17, 2013.**

Researchers collected qualitative and quantitative data for all of the 295 school districts in Washington state through public records requests, review of current state and district policies, and field interviews with, for example, judges, school administrators, principals, and advocates. Data revealed that American Indian, African American, Hispanic, and NHOPI students are disproportionately represented in exclusionary discipline. Data from 177 school districts indicate that students of color were 1.5 times more likely to be disciplined than their white peers, and that NHOPI, AI/AN, and African Americans were more than twice as likely to be disciplined. Note that, although the researchers may have only reported statistically significant findings, the report does not provide indicators such as p-values or confidence intervals, which would allow the reader to determine statistical significance of the differences.

Evidence relating to how preventing suspensions and expulsions from being an undefined length of time and ensuring educational services for students under disciplinary action may impact racial/ethnic discipline gaps

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Summary of findings

A preliminary review of the literature did not yield any studies directly evaluating the link between policies limiting disciplinary exclusion (e.g. suspension/expulsion) or ensuring academic services and decreasing racial/ethnic disproportionality in student discipline. However, data from Washington state indicate that students of color are more likely to be excluded from school (missing more days of instruction due to discipline) and are also less likely to receive educational services during exclusion than their peers. Therefore limiting the length of suspensions/expulsions and ensuring that excluded students receive educational services would likely have a greater positive impact on students of color, thereby working to decrease discipline gaps.

Annotated references

9. **Washington Appleseed and TeamChild. Reclaiming Students: The Educational & Economic Costs of Exclusionary Discipline in Washington State. 2012. Available from http://media.wix.com/ugd//4569ed_e44ccb42cff21777ea479f4125d347df.pdf. Accessed December 17, 2013.**

Researchers collected qualitative and quantitative data for all of the 295 school districts in Washington state through public records requests, review of current state and district policies, and field interviews with, for example, judges, school administrators, principals, and advocates. Exclusionary discipline led to significant loss of instructional time among Washington students. Some school districts in the state even have school policies that allocate academic penalties for missed school days, even if the absenteeism is a result of suspension. These data also indicated that low-income and students of color were more likely to be excluded from school, suggesting that these populations are more likely to miss school days and lose instructional time as a result of discipline. In addition, researchers found that in the 183 school districts that collected data on this measure, only seven percent of students were reported to have received educational services while excluded from school. The researchers found that data is not being collected commonly on this measure and that in large part, the school districts were not able to provide specific data, or data at all, about the educational services provided to excluded students. For the

districts that did collect this information, data revealed that the school districts providing educational services to excluded students had an average graduation rate 10 percent higher than school districts that did not report providing services. In addition, white students and students from affluent families were more likely to receive educational services during exclusions than students of color or low-income students.

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Evidence relating to how preventing suspensions and expulsions from being an undefined length of time and ensuring educational services for students under disciplinary action may impact educational opportunity gaps

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Summary of findings

Researchers have explored the impacts of missed class days (e.g. from long-term suspension/expulsion) and suspension of educational services on educational outcomes. The evidence indicates that missed class days are strongly associated with poor educational outcomes such as lower test scores and literacy development. In addition, these negative outcomes are more strongly associated with unexcused absences (such as those from suspension) than with excused absences. In addition, evidence indicates that suspended students who receive educational services have better academic outcomes than students who are not provided with these services. These findings indicate that the components of SHB 1680 that prohibit suspensions/expulsions of undefined length and ensure educational services would likely have a positive impact on educational outcomes for students involved in disciplinary actions. A few studies have been listed here as examples of the evidence. These example articles include one in-depth review of the literature as well as studies with strong literature reviews that cite further evidence.

Annotated references

10. Caroll, M. Educating expelled students after No Child Left Behind: Mending an incentives structure that discourages alternative education and reinstatement. *UCLA Law Review.* **2008; 55(6): 1909-1969.**

Carroll conducted a review of the literature on the impacts of exclusionary discipline that suspended access to educational services. The review highlights evidence that denying alternative education to expelled students removes them from supervised school environments and increases the likelihood that they will engage in criminal activity, alcohol and drug use, and high-risk sexual behavior. In addition, the article cites evidence that students denied educational services have difficulty accumulating credits toward graduation and are less likely to earn a high school diploma. A lack of support and educational services during exclusion is also associated with disengagement from school.

11. Gottfried MA. Excused versus unexcused: How student absences in elementary school affect academic achievement. *Educational Evaluation and Policy Analysis.* **2009; 31(9): 392-415.**

Gottfried conducted a cohort study of elementary school students. The data used captures the entire elementary school system within the School District of Philadelphia. Data for the 2000 Census was used for neighborhood characteristics. Gottfried conducted regression modeling, inputting variables such as student demographics, family income, teacher experience, and class size into the model. The research found that absenteeism is a predictor of student performance on standardized tests in reading and math (the Stanford Achievement Test-9th Edition [SAT 9]). The data indicate that a higher number of total days absent from school is related inversely to academic performance. In addition, students with higher numbers of unexcused absences (holding all else constant) perform even lower on the SAT 9s then their counterparts with higher percentages of excused absences. Days missed for out of school suspensions

are classified as unexcused absences. In addition, students with behavioral problems had the largest likelihood of missing school days and of having unexcused absences.

12. Hickman GP, Bartholomew M, Mathwig J, Heinrich RS. Differential developmental pathways of high school dropouts and graduates. *The Journal of Educational Research*, **2008; 102(1): 3-14.**
Hickman et al. conducted a retrospective cohort study with students who started kindergarten between 1990 and 1993 and tracked them over time until they graduated or dropped out of high school. The researchers found that absenteeism was significantly higher for students who dropped out of school than for high school graduates. This trend started in first grade, and then continued through the years becoming even more divergent during middle school. Students in kindergarten through eighth grade who dropped out of school missed an average of 124 school days, equivalent to missing three quarters of the year's instruction. The researchers did not control for potential confounding factors or conduct any modeling in order to determine a more precise role of absenteeism in elevating dropout rates.

13. Johnson JL, Sparks E, Lewis RG, Niedrich K, Hall M, Johnson J. Effective counseling strategies for supporting long-term suspended students. *Professional School Counseling*. **2006; 9(3): 261-264.**
In order to address the risk of students not receiving services during long-term suspension, a program in the North Carolina public school system began providing educational and other supports to suspended students through school counselors. Johnson et al. analyzed the data for 415 students who participated in this program in the Year 1 cohort. The researchers noted significant declines in discipline recidivism rates for long term suspensions from the baseline year before the program was implemented. Researchers also found an increase in reenrollment in school from the baseline year. In addition, results reveal that students were more likely to reenroll in school (i.e. were less likely to drop out of school) if they were placed in an educational setting during suspension or if they had a shorter suspension.

14. Ready DD. Socioeconomic disadvantage, school attendance, and early cognitive development: The Differential effects of school exposure. *Sociology of Education*. **2010; 83(4): 271-286.**
Ready et al. analyzed a sample of national data from the Early Childhood Longitudinal Study, Kindergarten Cohort. Data were collected twice in kindergarten and twice in first grade. The study included data from 13,613 children within 903 schools. The researchers found an inverse relationship between school absences and literacy development among kindergarten and first grade students, even after adjusting for racial/ethnic backgrounds, gender, age, full-day kindergarten attendance, kindergarten repetition, and language and single-parent status. In addition, the negative effects of increased absenteeism were stronger for children with lower socioeconomic status (SES). These findings indicate that students with lower SES are both more likely to miss days of school and also more likely to be negatively impacted by these absences.

Evidence relating to how standardizing definitions for causes of student discipline may impact racial/ethnic discipline gaps

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Summary of findings
A preliminary review of the literature did not yield any studies looking directly at the relationship between standardizing definitions for causes of discretionary disciplinary action and rates of discipline among each racial/ethnic group. However, several recent studies have found that students of color are more likely than their peers to receive **discretionary** discipline and be disciplined for behavior that

requires a more subjective evaluation (e.g. disrespect). At least one study has found that white students are more likely to receive punishment for nondiscretionary offenses. In addition, data indicate that there is great variability between schools in Washington state in how they define misbehavior as well as in the range of methods they used to address student behavior. These findings suggest that standard definitions for causes for disciplinary action have potential to decrease discipline gaps if causes are defined in a way that decreases the subjectivity of discipline. A few articles have been listed here as examples of the evidence.

Annotated references

15. Booker K, Mitchell A. Patterns in recidivism and discretionary placement in disciplinary alternative education: The impact of gender, ethnicity, age, and special education status. *Education and Treatment of Children.* **2011; 34(2): 193-208.**

Booker and Mitchell collected data on 269 students (grades 6-12) in three disciplinary alternative programs in Texas. The researchers found that African American and Hispanic students were significantly more likely than Caucasian students to be placed in disciplinary alternative education for discretionary reasons and were also more likely to return to alternative education within the same school year.

16. Losen DJ. Discipline policies, successful schools, racial justice, and the law. *Family Court Review.* **2013; 51(3): 388-400.**

Losen outlines a review of the literature related to school discipline. This review sites research indicating that disproportionally high numbers of black students were removed from class on discretionary grounds while white students had higher rates of punishment for nondiscretionary offenses. In addition, Losen indicates that research has found no evidence that overrepresentation of black students in school suspensions is due to higher rates of misbehavior—but that numerous empirical studies have indicated that black students are more likely to be disciplined for misbehavior that requires a subjective evaluation (e.g. disrespect). Losen also highlights research that reveals that black students are also more likely to receive harsher punishments for the same behavior as their white peers.

17. Washington Appleseed and TeamChild. Reclaiming Students: The Educational & Economic Costs of Exclusionary Discipline in Washington State. 2012. Available from http://media.wix.com/ugd//4569ed_e44ccb42cff21777ea479f4125d347df.pdf. Accessed December 17, 2013.

Researchers collected qualitative and quantitative data for all of the 295 school districts in Washington state through public records requests, review of current state and district policies, and field interviews with, for example, judges, school administrators, principals, and advocates. Researchers found that there was great variability between schools in how they defined misbehavior as well as in the range of methods they used to address student behavior.

Evidence relating to how discipline data collection/use and expanding data sharing agreements may impact discipline gaps

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Summary of findings

Researchers have found that many of the school districts in Washington state were not able to provide detailed information about discipline, and even fewer schools could provide race and ethnicity information about those incidents. These researchers indicated that this lack of information makes it difficult to see the full picture on what is going on with discipline and academic outcomes in

Washington, thereby making it challenging or impossible to close discipline gaps. The National Education Policy Center recently made recommendations relating to data collection to help work toward achieving effective and equitable learning environments. The Policy Center recommended that schools routinely collect and publicly report data on school disciplinary removal (e.g. incidence data on type of infraction and number of days of instruction missed), including data disaggregated by race/ethnicity, gender, and disability status.

In addition, expanding data sharing agreements with the Department of Social and Health Services and the Administrative Office of the Court may allow researchers to explore the associations between education, discipline, incarceration, and health. Ewert et al. have provided evidence that graduation rate data sets that exclude students who have been arrested lead to an underestimation of dropout rates, particularly among young men of color who are overrepresented in the justice system. They assert that these data sets do not provide an accurate picture of the racial/ethnic gaps in high school completion rates. Ewert et al. found that because school dropout data often do not include inmates, in any year that incarceration rates for students of color increase, it incorrectly appears that dropout rates for students of color have decreased. Data sharing agreements between agencies that work with youth have the potential to help to mitigate these data gaps.

Annotated references

18. Ewert S, Sykes BL, Pettit B. The degree of disadvantage: Incarceration and inequality in education. *The Annals of the American Academy of Political and Social Science*. **2013; 651(1): 24-43.**

Ewert et al. analyzed data from the March CPS (which collects data annually on 50,000 to 60,000 Americans) as well as data from a number of sources that collect information on the penal population. The researchers tracked the school dropout rates and the racial ethnic disparities in dropout rates between 1980 and 2010 and compared the difference in findings if they excluded students who had been arrested versus if they included them. The researchers conclude that graduation rate data sets that exclude students who have been arrested lead to an underestimation of dropout rates, particularly among young men of color who are overrepresented in the justice system. They assert that these data sets, then, do not provide an accurate picture of the gaps in high school completion rates between racial/ethnic groups.

19. Losen D. Discipline policies, successful schools, and racial justice. National Education Policy Center. 2011. Available from http://escholarship.org/uc/item/4q41361g#page-1. Accessed December 18, 2013.

The National Education Policy Center (housed at the University of Colorado at Boulder School of Education) reviewed the literature in relation to racial disparities in school discipline and the impacts of school discipline. Based on the research reviewed, the authors made several recommendations to help create more effective and equitable learning environments. Two of these recommendations pertained to data collection. They found that, nationally, existing discipline data is limited in important ways and is inconsistently collected. The authors recommended that schools routinely collect and publicly report data on school disciplinary removal (e.g. incidence data on type of infraction and number of days of instruction missed), including data disaggregated by race/ethnicity, gender, and disability status. A second recommendation was for researchers to investigate connections between school discipline data and outcomes (e.g. graduation rates, teacher effectiveness, and college and career readiness).

20. Washington Appleseed and TeamChild. Reclaiming Students: The Educational & Economic Costs of Exclusionary Discipline in Washington State. 2012. Available from

http://media.wix.com/ugd//4569ed_e44ccb42cff21777ea479f4125d347df.pdf. Accessed December 17, 2013.
Researchers collected qualitative and quantitative data for all of the 295 school districts in Washington state through public records requests, review of current state and district policies, and field interviews with, for example, judges, school administrators, principals, and advocates. Researchers found that of the 295 school districts in Washington, only 183 school districts could provide detailed information about discipline, only 177 could provide race and ethnicity information about those incidents. The researchers indicated that this lack of information makes it difficult to see the full picture of what is happening with discipline and academic outcomes in Washington, thereby making it more difficult to make improvements.

Evidence relating to how racial/ethnic discipline gaps may impact educational opportunity gaps

Summary of findings

A very strong body of evidence indicates that certain disciplinary actions (such as suspension and expulsion) are linked to poor academic outcomes (e.g. high dropout rates) even after controlling for potential confounding factors such as behavior, demographics, family income, and class size. Data from Washington state indicate that schools with higher exclusions (e.g. expulsions and suspensions) have higher dropout rates and lower graduation rates than schools with fewer exclusions. These data also indicated that low-income and students of color were more likely to be excluded from school, suggesting that the potential negative impacts of exclusion are being disproportionally felt by these populations. In addition, educational stakeholders in Washington expressed concerns that exclusions can lead to student disengagement from school, low expectations, and alienation. Several articles are listed below as examples of the evidence available. Many of these articles cite additional research supporting the relationship between discipline and academic outcomes.

Annotated references

21. **Fabelo T. Breaking Schools' Rules: A Statewide Study of How School Discipline Relates to Students' Success and Juvenile Justice Involvement. 2011. Available from http://csgjusticecenter.org/wp-content/uploads/2012/08/Breaking_Schools_Rules_Report_Final.pdf. Accessed December 9, 2013.**
Researchers examined millions of school and juvenile justice records in Texas for public school seventh graders. They found that African American students (particularly male students) and students with certain educational disabilities were disproportionately being removed from the classroom for discipline. After controlling for 83 potential confounding factors, researchers still found this race-based disparity. In addition, they found that students who were suspended and/or expelled, were more likely to drop out or be held back a grade than other students. This trend was stronger for students who were repeatedly disciplined. Researchers found that a student who was suspended or expelled for a discretionary violation was twice as likely to repeat his or her grade as a student with the same characteristics, attending a similar school, who had not been suspended or expelled. In addition, students who were suspended or expelled were more likely to be involved in the juvenile justice system the following year.

22. **Iachini AL, Buettner C, Anderson-Butcher D, Reno R. Exploring students' perceptions of academic disengagement and reengagement in a dropout recovery charter school setting.** *Children & Schools*. **2013; 35(2): 113-120.**

Iachini et al. collected qualitative data through focus groups with students using a semi-structured guide. Researchers recruited study participants from a dropout recovery charter school. Thirteen students enrolled in the study. One theme that researchers coded for was 'reasons that the students attributed to their lack of success in their previous school.' Researchers found that a majority of the students (n=10) indicated that behavioral and discipline challenges contributed to their lack of success. Students made comments that expressed their struggles with how many days of school they missed for frequently getting 'kicked-out' of school.

23. Lee T, Cornell D, Fan X, Gregory, A. High suspension schools and dropout rates for black and white students. *Education and Treatment of Children*. **2011; 34(2): 167-192.**
Lee et al. examined the association between school suspension and dropout rates in a statewide sample of public high schools in Virginia. The unit of analysis was the school unit, so this research did not link individual student suspensions to their risk of dropping out. Researchers controlled for a number of potential confounding factors including: school racial composition, percentage of students eligible for free and reduced meals, schools resources, prevalence of aggressive attitudes, and rejection of school rules among students. Lee et al. found that schools with high suspension rates tended to have high dropout rates. This trend was true for suspension rates among both white and black students, though school suspension rates were more closely associated with dropout rates for white students than with dropout rates for black students.

24. Suh S, Suh J. Risk factors and levels of risk for high school dropouts. *Professional School Counseling*. **2007; 10(3): 297-306.**
Researchers analyzed data from the National Longitudinal Survey of Youth, a national survey of youth 12 to 16 years of age who were enrolled in high school or working toward a Graduate Equivalency Diploma (GED) in 1996. Youth were interviewed annually since 1997. Researchers found that low SES, low grade point average (GPA), and a prior suspension all increased a student's risk of dropping-out of school. When considering the relationship between prior suspension and risk of dropping out, the researchers did not have a control group in order to determine if the suspension itself was associated with dropping out or if the behavior that led to the suspension was associated with dropping out. However, these findings do indicate that suspension was associated with dropping out even among students who did not have low GPAs.

25. Washington Appleseed and TeamChild. Reclaiming Students: The Educational & Economic Costs of Exclusionary Discipline in Washington State. 2012. Available from http://media.wix.com/ugd//4569ed_e44ccb42cff21777ea479f4125d347df.pdf. Accessed December 17, 2013.
Researchers collected qualitative and quantitative data for all of the 295 school districts in Washington state through public records requests, review of current state and district policies, and field interviews with, for example, judges, school administrators, principals, and advocates. Schools with higher exclusions (e.g. expulsions and suspensions) has higher dropout rates and lower graduation rates than schools with fewer exclusions. For example districts with more than 100 incidents per 1,000 students had an average graduation rate 24% lower than school districts with fewer than 25 discipline incidents per 1,000 students. These data also indicated that low-income and students of color were more likely to be excluded from school, suggesting that the potential negative impacts of exclusion are being disproportionally felt by these populations. In addition, educational stakeholders expressed concerns that exclusions can lead to student disengagement from school, low expectations, and alienation.

Summary of findings

The concept of the 'school-to-prison pipeline' (a funneling of school children out of school and into the juvenile and criminal justice systems) is becoming increasingly more researched. A strong body of evidence indicates that youth who have received school discipline are more likely to receive discipline again in the future; and that there is also a relationship between school discipline and later involvement in the justice system. These trends remain even after controlling for potential confounding factors such as student behavior, family income, and neighborhood characteristics. A few studies on this topic have been included here as examples of the evidence. These example articles include one review of the literature and articles with literature reviews where further evidence of the school-to-prison pipeline can be found.

Annotated references

26. Booker K, Mitchell A. Patterns in recidivism and discretionary placement in disciplinary alternative education: The impact of gender, ethnicity, age, and special education status. *Education and Treatment of Children.* 2011; 34(2): 193-208.

Booker and Mitchel collected data on 269 students (grades 6-12) in three disciplinary alternative programs in Texas. The researchers found that African American and Hispanic students were significantly more likely than Caucasian students to be placed in disciplinary alternative education for discretionary reasons and were also more likely to return within the same school year.

27. Caroll, M. Educating expelled students after No Child Left Behind: Mending an incentives structure that discourages alternative education and reinstatement. *UCLA Law Review*. 2008; 55(6): 1909-1969.

Carroll conducted a review of the literature on the impacts of exclusionary discipline that suspended access to educational services. The review highlights evidence that denying alternative education to expelled students removes them from supervised school environments and increases the likelihood that they will engage in criminal activity, alcohol and drug use, and high-risk sexual behavior. In addition, the article cites evidence that students denied educational services have difficulty accumulating credits toward graduation and are less likely to earn a high school diploma. A lack of support and educational services during exclusion is also associated with disengagement from school.

28. Fabelo, Tony; et al. Breaking Schools' Rules: A Statewide Study of How School Discipline Relates to Students' Success and Juvenile Justice Involvement. July 2011. Available from http://csgjusticecenter.org/wp-content/uploads/2012/08/Breaking_Schools_Rules_Report_Final.pdf.

Researchers examined millions of school and juvenile justice records in Texas for public school seventh graders. They found that African-American students (particularly male students) and students with certain educational disabilities were disproportionately more likely to be removed from the classroom for discipline. After controlling for 83 potential confounding factors, researchers still found this race-based disparity. In addition, they found that students who were suspended and/or expelled were more likely to drop out or be held back a grade than other students. This trend was stronger for students who were repeatedly disciplined. Researchers found that a student who was suspended or expelled for a discretionary violation was twice as likely to repeat his or her grade as a student with the same characteristics, attending a similar school, who had not been suspended or expelled. In addition, students

who were suspended or expelled were more likely to be involved in the juvenile justice system the following year.

29. Nicholson-Crotty S, Birchmeier Z, Valentine D. Exploring the impact of school discipline on racial disproportion in the juvenile justice system. *Social Science Quarterly*. **2009; 90(4): 1003-1018.**

The researchers analyzed data from the education and justice systems in 53 counties in Missouri. They analyzed the data at the jurisdictional level in order to understand the relationship between racial disproportion in school discipline and disproportionality in the justice system. The researchers found that racial disproportion in out-of-school suspensions (after controlling for differences in delinquent behavior, poverty, urbanization, and other factors) is strongly associated with disproportion in juvenile court referrals.

30. Theriot MT, Craun SW, Dupper DR. Multilevel evaluation of factors predicting school exclusion among middle and high school students. *Children and Youth Services Review*. **2010; 32(1): 13-19.**

Theriot et al. used data from one medium-sized school district in the southeastern United States. The researchers analyzed data for all middle and high school students with at least one reported disciplinary incident during the 2004–2005 school year (N=9706). They found that there is a positive relationship between the number of previous out-of-school suspensions and the last infraction resulting in school exclusion (i.e. suspension or expulsion).

Evidence relating to how involvement in the justice system impacts educational attainment, income, and health

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Summary of findings

There is very strong evidence indicating that involvement in the justice system is linked to poor outcomes in education, income, and health. Researchers have found, for example, that incarceration is associated with barriers to accessing a service provider, depression, lower educational attainment, lower income, higher rates of unemployment, involvement in jobs with high risk of injury or exposure to hazardous working conditions, divorce, and separation of families. In addition, research has found that negative health outcomes are also experienced by the children of incarcerated parents such as increased Body Mass Index, depression, delinquency, and antisocial behavior. A few studies on this topic have been included here as examples of the evidence. These example articles include both a meta-analysis (including 40 studies) and a comprehensive review of the literature that present evidence on the negative relationships between incarceration and education, income, and health.

Annotated references

31. Ewert S, Sykes BL, Pettit B. The degree of disadvantage: Incarceration and inequality in education. *The Annals of the American Academy of Political and Social Science*. **2013; 651(1): 24-43.**

Ewert et al. analyzed data from the March CPS (which collects data annually on 50,000 to 60,000 Americans) as well as data from a number of sources that collect information on the penal population. The researchers found a strong association between incarceration and lower educational attainment. For example, by 2010 over 50 percent of white and over 60 percent of black male inmates between the ages of 20 and 34 had not received a high school diploma or GED, rates much higher than those for the non-institutionalized male population. The analysis did not indicate the directionality of this association.

32. London A, Myers N. Race, incarceration, and health. *Research on Aging*. **2006; 28(3): 409-422.**
London and Myers conducted a review of the literature around health and other outcomes for incarcerated individuals. They highlighted research that indicates that black Americans have worse health outcomes than other racial/ethnic groups, and also are disproportionately represented in the justice system. The authors also outlined data indicating the high rates of injury in jails and prison as well as the high rates of communicable disease among incarcerated and formerly incarcerated individuals. In addition, they highlight research that indicates that incarceration is associated with lower educational attainment, lower income, higher rates of unemployment, and higher involvement in jobs with high risk of injury or exposure to hazardous working conditions. Evidence also indicates that incarceration is associated with divorce and separation of families.

33. Murray J, Farrington DP, Sekol I. Children's antisocial behavior, mental health, drug use, and educational performance after parental incarceration: A systematic review and meta-analysis. *Psychological Bulletin*. **2012; 138(2): 175-210.**
Murray et al. conducted a systematic review and meta-analysis of the literature on parental incarceration and impacts on children's later mental, emotional, and social health. They identified 40 studies that met their strict inclusion criteria. The researchers pooled the odds ratios across all samples in order to determine if children with incarcerated parents had a greater risk of each outcome than children in the control group who did not have an incarnated parent or parents. These pooled odds ratios indicated that parental incarceration was significantly associated with antisocial behavior among their children even after controlling for covariates. In some subpopulations parental incarceration was significantly associated with children's poor academic performance, poor mental health, and drug use, but this association was not significant for every subpopulation and did not always remain significant after controlling for covariates.

34. Roettger ME, Boardman JD. Parental incarceration and gender-based risks for increased body mass index: Evidence from the National Longitudinal Study of Adolescent Health in the United States. *American Journal of Epidemiology*. **2012; 175(7): 636-644.**
Roettger et al. analyzed data from the National Longitudinal Study of Adolescent Health (1994–2008). The dataset included 15,558 individuals who had completed interviews for all waves of the study, including 1,205 males and 1,472 females who reported that their biologic mother or father was incarcerated. The researchers found that females who had experienced a parent being incarcerated saw greater increase in Body Mass Index (BMI) overtime for than did females whose parents had not been incarcerated. This trend remained significant even after controlling for stressful life events, internalizing behaviors, and a range of individual, familial, and neighborhood characteristics.

35. Swisher RR, Roettger ME. Father's incarceration and youth delinquency and depression: Examining differences by race and ethnicity. *Journal of Research on Adolescence*. **2012; 22(4): 597-603.**
Swisher and Roettger analyzed data from the in-home portion of the National Longitudinal Study of Adolescent Health. Due to insufficient sample size for other racial/ethnic groups, only white, black, and Hispanic respondents were included in this study. The researchers found that among all racial/ethnic groups father's incarceration is associated with increased depression and delinquency for the children, even after controlling for other variables such as demographics and family background measures. In addition, when considering these results by race/ethnicity, the data indicate that among Hispanic respondents, having their father incarcerated is associated with a higher propensity for delinquency than among white and black respondents.

36. Turney K, Wildeman C, Schnittker J. As fathers and felons: Explaining the effects of current and recent incarceration on major depression. *Journal of Health and Social Behavior*. **2012; 53(4): 465-81.**

Turney et al. analyzed data from the longitudinal Fragile Families and Child Wellbeing study. The researchers found that currently and recently incarcerated fathers are more likely to report a change in employment status, separation from a child's mother, a change in relationship quality, and depression. The association between incarceration and depression remained significant even after controlling for variables such as demographic characteristics and history of depression.

37. Wu E, El-Bassel N, Gilbert L, Hess L, Lee HN, Rowell TL. Prior incarceration and barriers to receipt of services among entrants to alternative to incarceration programs: A gender-based disparity. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. **2012; 89(2): 384-95.**

Wu et al. collected data from a random sample of adults (N=322; 83 women and 239 men) entering alternative to incarceration programs in New York City. Researchers collected data though structured interviews including information on sociodemographics, substance use, prior incarcerations, and barriers that had prevented a participant from visiting or returning to a service provider. Less than half of the participants had earned a high school diploma or GED. When analyzing collapsed data for male and female participants, they found that a greater number of prior incarcerations were significantly associated with a greater number of barriers that prevented accessing a service provider. When they analyzed the data disaggregated by sex and controlling for sociodemographic and substance use indicators, researchers found that the relationship between a greater number of prior incarcerations and greater number of service barriers experienced remained significant only for men.

> ## Evidence relating to how discipline gaps impact student perceptions of discrimination

Summary of findings

A preliminary review of the literature yielded three studies specifically analyzing the relationship between school discipline and students feeling discriminated against. These studies indicate that at least some students perceive discriminatory practices in student discipline. One study conducted in Canada found that black students were significantly more likely than other students to indicate that students from their racial/ethnic group are treated more poorly by teachers and are more likely to face discrimination in school suspension practices. The second study found that while only a small number of students expressed personally feeling discriminated against by discipline practices, a larger number of students used racially coded language to describe students that are more likely to be disciplined. For the third study African American students identified discrimination in discipline by teachers as one type of discrimination they faced.

Annotated references

38. Bracy NL. Student perceptions of high-security school environments. *Youth & Society*. **201; 43(1): 365-395.**

Bracy collected data through interviews with administrators, disciplinary staff, teachers, students, and parents as well as through direct observations in two Mid-Atlantic high-security public high schools. The researchers found that while students acknowledged differential punishment for students with athlete status, very few students explicitly reported feeling that students are treated differently on the basis of race. Researchers did find, though, that some white students reported reverse racism from

teachers and administrators. In addition, some students who denied differential treatment on the basis of race used racially coded language that suggested that this differential treatment may be occurring, but that the students did not perceive it because of their own racial stereotypes. For example, students explained that students that look, act, or dress a certain way (using language commonly used to symbolize African Americans) are more likely to receive discipline. Although the researchers found that these claims were relatively rare, a number of students of color did perceive that they were more likely to be disciplined than their white peers.

39. Ruck MD, Wortley S. Racial and ethnic minority high school students' perceptions of school disciplinary practices: A look at some Canadian findings. *Journal of Youth and Adolescence*. **2002; 31:185-195.**

Ruck et al. examined data from students from Canadian schools and found that: black students were significantly more likely than other students to perceive that teachers treat students from their racial group 'worse' or 'much worse' than students from other racial groups; to perceive they were more likely to face discrimination in school suspension practices than other racial groups; and to perceive that they were more likely to have the police called on them and be treated worse by the police than other racial groups. South Asian students were also more likely to have these perceptions than were white students. Also, in general, students of lower SES were more likely to perceive that students from their racial/ethnic groups would be treated worse by the police at school than higher SES respondents.

40. Thompson A, Gregory A. Examining the influence of perceived discrimination during African American adolescents' early years of high school. *Education and Urban Society*. **2011; 43(1): 3-25.**

This study followed a sample of 46 low-achieving African American students through the first two years of high school. Data was collected using surveys administered throughout the two years. Findings indicated that, on average, students who perceived discrimination were less likely to report being engaged in their classes. One of the types of discrimination reported by students was discrimination in discipline by teachers.

Evidence relating to how perceptions of discrimination impact health

Summary of findings

A very large body of evidence indicates that experiencing racial discrimination is associated with poor health outcomes such as depression, low self-esteem, adolescent behavior programs, tobacco and alcohol use, and adverse birth outcomes. Over a hundred studies have analyzed this connection and found an association for both youth and adults. The evidence for this connection is very strong. The two studies that are listed here are meta-analyses, one of which analyzed 40 articles and the other which analyzed 121 articles.

Annotated references

41. Pachter LM, Coll CG. Racism and child health: A review of the literature and future directions. *Journal of Developmental and Behavioral Pediatrics*. **2009; 30(3): 255-63.**

Pachter and Coll conducted a meta-analysis of articles addressing the relationship between racial discrimination and health outcomes. The researchers identified forty articles that met their inclusion criteria. Twenty-six articles reported on the association between racism and behavioral/mental health, and all but one of these studies found that reported discrimination (and expectations of discrimination) were associated with negative health indicators (e.g. depression, low self-esteem/worth, and anxiety).

Only one of these studies showed no effect of discrimination on these outcomes. Studies also found associations between discrimination and anger, adolescent behavior problems, alcohol and tobacco use, and adverse birth outcomes.

42. Priest N, Paradies Y, Trenerry B, Truong M, Karlsen S, Kelly Y. Social determinants of child health. A systematic review of studies examining the relationship between reported racism and health and wellbeing for children and young people. *Social Science & Medicine*. **2013; 95: 115-127.**

Priest et al. reviewed 121 studies that analyzed the relationship between perceived racial discrimination of youth 0-18 years of age and health. The review shows that many of these studies found significant results indicating that discrimination was correlated with a number of negative health outcomes (e.g. anxiety, depression, negative self-esteem, aggression, internalizing, alcohol use, drug use, smoking, and negative birth outcomes). Although a number of these studies did find that discrimination was associated with positive health outcomes such as psychological adaptation and resilience, or found no association between a health outcome and discrimination—a majority of the studies found either that discrimination was positively correlated with poor health outcomes or that it was inversely correlated with positive health outcomes. Of the 96 studies that analyzed mental health, 76% of them found that discrimination was significantly associated with negative mental health outcomes.

Evidence relating to how perceptions of discrimination impact educational opportunity gaps

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Summary of findings

The evidence indicating that experiencing discrimination can have negative impacts on education is strong. The literature suggests that perceptions of discrimination are associated with, for example, decreased school engagement, more negative school behaviors, greater fear of being teased for high academic performance, and an increased likelihood of dropping out of school. A few studies on this topic have been included here as examples of the evidence. These example articles also include literature reviews where further evidence can be found.

Annotated references

43. Dotterer AM, McHale SM, Crouter AC. Sociocultural factors and school engagement among African American youth: The roles of racial discrimination, racial socialization, and ethnic identity. *Applied Developmental Science*, **2009; 13(2): 61-73.**

Dotterer et al. analyzed data collected from home interviews of youth, a father, and a mother from 86 two-parent African American families. Twenty-nine percent of adolescents reported that their peers and teacher exhibited discriminatory beliefs toward African Americans in general while 60 percent of youth reported that they had personally experienced discrimination from peers and teachers at some point. Researchers analyzed three components of school engagement (school self-esteem [e.g. feeling proud of grades], school bonding [e.g. feeling a sense of belonging in school], and GPA). Results showed that youth feelings that their peers and teacher exhibited discriminatory beliefs toward African Americans in general were significantly and negatively related to two indicators of school engagement (school self-esteem, and to school bonding) but unrelated to GPA.

44. Martinez CR, DeGarmo DS, Eddy JM. Promoting academic success among Latino youths. *Hispanic Journal of Behavioral Sciences*. **2004; 26(2): 128-151.**

Martinez et al. analyzed data from the Oregon Latino Youth Survey for 564 Latino and non-Latino students and parents. Researchers found that greater institutional barriers (measured by discriminatory experiences, school dissatisfaction, and unwelcoming experiences) significantly predicted both lower GPA and greater likelihood of dropping out of school.

45. Smalls C, White R, Chavous T, Sellers R. Racial ideological beliefs and racial discrimination experiences as predictors of academic engagement Among African American adolescents. *Journal of Black Psychology*. **2007; 33(3): 299-330.**

Smalls et al. explore a number of associations including the relationship between experiencing racial discrimination and academic engagement outcomes among 390 self-identified African American adolescents in Grades 7 through 10. Researchers administered surveys to the youth. Participants reporting more racial discrimination showed lower school engagement, lower persistence in the face of academic difficulty, greater fear of being teased for high academic performance, and more negative school behaviors.

46. Thompson A, Gregory A. Examining the influence of perceived discrimination during African American adolescents' early years of high school. Education and Urban Society. 2011; 43(1): 3-25.

This study followed a sample of 46 low-achieving African American students through the first two years of high school. Data was collected using surveys administered throughout the two years and indicated that, on average, students who perceived discrimination were less likely to report being engaged in their classes. One of the types of discrimination reported by students was discrimination in discipline by teachers.

Part II: Educator Cultural Competence

Evidence relating to how cultural competency training for educators impacts educational opportunity gaps

Summary of findings
A preliminary review of the literature yielded one study that analyzed the direct link between cultural competency training and student performance. This study found a positive correlation between an intervention that included cultural competence training and student engagement and test scores. This intervention improved test scores across the board, and narrowed the test score performance gap between white students and students from other racial/ethnic groups in fourth grade, but increased the test score performance gap for third graders.

Annotated references
47. Lee O, Deaktor RA, Hart JE, Cuevas P, Enders C. An instructional intervention's impact on the science and literacy achievement of culturally and linguistically diverse elementary students. *Journal of Research in Science Teaching*. **2005; 42 (8): 857-887.**

Lee et al. analyzed data on the impact of an instructional intervention to promote educational equity in science and literacy for culturally and linguistically diverse elementary students. The intervention included both teaching materials and teacher workshops that covered ways to incorporate English language and literacy development and students' home languages and cultures into science instruction. The research involved 1,523 third and fourth grade students in a large urban school district. Researchers found statistically significant increases on all measures of science and literacy between pre- and

posttests for both third and fourth graders. This intervention improved test scores across the board and also narrowed the test-score performance gap between white students and students from other racial/ethnic groups in fourth grade. While data for third grade also indicated improved test scores for students following the intervention, white students saw larger improvements than their peers from other racial/ethnic groups, thereby increasing the performance gap for this grade level.

Evidence relating to how cultural competency training impacts cultural competence among educators

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Summary of findings
A growing body of literature provides evidence of a positive correlation between cultural competency training for teachers and school administrators and progress toward educators' cultural competence as evidenced through indicators such as: increased cultural sensitivity, increased comfort working with diverse student populations, improved knowledge of how to address diverse student needs, and greater willingness to work with diverse communities. It is important to note, however, that though evidence-based trainings in cultural competency do exist, studies have found that some trainings have not been well rated by educators or have not shown evidence of efficacy. Although a number of studies exist supporting the relationship between training and progress towards cultural competence, none of the studies found in this preliminary literature review have employed rigorous study techniques involving control groups, and many of the identified studies analyzed only teacher perceptions of their growth following training.

Annotated references
48. Farr B, Sexton U, Puckett C, Pereira-León, Weissman M. Study of availability and effectiveness of cultural competency training for teachers in California: Final report. 2005.
The California state legislature required the Commission on Teacher Credentialing and the State Department of Education to contract with an independent evaluator to study the availability and effectiveness of cultural competency training for teachers and administrators in a sample of ten school sites across the state. Researchers analyzed the efficacy of cultural competency training using qualitative data collected through focus groups and interviews with school administrators and teachers. The report indicates that in general school administrators expressed that trainings on cultural competency have been effective. In contrast teachers indicated that some cultural competency trainings are effective, useful, and relevant while they found other trainings to be redundant, too theoretical, impractical, or irrelevant. A survey of 64 teachers found that on average teachers felt that the cultural competency training that they had received was educational, had changed their classroom practices, and that they had seen improvement in their student learning because of changes that they had made. Note that there was a very low survey response rate of 25%.

49. Fitchett PG, Starker TV, Salyers B. Examining culturally responsive teaching self-efficacy in a preservice social studies education course. *Urban Education*. 2012; 47(3): 585-611.
Fitchett et al. used a convenience sample—a class of 20 students in a middle/secondary social studies methods course at a large university in the southeast. Researchers used the Culturally Responsive Teaching Self-Efficacy Scale in order to asses each preservice teachers' efficacy to use culturally appropriate teaching both before and after the course. Researchers found that preservice teachers that were exposed to an in-depth culturally responsive teaching model for social studies were statistically significantly more confident in their ability to use culturally relevant practices, more willing to work with diverse communities, and more effective in teaching multicultural social studies content.

50. Hansen-Thomas H, Casey PPJ, Grosso L. Multiplying the effect of professional development: Teachers training teachers. *Tesol Journal.* **2013; 4(1): 129-150.**

Hansen-Thomas et al. collected qualitative data from nine practicing teachers in Texas who took graduate courses and then, in turn, provided professional development to other teachers in their districts. Data were collected through focus groups; interviews; online reflections and assignments; and teacher and student surveys on multicultural competency, second language acquisition and English as a second language (ESL) awareness. The researchers concluded that these nine teachers expressed improved cultural sensitivity, a greater awareness of ELLs' needs, as well as higher confidence in teaching diverse students. The qualitative data also indicated these participants felt that they were then able to transfer what they learned from their graduate courses to their peers through the professional development training sessions.

51. Keengwe J. Fostering cross cultural competence in preservice teachers through multicultural education experiences. *Early Childhood Education Journal.* **2010; 38(3): 197-204.**

Keengwe analyzed qualitative data collected from a written survey of university students in the Midwest. These students were preservice teachers who had just completed a semester long course on the relationship between educational practices and the social-cultural patterns related to race, ethnicity, culture, class, gender, sexual orientation, language, etc. The course included a number of components including a field trip to a culturally diverse school setting, conversations with an ELL peer, and reflection papers. Researchers found a theme that the students had very limited understanding and knowledge of other cultures going into the course, and that 100 percent of the students who completed the survey made comments indicating that they had made steps toward cultural awareness by the end of the semester.

> ## Evidence in relation to how cultural competence of educators impacts educational opportunity gaps

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Summary of findings

A large body of literature has developed over the past several decades highlighting the positive impacts of cultural competent or relevant teaching on student academic experiences and performance (e.g. engagement and test scores). This relationship is most evident for students with cultural norms outside those of the majority culture, or those who are English language learners. Although a preliminary review of the literature yielded no studies with the rigor of randomized-controlled trials (possibly due to logistical or ethical concerns), the high volume of recent peer-reviewed (qualitative and quantitative) studies supporting the positive correlation between cultural relevant education and positive academic outcomes provide a strong evidence base for the validity of this relationship. A few studies on this topic have been included here as examples of the evidence. These example articles include one review of the literature and one meta-analysis where further evidence of the positive academic results of cultural relevant teaching can be found.

Annotated references

52. Boutte G, Kelly-Jackson C, Johnson G. Culturally relevant teaching in science classrooms: Addressing academic achievement, cultural competence, and critical consciousness. *International Journal of Multicultural Education.* **2010; 12(2).**

Boutte et al. reviewed the literature on culturally relevant teaching in science, and highlighted some select examples of classroom lessons that attempted to engage the students through culturally relevant

approaches. The researchers indicate that this approach improved student engagement in the lessons and, in the case of one lesson, improved student test scores for the chapter over the average scores from other chapters. These examples provide important anecdotal insights from teachers on student engagement resulting from culturally relevant lesson plans, but do not present data analyzed for statistical significance.

53. Colvin J, Tobler N. Cultural speak: Culturally relevant pedagogy and experiential learning in a public speaking classroom. *Journal of Experiential Education*. **2013; 36(3): 233-246.**
Colvin et al. conducted qualitative research exploring the experiences of 18 Latino students taking a semester-long service-learning public speaking course at a large public university in the United States. This course was open to Latino/Spanish-speaking students in order to explore the effectiveness of a) service-learning in a community that students identify with and b) culturally relevant pedagogy. Note that these students were not randomly selected, but rather self-selected. The instructor self-identified as a person of color, and though he was not Latino he associated closely with the Latino community and spoke fluent Spanish. University students worked with K-12 students in schools with a high percentage of Latino students, giving speeches and providing mentorship. This created an environment where the college students had both a professor and mentees with whom they could relate to culturally. Researchers analyzed student journals and reflection papers and identified two major themes: 1) the effectiveness of the culturally relevant pedagogy and 2) the effectiveness of the service-learning component.

54. Garcia O, Woodley HH, Flores N, Chu H. Latino emergent bilingual youth in high schools: Transcaring strategies for academic success. *Urban Education.* **2013; 48(6): 798-827.**
Garcia et al. conducted mixed-methods research in seven New York City public high schools. The researchers selected schools that had a high Latino graduation rate, a higher than city-average Latino population, and a higher than city-average emergent bilingual population. They collected data through direct observations and interviews with principals and key personnel. They found that these schools with high Latino graduation rates had some common traits. These schools extended the concepts of native language, the inclusion of native cultures and histories, traditional school structures and assessment practices, and 'transcaring' (caring that builds a common collaborative space that transcends linguistic and cultural differences between schools and homes). The researchers concluded that the teachers in the effective schools did not aim to move students toward an American acculturation or toward a Latin American static identity, but rather toward a "transculturación" (a third space existing of a combination of these). Note that this study did not include a control group.

55. Laughter JC, Adams AD. Culturally relevant science teaching in middle school. *Urban Education*. **2012; 47(6): 1106-1134.**
Researchers tracked the student engagement and performance in five middle school science classes (all taught by the same teacher [Adams]) in a mid-sized Southeastern city in the United States. Adams taught a lesson around a science fiction book that addresses social justice (Derrick Bell's The Space Traders). Adams encouraged conversations derived from the students own cultural perspectives, critical thinking, and open dialogue. Data analysis consisted of review of teacher lesson plans and notes, student online discussions, student written questions, and qualitative interviews with the teacher. Laugher and Adams concluded that the students showed academic success in that they presented critical thinking, application of the story line to current events and their own lives, and actively participated in class. It is important to note that this was only an observation of one teacher applying her idea of culturally relevant teaching, and the evidence of academic success is purely qualitative. In addition the second author is also the teacher who taught the curriculum being observed.

56. Lewis JL, Ream RK, Bocian KM, Cardullo RA, Hammond KA, Fast LA. Con Carino: Teacher caring, math self-efficacy, and math achievement among Hispanic English learners. *Teachers College Record.* **2012; 114(7): 2.**

Researchers used longitudinal survey and academic performance data collected in a Southern California school district that included a sample of 1,456 students. They analyzed the data to investigate Hispanic elementary student perceptions of teacher caring in relation to student math confidence and test scores. Teacher caring is defined as the ability to empathize with the student and also their ability to communicate that caring to their students. Researchers found that caring teachers bolster student self-efficacy in math, which in turn leads to improved math test scores. In addition, they found that this positive impact was greatest among Hispanic English learners, whose overall math performance was lowest among the study participants, thereby shrinking the gap in test scores.

57. Salazar MC. A Humanizing pedagogy: Reinventing the principles and practice of education as a journey toward liberation. *Review of Research in Education.* **2013; 37(1): 121-148.**

Salazar provides an extensive review of the literature on humanizing pedagogy (an approach that focuses on the human rather than using a one-size-fits all paradigm) and concludes that educators should enact humanizing pedagogy that is grounded in theory, practice, and shaped by students' and teachers' lives. After reviewing the literature, Salazar concluded that culturally appropriate educating will help mitigate student reactions to suppression of their language and culture, such as disruptive behavior or disengaging.

58. Warikoo N, Carter P. Cultural explanations for racial and ethnic stratification in academic achievement: A Call for a New and Improved Theory. *Review of Educational Research.* **2009; 79(1): 366-394.**

Warikoo and Carter conducted an extensive meta-analysis of cultural explanations for ethno-racial differences in K–12 schooling and academic performance. The researchers highlight the vast complexities of the interplay between culture and academic performance and the tendency in research to oversimplify these webs of interaction. The researchers cite a number of studies that indicate that high level training and cultural sensitivity among teachers, programs that foster cultural and ethnic pride, and dual-language bilingual programs are associated with positive academic results.

Part III: Instructing English Language Learners

> **Evidence for how scholarship incentives impact rates of teachers seeking endorsements or trainings**

Summary of findings

A small body of empirical evidence indicates that scholarship incentive programs can be effective in encouraging teachers to seek training in specific subjects or to work in specific school districts. This preliminary review identified two strong articles on this topic—one of which provides a review of the evidence on the impact of scholarship incentive programs.

Annotated References

59. Liou PY, Desjardins CD, Lawrenz F. Influence of scholarships on STEM Teachers: Cluster analysis and characteristics. *School Science and Mathematics.* **2010; 110(3): 128-143.**

Liou et al. analyzed data from 304 former and current Noyce scholarship recipients who responded to the Noyce Scholarship Program Evaluation Scholar Survey. The Nocye scholarship is a national

scholarship that subsidizes the cost of the recipients' teacher education program and science, technology, engineering, and mathematic (STEM) trainings, but requires a two-year or more commitment to teach in a high-needs school or district. The researchers analyzed if the scholarship program incentivized people to become teachers and to teach in high-need schools. They found that of the 304 recipients, 71 of the teachers indicated that they may not have entered the field if they had not had the scholarship. Of the 304 respondents 180 of them indicated that they may not have gone to teach in a high-needs school if they had not received scholarship money to do so. The researchers also found that while 47% of the white recipients indicated that they would have become a teacher without the scholarship but that they did not know if they would be teaching in a high-needs school, 47% of recipients of color indicated that they would have become a teacher **and** gone on to teaching in a high-needs school even without the scholarship.

60. Kolbe T, Strunk KO. Economic incentives as a strategy for responding to teacher staffing problems: A typology of policies and practices. *Educational Administration Quarterly*. 2012; 48(5): 779-813.

Kolbe and Strunk conducted a national scan of economic incentive policies in place between 2000 and 2010. They defined economic incentives as including both monetary and nonmonetary rewards that are used to increase the supply of qualified teachers and attract, retain, or distribute teachers to areas where they are needed. Scholarships for trainings and education were included in this definition. They reviewed scholarly literature, government documents, reports, and briefings. Most of the article is dedicated to outlining the current incentive policies and programs in place nationally and the stated intentions of these programs. The researchers did include references to a number of studies considering the effect of these incentives though. They concluded that there is limited (and sometimes confounding) research into the effectiveness (and cost-effectiveness) of economic incentives. However, they do cite several studies that have shown economic incentives (including scholarship programs) sometimes as low as $1,800, can motive educators to choose or remain in high-need schools or subject shortage areas.

> **Evidence for how educator endorsements/trainings in special education, bilingual education, and English language learner education impact educational opportunities/outcomes**

Summary of findings

Numerous studies have analyzed the impacts of special education, bilingual education, and ELL education professional development programs, credentialing programs, and in-service trainings on the academic outcomes of their students. Many of these studies have found that the training being studied showed positive impacts on academic outcomes. Some studies have found that the model being studied is not effective, or that it has different impacts on different student subpopulations (e.g. training for special education teachers may impact students with and without disabilities differently). To summarize, evidence-based training is available, and if the training and education programs used in Washington state are based on evidence than they would likely have positive impacts on ELL and special education student academic outcomes. Examples of recent studies on this topic are included here. Several of these articles are reviews that reference multiple studies.

Annotated references

61. Feng L, Sass TR. What makes special-education teachers special? Teacher training and achievement of students with disabilities. *Economics of Education Review*. 2013; 36: 122-134.

Feng et al. used statewide data from Florida to analyze the impact of pre-service and in-service teacher trainings on the academic outcomes of students with disabilities. The researchers analyzed changes in test scores over time. They found that students with disabilities who had teachers certified in special education had significantly better outcomes in math and reading than similar students whose teachers were not special-education certified. They also found that students without disabilities experienced slightly worse outcomes when taught by a special education certified early career teacher. The researchers found little evidence that in-service training had a positive effect on teachers of special education courses ability to improve academic outcomes; but students without disabilities whose teachers received special education training showed slightly better academic outcomes in reading and math. In addition, teachers with advanced degrees were more effective in boosting math outcomes for students with disabilities than teachers with only a baccalaureate degree.

62. Garcia E, Arias MB, Harris MNJ, Serna C. developing responsive teachers: A challenge for a demographic reality. *Journal of Teacher Education.* **2010; 61: 132-142.**
Garcia et al. conducted a review of the literature in order to summarize teacher development program characteristics that researchers have found to be effective in preparing teachers to work with ELLs and other diverse students. The researchers outline findings from several studies highlighting teacher preparation programs that have been successful in preparing teachers to teach diverse learners in a way that enables them to reach high levels of academic performance. This article indicates that effective evidence-based training programs for teachers that work with diverse students do exist.

63. Janzen J. Teaching English language learners in the content areas. *Review of Educational Research.* **2008; 78(4): 1010-1038.**
Janzen conducted a review of the literature on teaching ELLs. In this review Janzen highlighted a number of studies that have looked at the impact of teacher professional development on their beliefs and practices. Janzen highlights several professional development programs which showed positive results in teachers' effectiveness at promoting literacy skills, student understanding of science content, greater teacher acceptance of students' home languages and cultures, and teacher use of instructional congruence. The author also notes that these studies indicate that teachers require extensive support in changing their practices and that change can take a long time. Janzen also sights one study that found when content-area teachers attend training on teaching ELL students, they may not implement the information that they have learned in the trainings.

64. Short D, Echevarría J. Richards-Tutor C. Research on academic literacy development in sheltered instruction classrooms. *Language Teaching Research.* **2011; 15(3): 363-380.**
Short et al. summarized findings from three studies looking at teacher and student outcome changes over time on standardized assessments and measures after implementation of the Sheltered Instruction Observation Protocol (SIOP)—a model that teaches students who are learning a second language using techniques that make the content material accessible and help develop second language skills. Overall the studies found that students with teachers who were trained in the SIOP model of instruction and implemented it with fidelity performed significantly better on assessments of academic language and literacy than students with teachers who were not trained in the model. These studies involved control groups and pre-and post-tests to compare the change in academic outcomes between the students with teachers trained in the model and those with teachers that were not trained in the model. In addition, one study examined the differences in test scores on other content areas (e.g. math and social studies). They found that on some tests the intervention group performed better, on one test the control group performed better, and on some tests there were no significant differences between the two groups of students. There were no pre-tests for these content area tests, so no conclusions can be drawn about the impact of the intervention on improving test scores in these areas.

Part IV: English Language Learner Accountability

> **How accountability benchmarks, instructional strategies, and program designs for the Transitional Bilingual Instructional Program may impact educational opportunity gaps**

These sections of SHB 1680 create an English Language Learner Accountability Task Force that would be specifically required to identify **evidence-based** designs and instructional strategies for ELLs to achieve English proficiency. The bill also requires the task force to select benchmarks which **research suggests** are associated with students achieving English proficiency. These sections also require OSPI to provide schools with support in selecting **research-based** models, materials, and professional development for school staff. The bill has already stipulated that the accountability work must be grounded in evidence, so it would therefore be expected to have a positive impact on the educational opportunities of ELLs, thereby working to close educational opportunity gaps.

Part V: Disaggregated Student Data

> **Evidence on how disaggregating student data may impact the understanding of educational opportunity gaps and the ability to address them**

Summary of findings

A large body of evidence indicates that when populations made up of diverse subpopulations are aggregated during data collection or analysis, important distinctions between the subpopulations are masked. Researchers have indicated that it becomes difficult to meet the educational needs of subpopulations who have unique needs and academic outcomes that are often left unaddressed due to a lack of data disaggregation. A few academic articles have been provided here that highlight this trend among Asian American and Pacific Islander (AA/PI) and black immigrant subpopulations—but this trend is also found for many other populations (e.g. unique white subpopulations, tribes, etc.). Data indicate that this trend is also true in Washington state where disaggregated data show large variations between academic outcomes of Asian subgroups in the state.

Annotated references

65. Capps R, Fix M. Sensitive subjects: Research choices and presentational challenges in studying immigrant children and families. *New Directions for Child and Adolescent Development*. **2013; 141: 79-97.**

Capps and Fix describe some of the challenges they have faced as researchers who work with immigrants to the United States. One of the challenges that they describe is working with populations within which diverse subpopulations exist. For example, the researchers highlight work that they have done with black immigrants. They indicate the unique needs of immigrants with different backgrounds, and how it is difficult to understand these needs when sample sizes in many data sets are too small to disaggregate by country of origin. When they looked at a large range of datasets (which allowed for disaggregation) they found that, although English is predominant among black immigrant families, for children from countries where English is not a predominant language (such as Haiti, the Dominican Republic, Somalia, and Sudan) school readiness and academic progress often lagged.

66. Hune S, Takeuchi D, Andresen T, et al. Asian Americans in Washington State: Closing their Hidden Achievement Gaps. 2009. Available from http://www.capaa.wa.gov/documents/AchievementGapReport.pdf. Accessed December 21, 2013.

Hune et al. indicate that Asian American academic outcome gaps in Washington state are hidden by a number of factors, one of which is the practice of aggregating student data for all Asian American ethnic groups into one category. The researchers present disaggregated data that shows large variations between academic outcomes of Asian subgroups in Washington. They express that, although they attempted to separate Asian Americans and Pacific Islander data as well as data on Asian American subgroups when possible, in some cases disaggregated data were not available. One of the recommendations to allow for better understanding of opportunity gaps and to assess their reduction over time, is to collect data disaggregated by Asian American ethnic subgroups.

67. Museus S, Kiang P. Deconstructing the model minority myth and how it contributes to the invisible minority reality in higher education research. *New Directions for Institutional Research.* **2009; 142: 5-15.**

Museus and Kiang indicate that the "model minority myth" (the concept that Asian Americans achieve universal academic and occupational success) is perpetuated by data collection that aggregates all Asian subpopulations. The researchers summarize findings revealing that when these data are disaggregated it becomes evident that Asian subgroups have very different academic outcomes. They argue that the practice of aggregating data leads to great misunderstandings of these populations.

68. Teranishi RT. Asian American and Pacific Islander students and the institutions that serve them. *Change: The Magazine of Higher Learning.* **2012; 44(2): 16-22.**

Teranishi makes the argument for the importance of disaggregating student data in order to better serve subpopulations. The article indicates that when data from all Asian subpopulations are aggregated it appears that Asian American and Pacific Islander students are universally academically successful. When the data are disaggregated it becomes clear that some subgroups are facing academic challenges. These differential outcomes among Asian American and Pacific Islanders are concealed by collapsing data, which results in at-risk groups being underserved.

Part VI: Recruitment and Retention of Educators

> **Evidence for how updating the model framework for high school Career and Technical Education courses related to careers in education may impact cultural competency of educators**

Summary of findings

SHB 1680 would require revision and updating of the model framework for high school Career and Technical Education courses related to careers in education to include: 1) standards for cultural competency, 2) the most recent competency standards established by the Professional Educator Standards Board (PESB) and new research on best practices for educator preparation and development, and 3) curriculum and activities used by the Recruiting Washington Teachers (RWT) program.

Evidence from the literature strongly indicates that cultural competency among teachers is associated with increased academic performance, particularly for students from cultural backgrounds other than that of the majority culture (evidence for this link is included in the annotated references under 'Part II:

Educator Cultural Competence'). Therefore incorporating cultural competency standards into high school courses related to careers in education would likely work to decrease educational opportunity gaps.

The Washington State Board of Education and PESB *4th Biennial Joint Report* indicated that one of PESB's strategic goals is to ensure that educator preparation programs supply highly-effective educators. One specific initiative that PESB indicated in the report to accomplish this goal is to establish relevant standards along the certification and career continuum that ensure culturally-competent professional practice among educators. This indicates that integrating PESB standards and new research on best practices for educator preparation into the high school course frameworks has potential to increase cultural competence among future educators.

A recent report on the outcomes of the RWT program found that overall the programs have realized positive impacts on the academic outcomes of the high school participants. These programs have also fostered a more positive view of cultural diversity among participants. This indicates that incorporating curriculum and activities used by the RWT programs into the model framework for high school courses has potential to improve academic outcomes for participating high school students and also to have positive impacts on their future students if they go on to pursue teaching careers. In addition, RCW 28A.415.370 mandates that the PESB evaluate the effectiveness of current strategies for recruiting teachers in Washington and use the findings from the evaluation to revise the RWT program and make other recommendations to teacher preparation programs or the legislature. This mandate indicates that the RWT programs will continue to adapt in response to what the evidence finds to be effective.

Annotated references

69. Chu M, Nourse S, Schmitz S, Timmons Fores M. Recruiting Washington Teachers Grant Study: 2011-2012 Program Year Update. 2013. Available from https://docs.google.com/a/uw.edu/viewer?a=v&pid=sites&srcid=cGVzYi53YS5nb3Z8aG9tZXxneDxxneDo1ZDA4NDhhNDE4YmY1ZTRm. Accessed December 21, 2013.
Researchers evaluated the impacts of RWT programs in Washington state. They reviewed the original grant applications and annual site evaluations and conducted site visits. On-site, the researchers conducted interviews and focus groups with key personnel as well as with current and past student participants. They found that across all RWT programs participation in the program "provided positive identity development, advising, support and motivation linked to high school graduation for students from ethnic/language groups who face high dropout rates." They found that RWT programs produced high school graduates and successfully linked them to college admission at much higher rates than observed prior to the RWT program. The research revealed that approximately 50-75 percent of participants still wanted to enter the teaching field upon graduating high school. The report also indicates that the programs seem to offer these high school participants insight into their own learning and educational success as well as an opportunity to break down stereotypes and change the perspectives—both their own and those of some high school educators. Some programs also found that actively addressing the academic challenges that this diverse group of students face, and viewing cultural diversity as an asset for future teachers helped foster academic success among the participants.

70. Washington State Board of Education and Professional Educator Standards Board. Working Together for Student Achievement: 4th Biennial Joint Report. 2012. Available from http://www.sbe.wa.gov/documents/2012.10.15%20SBE%20and%20PESB%20Report.pdf. Accessed December 21, 2013.
In October of 2012 the State Board of Education and PESB released the 4th Biennial Joint Report on their progress in strengthening basic education and improving student academic outcomes. The report

indicated that one of PESB strategic goals is to ensure that educator preparation programs supply highly-effective educators. One specific initiative that PESB included in the report to accomplish this goal is to establish relevant standards along the certification and career continuum that ensure culturally-competent professional practice among educators.

Evidence for how incorporating cultural competence standards into articulated pathways for teacher preparation and certification and paraeducator apprenticeship and certification programs may impact educational opportunity gaps

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Summary of findings
Research indicates that evidence-based cultural competence training can lead to increased educator cultural competence. In turn, evidence supports that increased cultural competence of educators leads to improved academic outcomes, particularly for students who are from diverse cultural backgrounds, thereby narrowing educational opportunity gaps. Evidence for these connections can be found in the annotated references under 'Part II: Educator Cultural Competence.'

Evidence for how an articulated pathway for teacher preparation and certification may impact recruitment and retention of teachers of color

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Summary of findings
The literature indicates that many articulated pathways for teacher certification have successfully increased the recruitment and retention of educators of color. Some of these successful pathways have done targeted recruitment of, for example, paraeducators, uncertified teachers, specific racial/ethnic groups, high school students, and/or students from community colleges. This indicates that articulated pathways for teacher preparation and certification could increase the recruitment and retention of educators of color if the pathways are modeled after evidence-based pathways that have shown to be effective in recruiting teachers of color.

Annotated references
71. Sleeter C, Milner R. Researching successful efforts in teacher education to diversify teachers. In: Ball AF, Tyson CA, eds. *Studying Diversity in Teacher Education.* **Lanham, Maryland: Rowman and Littlefield Publishers, Inc; 2011: 81-104.**
Sleeter and Milner provide an in-depth review of articles evaluating the effect of articulated pathway program on the recruitment and retention of educators of color. Although they indicate that more studies by external researchers should be conducted on these alternative pathway programs, they also highlight numerous programs (both internally and externally evaluated) that have shown to be effective in recruiting teachers of color. They summarize studies indicating that certification pathways that were designed to recruit paraprofessionals, uncertified teachers, and individuals of color into the teaching field have shown to be effective.

72. Villegas A, Davis, D. Approaches to diversifying the teaching force: Attending to issues of recruitment, preparation, and retention. *Teacher Education Quarterly***. Fall 2007: 137-147.**
Villegas and Davis provide a summary of recruitment programs that have been effective in increasing recruitment of future teachers of color into pathways to teacher certification. The researchers highlight a number of articulated pathway and recruitment programs. Following the review of the literature Villegas

and Davis conclude that clear articulation agreements are essential in recruiting students of color to become teachers. In addition, they indicate that partnerships with school districts are also needed to recruit paraprofessionals into teaching programs. Note that, although the researchers indicate that the approaches summarized in this article were carefully designed and well documented approaches to diversify the teaching force, they did not provide data in this article to indicate how effective these programs have been in recruiting of teachers of color.

Evidence for how recruitment and retention of teachers of color impacts educational opportunity gaps

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Summary of findings
A strong body of evidence indicates that teachers of color have positive academic and social impacts on their students of color, thereby helping to decrease educational opportunity gaps. In addition, findings indicate that students of color indirectly benefit when attending a school where teachers of color are equitably represented. The annotated reference list below includes three articles that provide reviews of the literature on impacts of teachers of color on academic outcomes (one which is a very comprehensive review specifically on this topic). All three reviews conclude that, overwhelmingly, the literature supports a positive relationship between teachers of color and academic outcomes for their students of color**.**

Annotated references
73. Achinstein B, Ogawa RT, Sexton D, Freitas C. Retaining teachers of color: A pressing problem and a potential strategy for "hard-to-staff" schools. *Review of Educational Research.* 2010; 80(1): 71-107.
Achinstein et al. conducted an in-depth review of the literature on the retention of educators of color. In their introduction to the current literature the researchers identified at least six studies between 1986 and 2009 that indicate that teachers of color may produce more favorable academic results on standardized test scores, attendance, retention, advanced-level course enrollment, and college-going rates for students of color than their white colleagues. They cite research that the differences between an educator's racial and cultural backgrounds and those of their students may lead to failure to fully provide students of color with opportunities to learn. Anchinstein et al. emphasize, though, that this does not mean that white teachers cannot be effective educators for students of color or that all teachers of color are effective with students of color.

74. Irvine JJ, Fenwick LT. Teachers and teaching for the new millennium: The role of HBCUs. *The Journal of Negro Education.* **2011; 80(3): 197-208.**
Irvine and Fenwick provide an in-depth review of the literature on the impact of teachers of color on the academic outcomes of their students of color. The researchers summarize a large number of studies that have yielded results such as increases in test scores, school attendance, enrollment in higher level courses, and college enrollment. In addition they cite evidence that teachers of color are more likely to have higher expectations of their students of color than white teachers. Irvine and Fenwick also cite literature that argues that employing teachers of color may benefit both students of color and white students by: 1) helping to dispel myths of racial inferiority, 2) providing accessible models of intellectual authority, and 3) increasing student understanding of cultural diversity thereby enhancing the ability of all students to interact with each other.

75. Villegas AM, Irvine JJ. Diversifying the teaching force: An examination of major arguments. *The Urban Review.* **2010; 42(3): 175-192.**

Villegas and Irvine conducted an exhaustive review of the literature to pinpoint the arguments for recruiting teachers of color, and to determine if those arguments are founded in empirical evidence. The researchers included work published in peer-review journals or books, some reports that have undergone the peer review process, and relevant papers presented at recent annual meetings of the American Education Research Association. The researchers made three main conclusions based on their review. First, there is inadequate evidence supporting that teachers of color provide a role modeling effect for their students of color. The researchers qualify this finding by indicating that this is due to a lack of research on this connection, and that this does not mean that the relationship does not exist. Second, a broad body of empirical evidence supports that students of color directly benefit when paired with a teacher of their race/ethnicity, and indirectly benefit when attending a school where teachers of color are equitably represented. Of the 15 studies that Villegas and Irvine reviewed relating to the positive impacts that teachers of color have on students of color academically (e.g. increased test scores, decreased absenteeism, etc.), 14 of them found positive correlations, and only one found no significant association. Third, there is strong evidence that teachers of color can help alleviate the severe shortage of teachers in underserved schools because teachers of color are more likely to start working and remain as teachers in these schools than their white colleagues.

The Relationships between Education, Income, and Health

> ### Evidence in relation to how educational opportunities/outcomes impact educational attainment

Summary of findings

Only a limited amount of time was dedicated to researching the literature on the link between educational opportunities/outcomes and educational attainment because several measures of educational outcome are innately indicative of education attainment (e.g. high school drop out as an academic outcomes is also a measure of educational attainment). A preliminary literature review yielded very strong evidence that school absences and grades as well as youth's educational expectations and school engagement are predictive of educational attainment later in life.

Annotated references

76. Ou SR, Reynolds AJ. Predictors of Educational Attainment in the Chicago Longitudinal Study. *School Psychology Quarterly.* **2008; 2(2): 199-229.**

Ou and Reynolds analyzed data from the Chicago Longitudinal Study, using a sample size of 1286 youth in order to investigate predictors of high school completion and total educational attainment. They found that, among other factors, school absences, grade retention, and youth's educational expectations all influenced educational attainment.

77. Melby JN, Conger RD, Fang SA, Wickrama KA, Conger KJ. Adolescent family experiences and educational attainment during early adulthood. *Developmental Psychology.* **2008; 44(6): 1519-36.**

Melby et al. analyzed data from a longitudinal study of two-biological-parent intact families in Iowa. They had a sample size of 451 families. The researchers conducted modeling to determine what factors impact educational attainment and found level of academic engagement was strongly correlated with later educational attainment.

Evidence in relation to how educational attainment impacts health

Summary of findings

The connection between higher educational attainment and better health is very well documented. Data collected nationally and in Washington State indicate a correlation between higher educational attainment and positive health outcomes such as decreased rates of diabetes, oral health problems, tobacco use, inactivity, obesity, depression, and coronary heart disease. The correlation between health and education is observed even after controlling for income, which can also serve as a mediating factor. A few articles are listed here as evidence of these associations.

Annotated references

78. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System prevalence and trends data: Washington-2012. Available from http://apps.nccd.cdc.gov/brfss/page.asp?cat=XX&yr=2012&state=WA#XX. Accessed December 2, 2013.

Recent Behavioral Risk Factor Surveillance System (BRFSS) data from Washington state shows correlations between higher educational attainment and positive health outcomes for a number of indicators including: oral health, tobacco use, women's health indicators, health screening rates, and physical activity.

79. Kandel DB, Griesler PC, Schaffran C. Educational attainment and smoking among women: risk factors and consequences for offspring. *Drug and Alcohol Dependence***. 2009; 104: 24-33.**

Researchers examined United States data from four national data sets and found that, among women, lower levels of education are associated with greater risk of being a current smoker, smoking daily, smoking heavily, being nicotine dependent, starting to smoke at an early age, having higher levels of circulating cotinine (a metabolite of nicotine) per cigarettes smoked, and continuing to smoke in pregnancy. In addition, lower levels of maternal education were linked to increased risk of antisocial behavior among offspring.

80. McCarty CA, Mason WA, Kosterman R, Hawkins JD, Lengua LJ, McCauley E. Adolescent school failure predicts later depression among girls. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine***. 2008; 43(2): 180-7.**

McCarty et al. conducted a prospective longitudinal cohort study with a sample of 808 youth followed from ages 10 to 21. The researchers discovered that adolescent school 'failure' (meaning being suspended, expelled, or dropping out of high school early) predisposed girls to depression in early adulthood.

81. McLaren L. Socioeconomic status and obesity. *Epidemiologic Reviews***. 2007; 29(1): 29-48.**

McLaren et al. conducted a meta-analysis exploring the relationship between obesity and SES among adults. A total of 333 studies published internationally met the inclusion criteria. In highly developed countries, the majority of the studies found higher body weights among women with lower education attainment. Nearly 50% of the studies in highly developed countries found the same relationship for men.

82. **Mersky JP, Mersky JP, Mersky JP, Reynolds AJ, Reynolds AJ. Educational success and adult health: Findings from the Chicago Longitudinal Study.** *Prevention Science*. **2009; 10(2): 175-195.**
Merky et al. analyzed data from a Chicago prospective cohort study that followed 1,539 individuals. Results indicate that high school completion was significantly and inversely associated with tobacco smoking, frequent substance use, depression, and no health insurance coverage. In addition, middle school reading performance was inversely related to depression and student's expectation to attend college was negatively associated with frequent drug use.

83. **Mezuk B, Eaton WW, Golden SH, Ding Y. The influence of educational attainment on depression and risk of type 2 diabetes.** *American Journal of Public Health*. **2008; 98(8): 1480-5.**
Researchers analyzed adult survey data collected in the Baltimore Epidemiological Catchment Area and then conducted follow-up interviews with the survey cohort. Mezuk et al. found a statistically significant association between type 2 diabetes and lower educational attainment. In addition, the data indicate that depression was associated with type 2 diabetes, but each year of education attained decreased the risk of type 2 diabetes for those experiencing depression.

84. **Reed P, Kindig D, Cheng E, Kinne S. Health of Washington State Report: Mortality and Life Expectancy. Washington State Department of Health. 2013. Available from** http://www.doh.wa.gov/Portals/1/Documents/5500/GHS-MLE2013.pdf. **Accessed December 23, 2013.**
The authors present Washington state data on mortality and life expectancy. The data show that age-adjusted death rates were higher in Washington census tracks with lower college graduation rates and also in census tracks with higher poverty. The state data also show that self-reported health status decreases both as income and as educational attainment decrease.

85. **Skodova Z, Nagyova I, Dijk J, et al. Socioeconomic differences in psychosocial factors contributing to coronary heart disease: A review.** *Journal of Clinical Psychology in Medical Settings.* **2008; 15(3): 204-213.**
Skodova et al. conducted a meta-analysis of the literature addressing the relationships between SES, coronary heart disease (CHD), and psychosocial factors contributing to coronary heart disease. Researchers identified 12 studies that met their inclusion criteria. They found that higher levels of education are associated with lower rates of CHD, and that decreasing education is associated with factors that are linked to CHD such as depression, anxiety, hostility, and a lack of social supports.

86. **Steptoe A, Hamer M, Butcher L, et al. Educational attainment but not measures of current socioeconomic circumstances are associated with leukocyte telomere length in healthy older men and women.** *Brain, Behavior, and Immunity*. **2011; 25(7): 1292-8.**
Steptoe et al. analyzed data collected from 543 male and female London-based civil servants of white European origin. All participants were between the ages of 53 and 76 and healthy. Researchers looked at blood samples to determine telomere length and telomerase activity. Telomere shortening is associated with aging. Short telomeres are also associated with increased risk of premature heart attack and mortality. Researchers found that lower educational attainment was associated with shorter telomere length after controlling for biological and behavioral covariates. This association remained significant even after adjusting for current SES. Researchers speculated that low educational attainment may be an indicator of long-term SES, and may be associated with accumulated stress resulting in telomere shortening. They also postulate that education may promote problem-solving skills leading to reduced responses to stress, thereby impacting aging.

87. VanEenwyk J, Brandt G, Bezruchka S, Pobutky, A. Health of Washington State Report: Social and Economic Determinants of Health. Washington State Department of Health. 2013. Available from http://www.doh.wa.gov/Portals/1/Documents/5500/Context-SED2013.pdf. Accessed December 23, 2013.

VanEenwyk et al. conducted a review of the literature on the complex relationships between the social factors that impact health. The authors found that the literature provides extensive evidence of the association between lower educational attainment and poor health outcomes and also of the association between lower income and poor health outcomes.

Evidence relating to how educational attainment impacts income

Summary of findings

The connections between increasing educational attainment and increasing income as well as decreasing rates of unemployment are well documented globally. Data indicate that this trend does exist in Washington state. The evidence for these connections is very strong. Because this connection is widely accepted, less time was dedicated to researching this relationship. Washington state data show that this relationship is also found in Washington.

Annotated references

88. Bureau of Labor Statistics website. Employment projections: Earnings and unemployment rates by educational attainment. Last updated May 22, 2013. Available from http://www.bls.gov/emp/ep_chart_001.htm. Accessed December 10, 2013.

National data from 2012 indicate that as educational attainment increases median weekly earnings also increase and unemployment rates decrease.

89. Centers for Disease Control and Prevention website. Behavioral Risk Factor Surveillance System: Web enabled analysis tool. Available from http://apps.nccd.cdc.gov/s_broker/WEATSQL.exe/weat/freq_analysis.hsql?survey_year=2010. Accessed December 9, 2013.

Washington state data from the 2010 Behavioral Risk Factor Surveillance System survey indicate that as educational attainment increases income level also increases.

Evidence in relation to how income impacts health

Summary of findings

A large body of literature provides very strong evidence that economic instability and low-income are associated with adverse health outcomes. This research indicates a relationship between economic instability/low SES and, for example, depression, acute and recurring infections, poor heath-status, higher body mass index (BMI), and poor oral health. Data indicate that this correlation between low income and poor health is found in Washington state. A few examples from the literature are listed here including a meta-analysis that looked at over 300 studies.

Annotated references

90. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System prevalence and trends data: Washington-2012. Available from

http://apps.nccd.cdc.gov/brfss/page.asp?cat=XX&yr=2012&state=WA#XX. Accessed December 2, 2013.
Recent Behavioral Risk Factor Surveillance System (BRFSS) data from Washington State show correlations between higher income and improved health for a number of indicators including: oral health, tobacco use, women's health indicators, health screening rates, and physical activity.

91. Paul KI, Moser K. Unemployment impairs mental health: Meta-analyses. *Journal of Vocational Behavior*. 2009; 74(3): 264-282.
Paul et al. conducted a meta-analysis of 237 cross-sectional and 87 longitudinal studies that examined the relationship between mental health and unemployment. The meta-analysis of cross-sectional data revealed that unemployed persons showed significantly more symptoms of distress and impaired well-being than did employed persons. The meta-analyses of longitudinal studies and natural experiments supported the concept that unemployment is not only correlated to distress but also causes it.

92. Prause J, Dooley D, Huh J. Income volatility and psychological depression. *American Journal of Community Psychology*. 2009; 43: 1-2.
Prause et al. analyzed a sample (n = 4,493) from the National Longitudinal Survey of Youth. Researchers found that income volatility was significantly associated with depression; and downward volatility (frequent losses in income) was significantly associated with depression even after controlling for baseline depression. High income appeared to act as a buffer, so those with lower incomes were more vulnerable to the adverse effects of downward volatility.

93. Reed P, Kindig D, Cheng E, Kinne S. Health of Washington State Report: Mortality and Life Expectancy. Washington State Department of Health. 2013. Available from http://www.doh.wa.gov/Portals/1/Documents/5500/GHS-MLE2013.pdf. Accessed December 23, 2013.
The authors present Washington state data on mortality and life expectancy. The data show that age-adjusted death rates were higher in Washington census tracks with lower college graduation rates and also in census tracks with higher poverty. The state data also show that self-reported health status decreases both as income and as educational attainment decrease.

94. Spencer N, Thanh TM, Louise S. Low income/socio-economic status in early childhood and physical health in later childhood/adolescence: A systematic review. *Maternal and Child Health Journal*. 2013; 17(3): 424-31.
Spencer et al. conducted a meta-analysis of studies examining the relationship between low SES in the first five years of life and physical health outcomes in later childhood and adolescence. Nine studies met the researchers' strict inclusion criteria. The studies indicated significant associations between early childhood low-income status and a number of adverse health outcomes including: activity-limiting illness, parent-reported poor health status, acute and recurrent infections, increasing body mass index (BMI), dental caries, and higher rates of hospitalization.

95. Subramanyam M, Kawachi I, Berkman L, Subramanian SV. Relative deprivation in income and self-rated health in the United States. *Social Science & Medicine*. 2009; 69(3): 327-334.
Subramanyam et al. analyzed data from the Current Population Surveys conducted by the United States Census Bureau. Researchers found that individuals from the lowest income category were over five times more likely to report being in poor health than participants from the highest income category. In addition, they found that relative deprivation (the differences in incomes between an individual and others who have higher incomes than that individual [one measure of income inequality]) appeared to explain a large part of this association.

96. **VanEenwyk J, Brandt G, Bezruchka S, Pobutky, A. Health of Washington State Report: Social and Economic Determinants of Health. Washington State Department of Health. 2013. Available from http://www.doh.wa.gov/Portals/1/Documents/5500/Context-SED2013.pdf. Accessed December 23, 2013.**

VanEenwyk et al. conducted a review of the literature on the complex relationships between the social factors that impact health. The authors found that the literature provides extensive evidence of the association between lower educational attainment and poor health outcomes, and also of the association between lower income and poor health outcomes.