

# UPDATING WYOMING'S REGIONAL COST ADJUSTMENT

A PRESENTATION TO  
THE JOINT APPROPRIATIONS COMMITTEE AND  
THE JOINT EDUCATION COMMITTEE

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# Regional Cost Indices

2

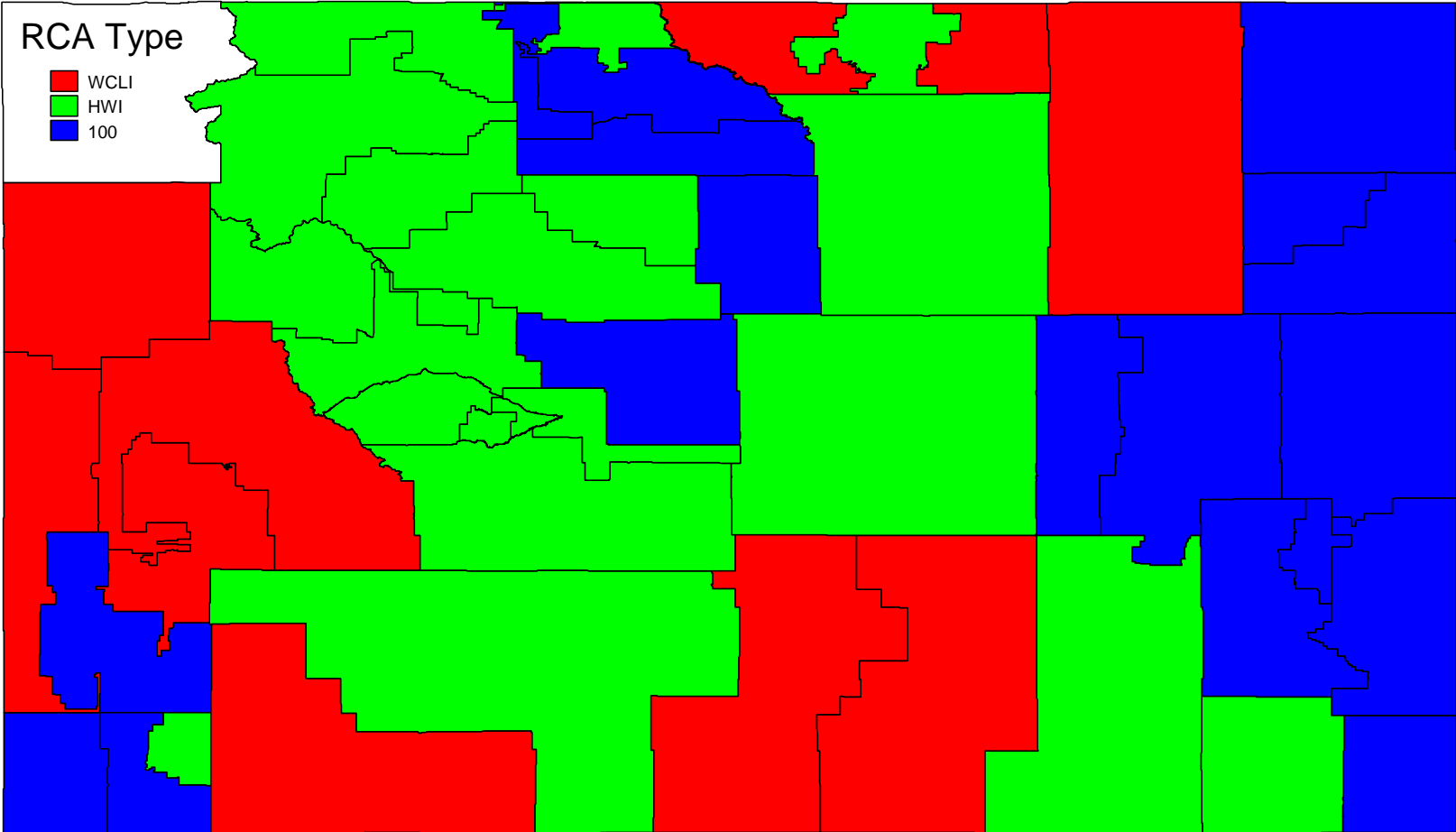
- Some school districts must pay a premium to attract the same high quality teachers available to other districts at lower cost
- A regional cost index indicates how much more or less it costs each school district to recruit and employ equivalent school personnel
- The challenge is to ensure that the regional cost index
  - ▣ accurately reflects costs
  - ▣ only reflects factors that are outside of school district control

# Wyoming's RCA Policy Choice

3

- Wyoming's regional cost adjustment (RCA) is designed to provide additional resources to school districts with higher labor costs
  - ▣ The RCA applies only to the salary components of the funding model
  - ▣ Only districts with above average costs receive an RCA
- Each school district's RCA is the larger of
  - ▣ The Wyoming Cost of Living Index (WCLI)
  - ▣ The 2005 Wyoming Hedonic Wage Index (HWI)
  - ▣ 100

# The Determinants of the Wyoming RCA



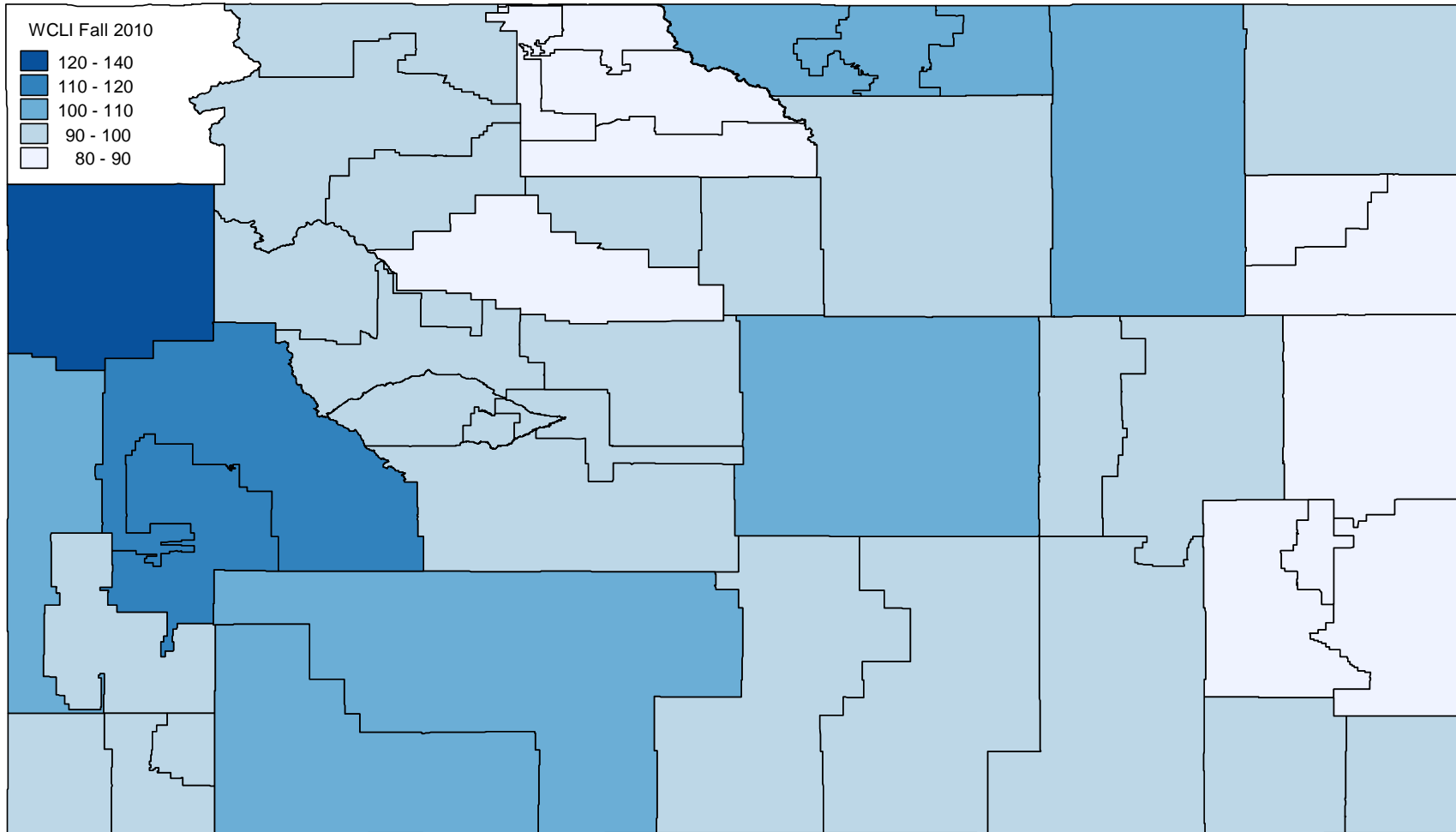
# The WCLI

5

- Modeled after the U.S. Bureau of Labor Statistics' Consumer Price Index for urban consumers (CPI-U)
- Produced bi-annually by the Wyoming Department of Administration & Information's Economic Analysis Division
- Constructed as a weighted average of the prices for food, housing, apparel, transportation, medical services, and recreation and personal care
  - ▣ Weights designed to reflect each item's share in the typical consumer's budget

# The WCLI, Fall 2010

6



# Concerns about Using the WCLI for Regional Cost Adjustment

7

- Any cost of living index overstates the cost of hiring in locations that have attractive amenities
- The WCLI overstates the cost of living in Wyoming counties with relatively high housing costs
  - ▣ Residents of Wyoming spend a smaller share of their budgets on housing than the residents of any other state except Iowa and North Dakota
  - ▣ Housing weight in the WCLI is 48.0%
  - ▣ Housing weight in the CPI-U is 41.5%
  - ▣ If the WCLI used the same weights as the CPI-U, the WCLI for Teton County would be 128 instead of 132

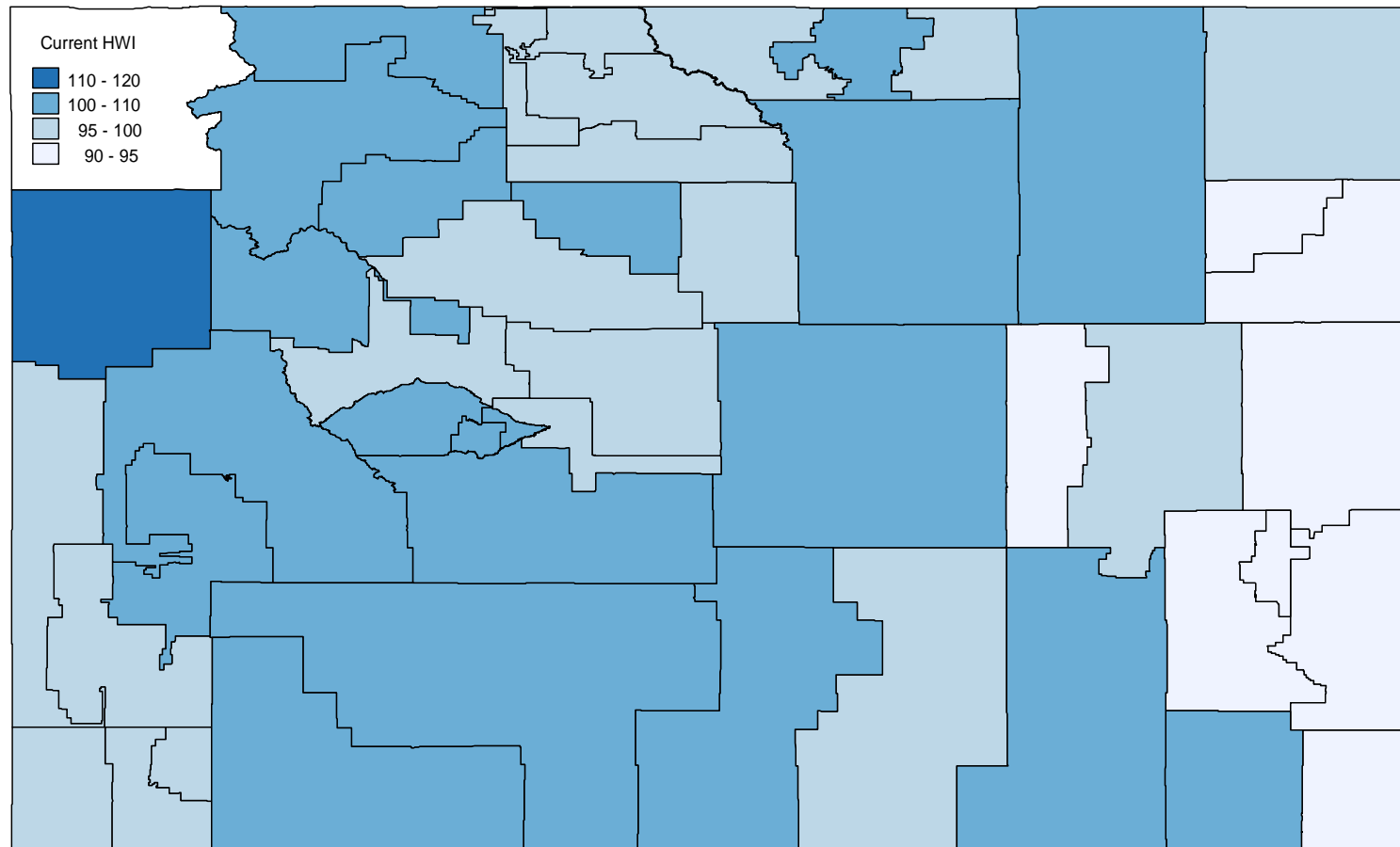
# The 2005 Wyoming HWI

- Based on regression analysis of teacher salary data from 2003-04 and 2004-05
- Regression analysis used to separate observed variation in teacher “base” salaries into that which is attributable to
  - ▣ Discretionary factors (such as teacher characteristics, teaching assignments and length of the school year)
  - ▣ Factors outside of school district control
- The HWI is based on the predicted, full-time base salary in each school district, holding constant the influence of discretionary factors



# The 2005 Hedonic Wage Index

9



# Five Updates to the HWI

- The update uses more recent data and a much longer time series
  - ▣ The 2005 Wyoming HWI was estimated using two years of data
  - ▣ The update covers the six school years from 2005-06 through 2010-11
  - ▣ Using a longer time series allows for a richer specification of discretionary and uncontrollable cost factors and should lead to more precisely measured regional cost adjustments

# Five Updates to the HWI

- The update uses a hedonic model of total salary, not just base salary
  - ▣ Teachers are likely to consider their total salary when deciding whether to accept a new position or stay in their existing one
  - ▣ Supplemental salary (except for coaching supplements) is treated as just another part of an individual's compensation package
  - ▣ The 2005 HWI treated supplemental salary as an uncontrollable factor

# Five Updates to the HWI

12

- The update uses a much richer set of discretionary factors
  - ▣ Broadening the set of teacher characteristics included in the model strengthens the argument that the resulting regional cost index reflects only factors that are outside of school district control
- The update revises and expands the set of uncontrollable cost factors to improve the predictive power of the hedonic wage model

# Five Updates to the HWI

- The update includes an extended version of the National Center for Education Statistics' Comparable Wage Index (CWI) as one of the uncontrollable cost factors
  - ▣ The CWI, which was not available for the previous analysis, provides a direct measure of the labor market alternatives available to Wyoming school teachers
  - ▣ The CWI lacks the geographic detail needed to make it a good substitute for the WCLI or the HWI in the construction of the RCA
  - ▣ Embedding it in the hedonic wage model is the best available strategy for incorporating the information from the CWI into Wyoming's RCA

# Explanatory Factors from the Updated Hedonic Wage Model

14

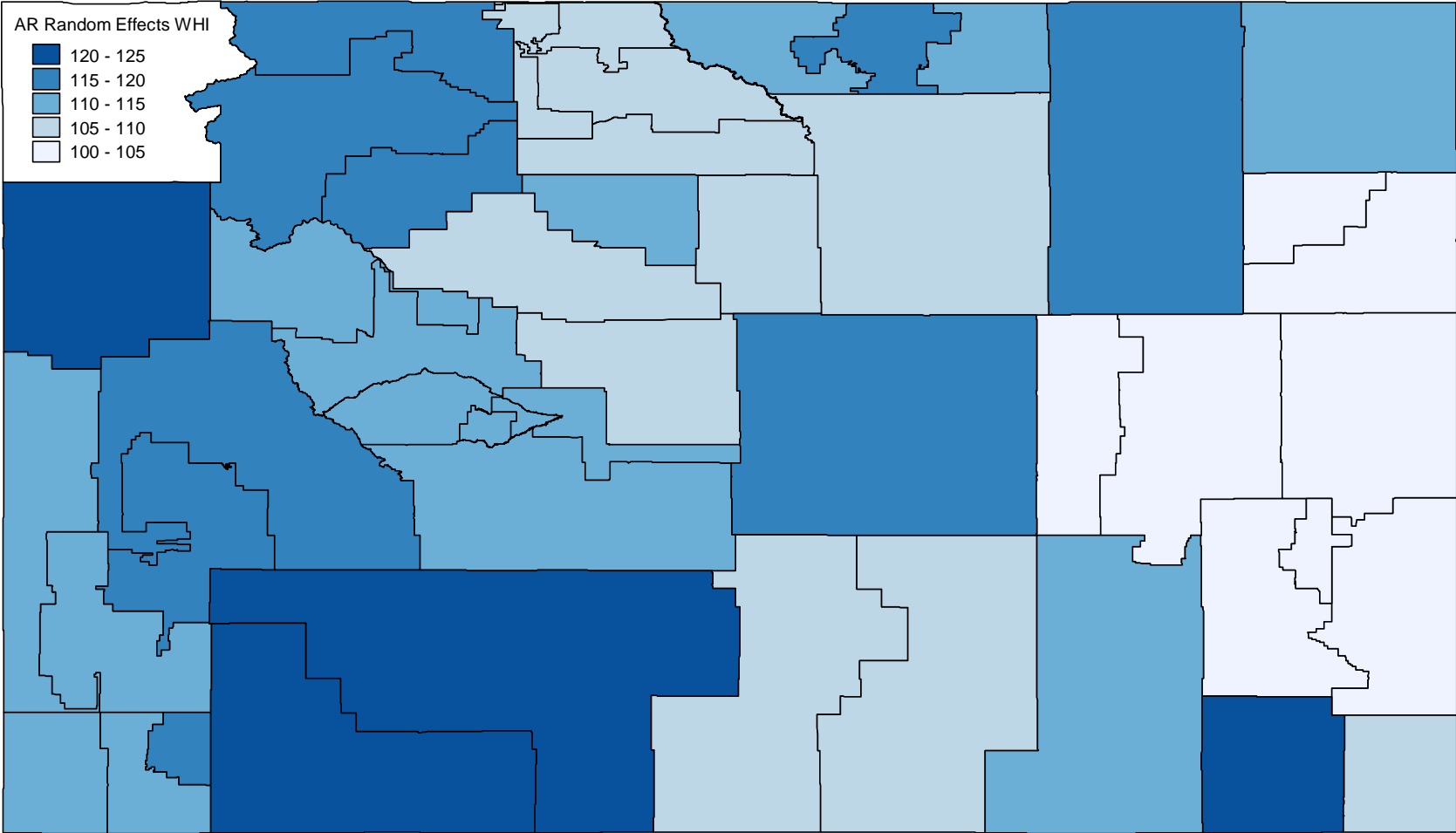
Discretionary Factors	Uncontrollable Cost Factors
Contract days	WCLI
Years of experience in the school district	CWI
Years of experience, total	Miles to Yellowstone
Highest Degree held	Miles to nearest city of 50,000
Teaching Assignment Indicators	Miles to nearest city of 15,000
Subject matter indicators (math, science, etc.)	Five-mile radius population density
Large school (enrollment > 1,000)	County population density
School type (elementary, middle, etc.)	Student demographics at the school
Non-Teaching Assignment indicators	Percent Free Lunch
(principal, coach, head teacher, tutor, etc.)	Percent Special Education
	Percent English language learners

# The Updated HWI

15

- Four estimation strategies explored
  - ▣ Pooled cross-section model
  - ▣ Between Teachers model
  - ▣ Teacher Fixed Effects model
  - ▣ Autoregressive (AR) Random Effects model
- The AR Random Effect HWI is the best choice for updating the 2005 Wyoming HWI
  - ▣ It incorporates all of the available information about teacher salaries
  - ▣ It incorporates some information about persistent but unmeasured teacher characteristics
  - ▣ It can measure the impact of the stable cost factors like a high cost of living or geographic isolation

# The AR Random Effects HWI

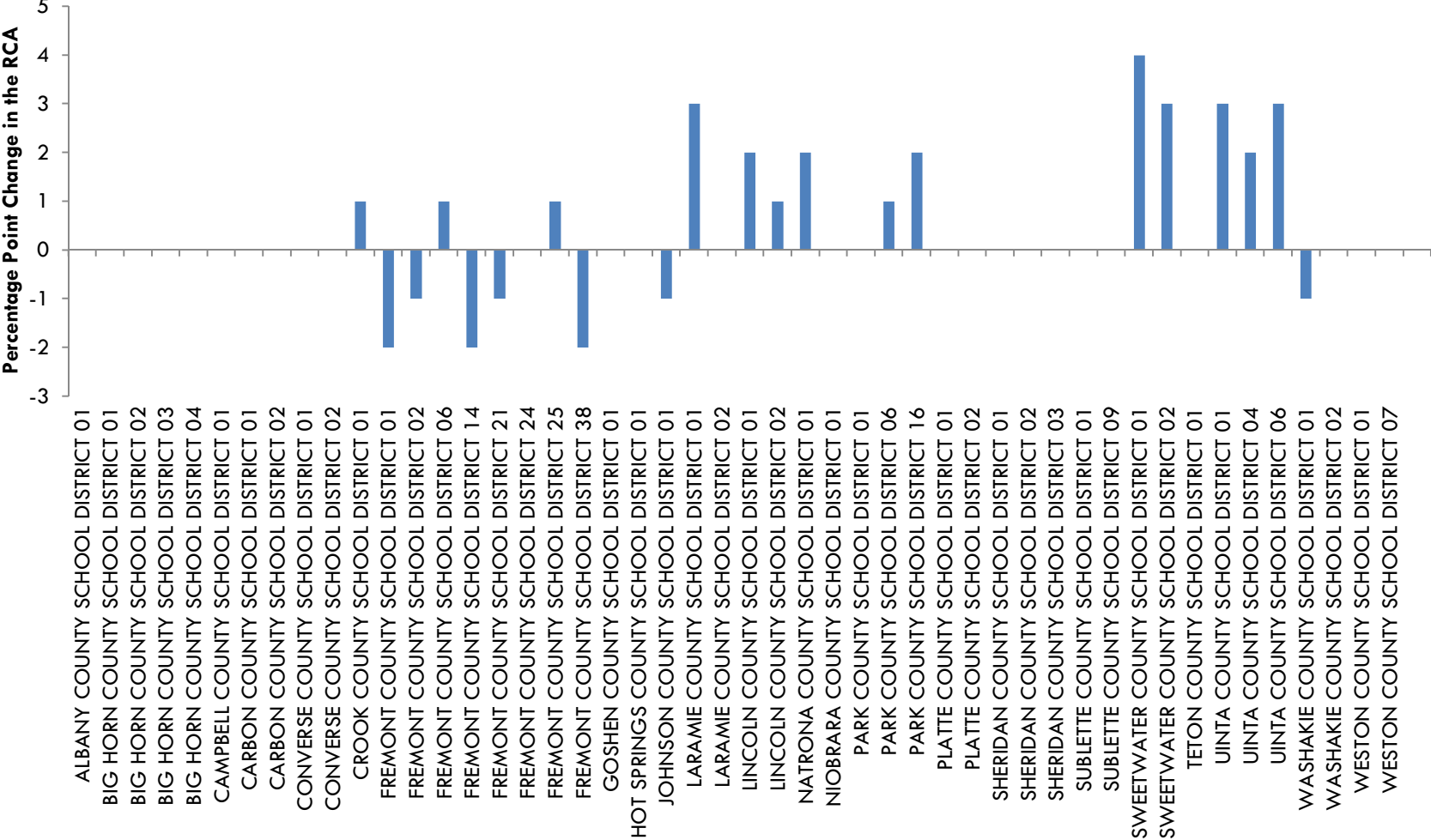




# Equity Implications

- Defining the RCA as the greater of three alternatives—the WCLI, the HWI or 100—has unintended consequences for school funding equity that will not be resolved by updating the HWI
- From a strict equity perspective, continuing to apply the regional costs index only to districts with above-average costs will overfund more than a third of the school districts in Wyoming
- Continuing to offer the WCLI option will also overfund some districts because
  - ▣ any cost of living overstates the cost of hiring in locations that have attractive amenities
  - ▣ the WCLI overstates the cost of living in Wyoming counties with relatively high housing costs

# The Impact on the RCA of Updating Using the AR Random Effects HWI



# The Count of School Districts Receiving Each Type of RCA

19

	HWI	WCLI	100
2011 AR Random Effects HWI	22	9	17
2005 Wyoming HWI	20	10	18

# Conclusions

- The cost of education varies widely within the state, offering strong support for regional cost adjustments
- Because of the three-way design of the RCA, only 22 of the 48 school districts in Wyoming would receive the regional cost adjustment indicated by the updated HWI
  - ▣ The remaining districts would receive a larger adjustment
- Equity goals in Wyoming would be better served if the Legislature replaced the three-way design of the RCA, and simply used the updated HWI as the sole source of regional cost adjustments

21

Thank you

## Supplemental Table: Index Values from RCA Maps

School District Name	WCLI Fall 2010	2005 Wyoming HWI	AR Random Effects HWI
Albany County School District 01	98	101	101
Big Horn County School District 01	87	98	95
Big Horn County School District 02	87	100	95
Big Horn County School District 03	87	99	97
Big Horn County School District 04	87	99	97
Campbell County School District 01	108	106	107
Carbon County School District 01	99	101	97
Carbon County School District 02	99	98	95
Converse County School District 01	95	96	93
Converse County School District 02	95	94	92
Crook County School District 01	91	97	101
Fremont County School District 01	98	103	101
Fremont County School District 02	98	102	101
Fremont County School District 06	98	100	101
Fremont County School District 14	98	104	102
Fremont County School District 21	98	103	102
Fremont County School District 24	98	99	98
Fremont County School District 25	98	100	101
Fremont County School District 38	98	102	100
Goshen County School District 01	90	95	93
Hot Springs County School District 01	90	100	97
Johnson County School District 01	99	102	96
Laramie County School District 01	97	106	109
Laramie County School District 02	97	95	95
Lincoln County School District 01	99	97	102
Lincoln County School District 02	102	98	103
Natrona County School District 01	101	106	108
Niobrara County School District 01	90	94	90
Park County School District 01	96	103	103
Park County School District 06	96	104	105
Park County School District 16	96	101	103
Platte County School District 01	85	95	91
Platte County School District 02	85	93	92
Sheridan County School District 01	105	98	101
Sheridan County School District 02	105	107	107
Sheridan County School District 03	105	99	103
Sublette County School District 01	114	106	105
Sublette County School District 09	114	103	105
Sweetwater County School District 01	102	105	109
Sweetwater County School District 02	102	104	108
Teton County School District 01	132	118	111
Uinta County School District 01	94	99	103
Uinta County School District 04	94	99	102
Uinta County School District 06	94	100	103
Washakie County School District 01	93	101	99
Washakie County School District 02	93	96	96
Weston County School District 01	90	94	92
Weston County School District 07	90	94	93