



Following The **Money**: Wages of Community College Leavers

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Presenters:

- Willard Hom, Director, Research and Planning, CCCCCO
- Catharine Liddicoat, Specialist, Information Systems and Analysis, CCCCCO

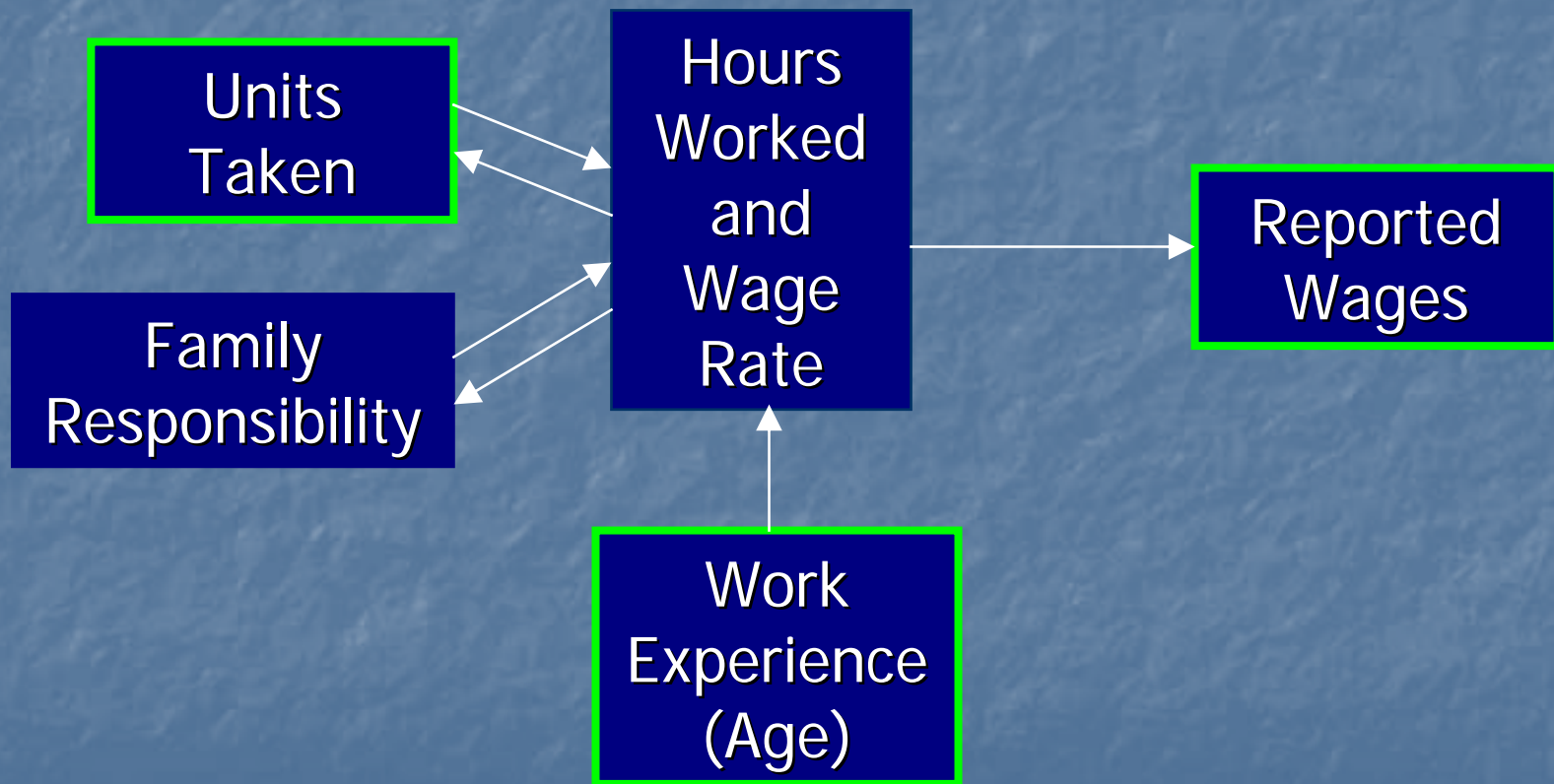
Value of the Wage Analysis

- Fulfills ARCC/AB1417 mandate.
 - ARCC: Accountability Reporting for the Community Colleges
- Builds knowledge about workforce development by California community colleges (CCCs).

Organization of Today's Presentation

- Present information about findings from the current ARCC wage analysis.
- Specify current data and measurement limitations.
- Present general information on economic models for analyzing economic benefits of CCC attendance and award achievement.

In particular, we'll look at the following model



Research Questions:

- In general, what happened to wages for those who attained a degree or certificate from a California Community College (CCC) in 1999-2000?
 - Using a cohort developed for current CCC accountability study (ARCC/AB 1417).
 - Further analyses and articles are planned.

Research Questions:

- What happens when these wages are adjusted for inflation?
- What is the relationship between units taken per semester and wages?
 - Proxy for FT versus PT employment
- What is the relationship between age and wages for this cohort?

Research Questions:

- What is the relationship between gender and wages for this cohort?
- What happens to wages for those who earn degrees versus certificates?

The 1999-2000 Cohort: Who Are They?

- CCC Students who received any credit award in 1999-2000, AND
- No longer enrolled at a CCC in the next two years following award attainment , AND
- Not transferred out to four-year institution, AND
- On EDD's wage file (i.e., SSN match).
 - Wage data for 1994-95 through 2004-05

Wages: Digging Deeper

- Because the ARCC addresses wages for vocational awards, and for simplicity, the analyses presented here use:
 - Single award recipients
 - Who attained vocational awards only
 - And had greater than zero wages in all five pre-award years
 - $N = 5,453$

Gender

(N = 5,453)

	N	Percent
Female	2,978	54.6
Male	2,452	45.0
Unknown/ Decline to State	23	0.4

Ethnicity

	N	Percent
Asian	440	8.1
Black/African American	309	5.7
Filipino	317	5.8
Hispanic	1,018	18.7
Native American	63	1.2
Other Non-White	93	1.7
Pacific Islander	23	0.4
White	2,982	54.7
Unknown/Decline to State	208	3.8

Major Award Types: Single Award Recipients

	N	Percent
AA/AS Degree	2,229	40.9
Credit Certificate (6+ semester units)	2,191	40.2
Other Credit Award (under 6 semester units)	938	17.2
Noncredit Award	95	1.7
Total	5,453	100.0

So....
What Happened to Wages?

For this cohort...

Wages

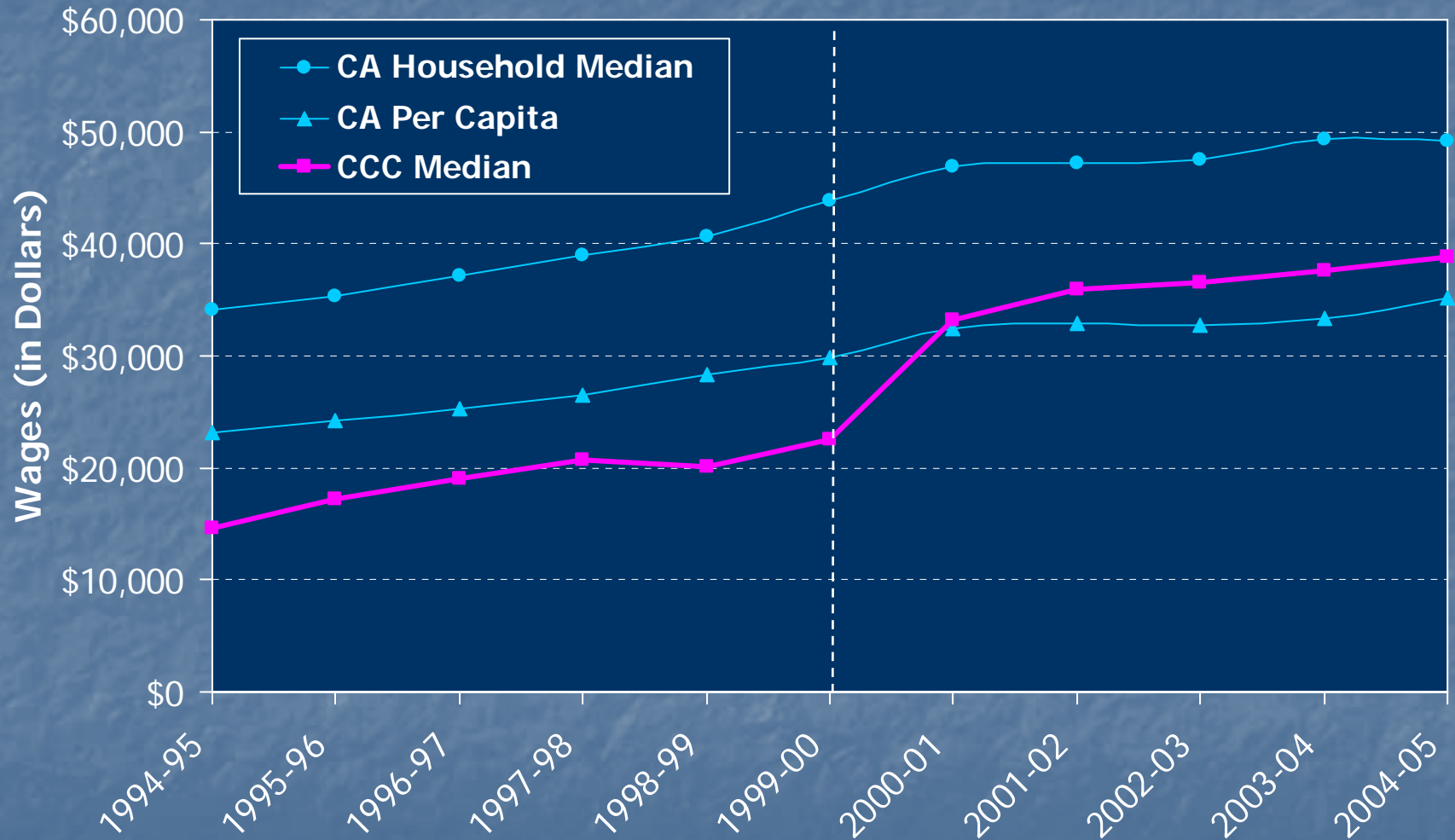
Vocational Only, Pre-Award Wages > 0

(N = 5,453)

	Pre1 1998-99	Cohort Yr 1999-00	Post1 2000-01	% Change Pre1 to Post 1
Mean	\$25,455	\$27,936	\$35,963	41.3
Median	\$20,142	\$22,485	\$33,194	64.8
Std. Dev.	\$22,163	\$24,207	\$26,065	

Wage Trend

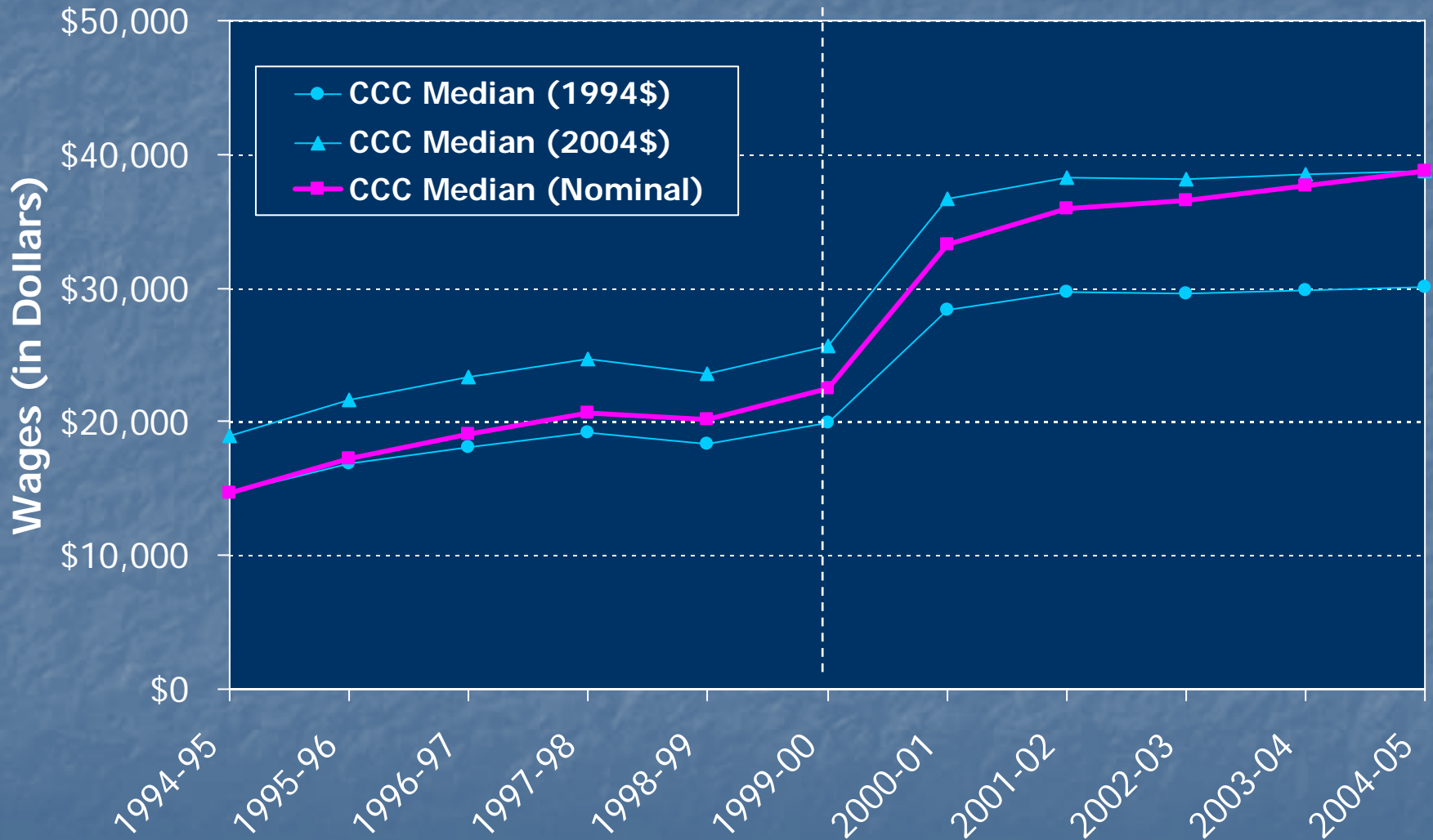
(Vocational Only, Pre-Award Wages >0)



When Adjusted for Inflation...

- Used the Western-Urban CPI to adjust for inflation.
 - More relevant to California's economic conditions.
- Trends remain.
- "Jump" at award attainment remains.

Wage Trend – Inflation Adjusted (Vocational Only, Pre-Award Wages >0)



Too Good To Be True?

- How much of this wage “jump” is due to earning the CCC degree or certificate?
- What are some other factors that may help account for the dramatic wage increase after award achievement?
- One possible alternative...

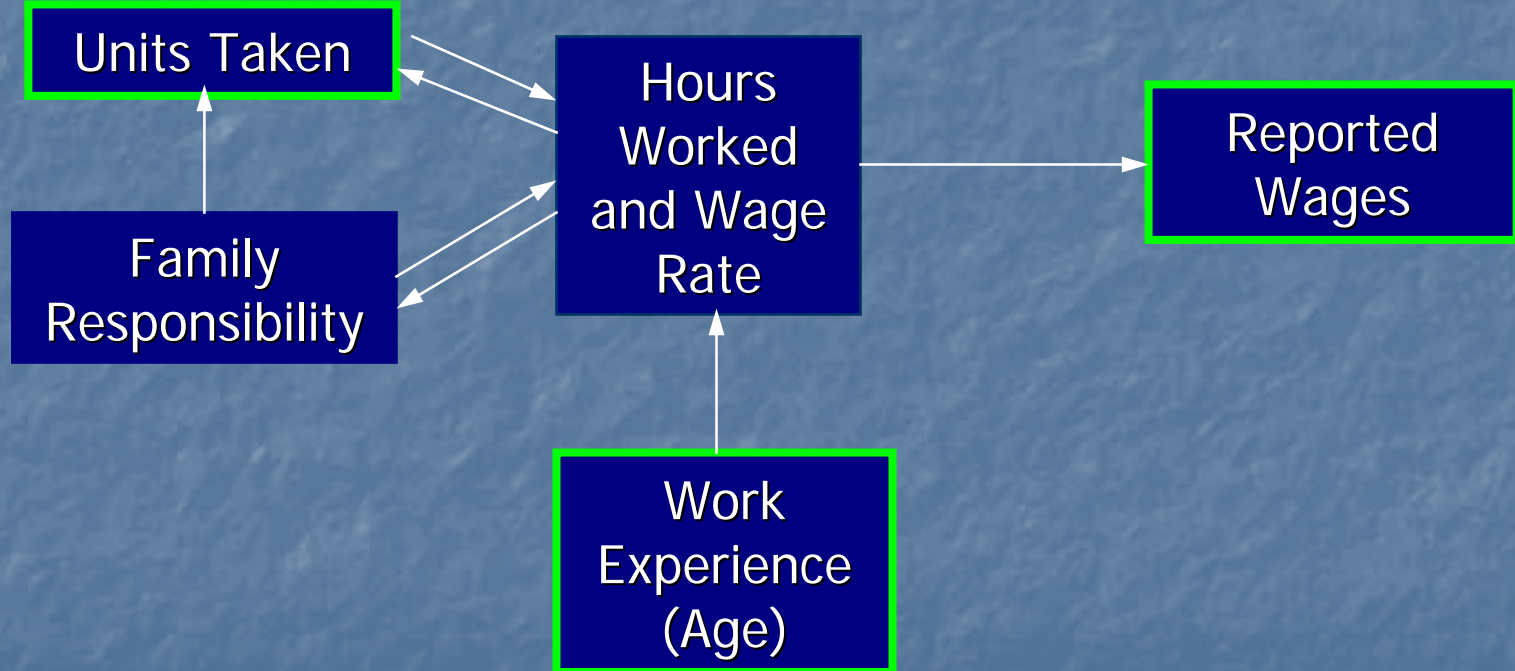
Alternative Explanation for Wage Jump

- Going from part-time (PT) to full-time (FT) employment upon graduation may account for the post-award wage “jump” seen in previous slides.
- Use caution when attributing wage gain to CCC award.
- With current data, we do not know much about the transition from PT to FT.
- Therefore...

Relationship of Units With Wages

- Use units taken as “proxy” for PT versus FT employment during the pre-award years
- What are the related effects on wage changes at award?
- Wages, units, etc. are part of a complex model.

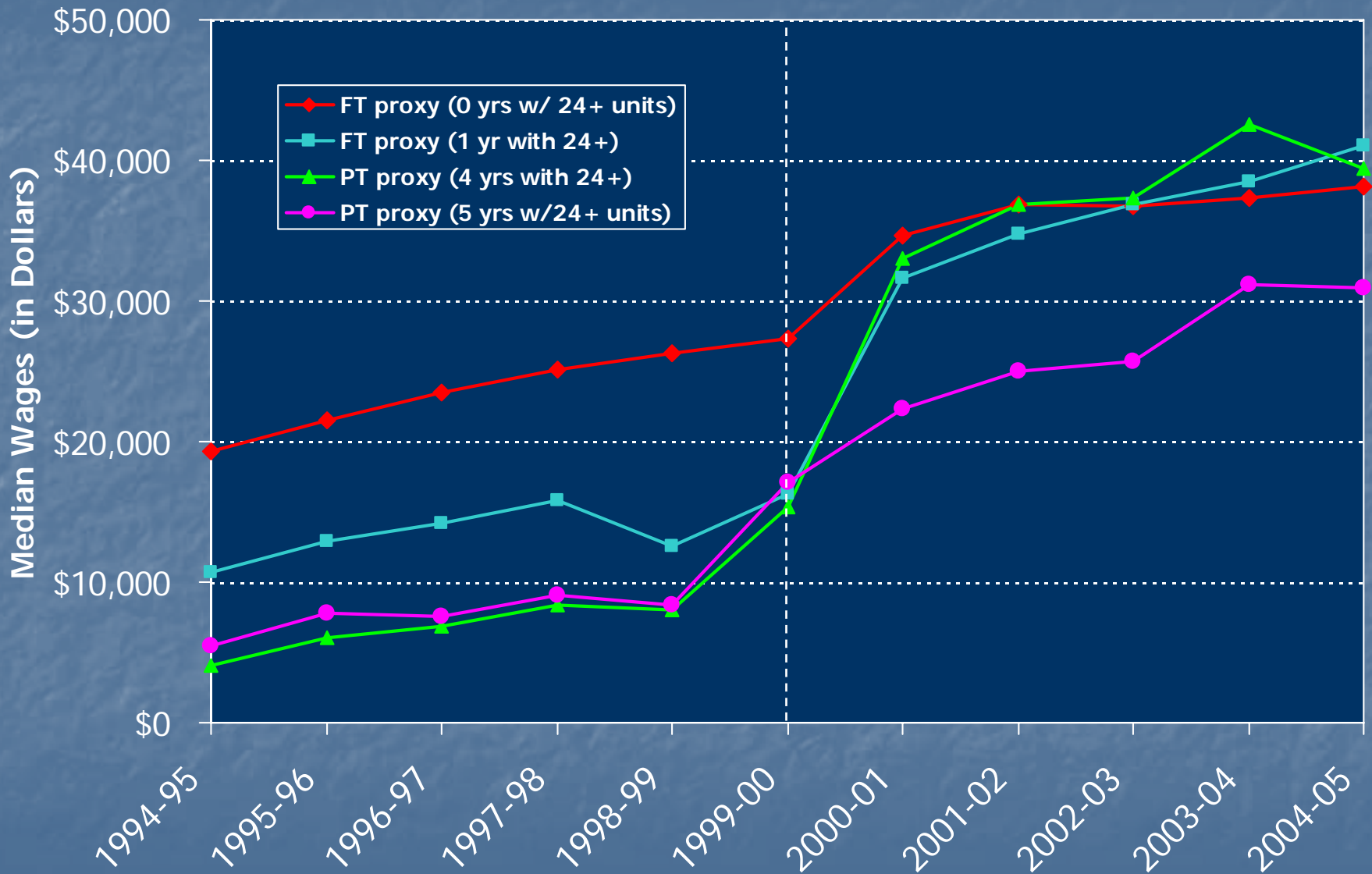
Units/Wages: A Model



Wages by Units Taken

- Used number of pre-award years where student took 24 or more units as rough proxy for FT vs. PT employment in pre-award years.
 - 0 or 1 year with 24+ units = FT employment
 - 4 or 5 years with 24+ units = PT employment
- Proxy analysis supports hypothesis that going from PT to FT employment upon award may lead to wage “jump,” but...

Wages by FT and PT Employment Proxy



Wages by Units Taken

- Notice that the “jump” in wages still occurred for cohort members in the “FT employment” proxy groups.
- However, the jump was more dramatic for those taking more units (PT employment proxy) during the pre-award years.
 - 31.6% for FT proxy
 - 167.7% for PT proxy

Some additional information about units and wage relationship

- We'd expect the correlation between wages and units taken to be negative.
- Students more likely to work PT might be those pursuing more intense or demanding courses of study:
 - AA/AS degrees
 - Certificates requiring greater number of units

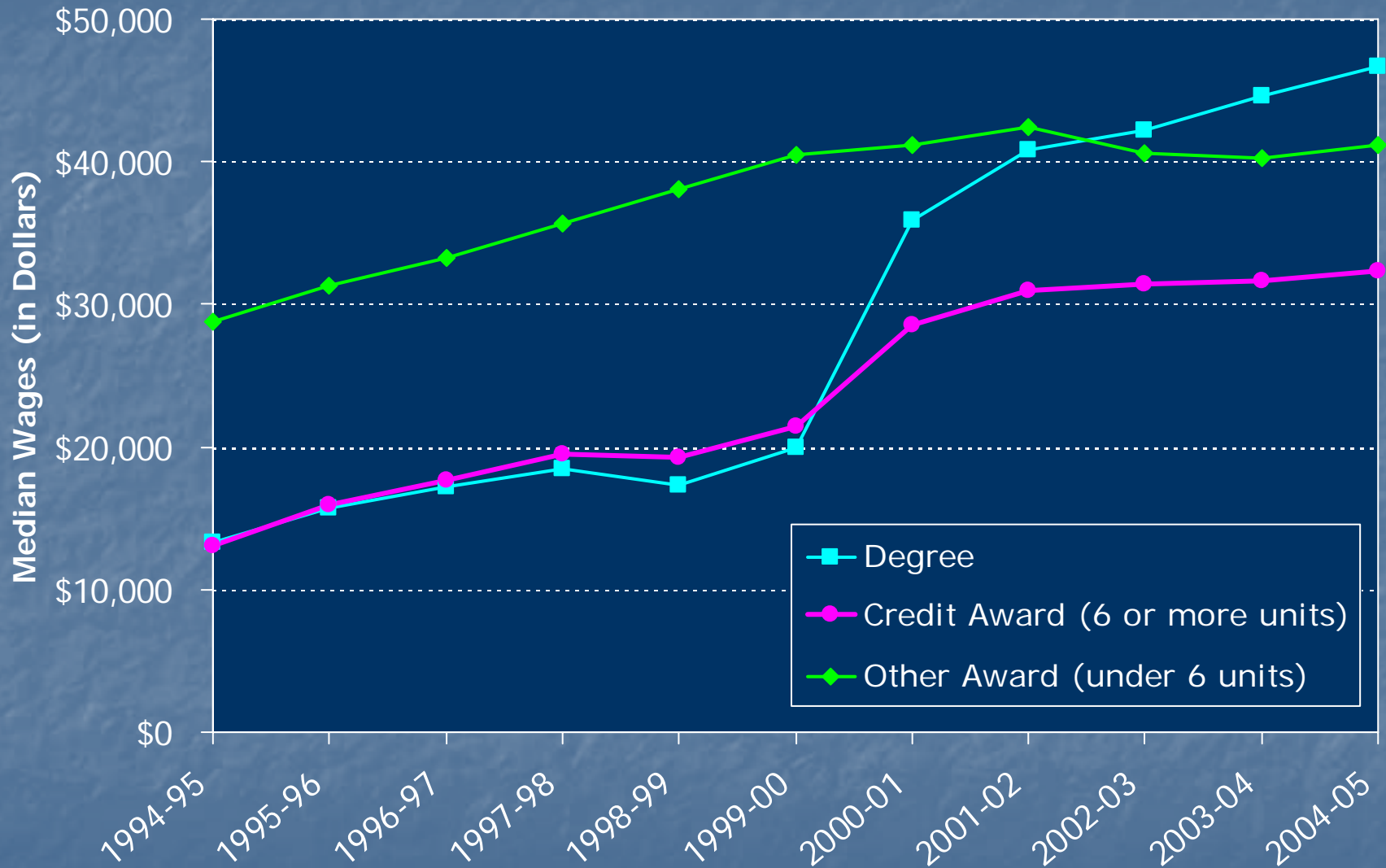
Correlation of Pre-Award Wages with Units Taken (Spearman's Rho)

Award	5 yrs before	4 yrs before	3 yrs Before	2 yrs before	1 yr before
Degree n = 2,229	-.145	-.222	-.287	-.332	-.426
Certificate n = 2,191	-.078	-.127	-.113	-.120	-.288
Other award n = 938	-.036	-.004	-.066	-.002	.015

Degrees versus Certificates: Effects on Wages

- Analyzed median wages for:
 - AA/AS Degrees
 - Credit Certificates (6 units or more)
 - Other Credit Award, under 6 units

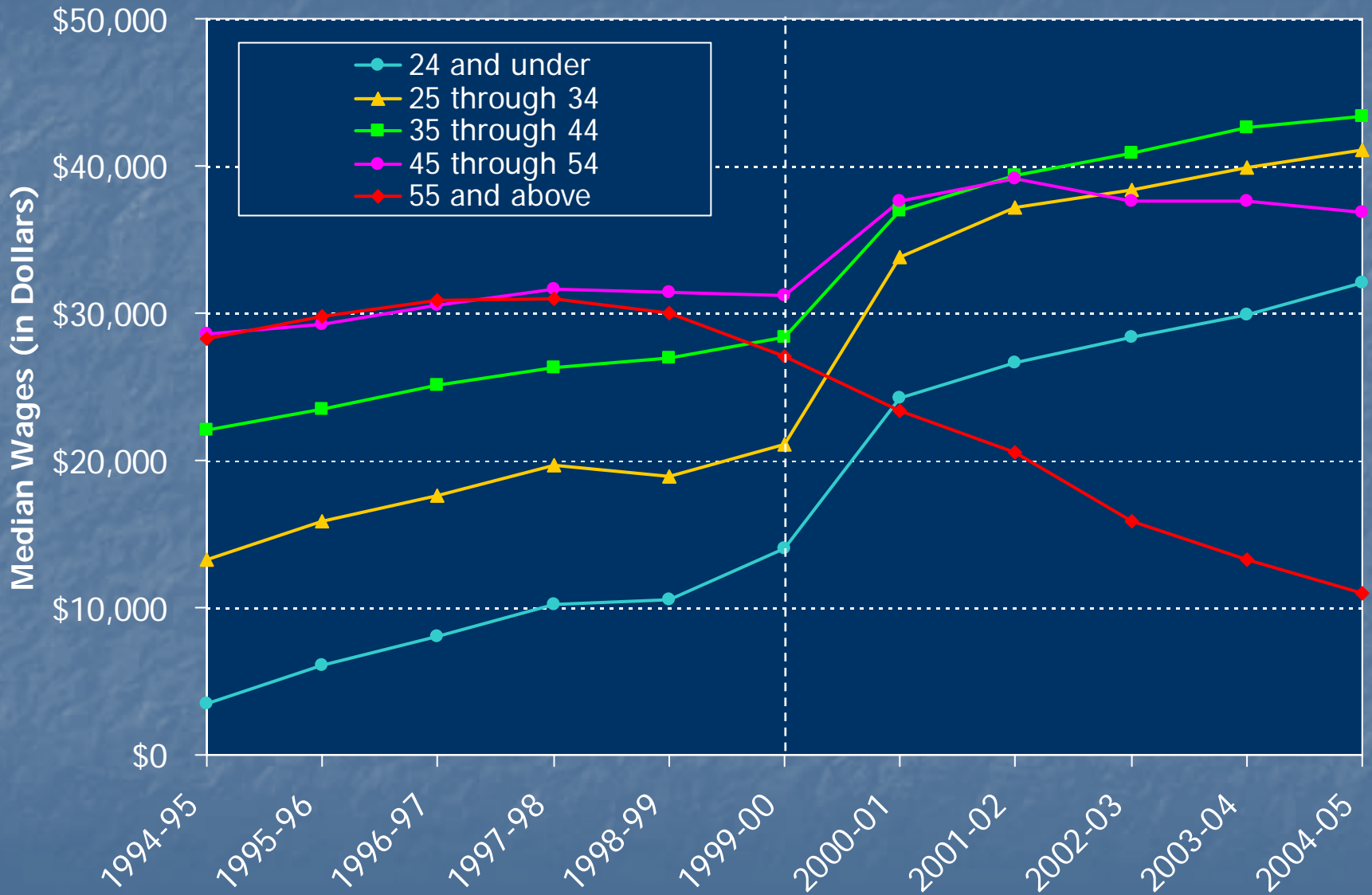
Wage Trend by Award Type



Relationship Between Age and Wages

- Based on age at term of award.
- In general, trends are similar.
- There's still a "jump" upon receiving award.
- "Jump" is most pronounced for
 - 24 years old and under
 - 25 to 34 year olds

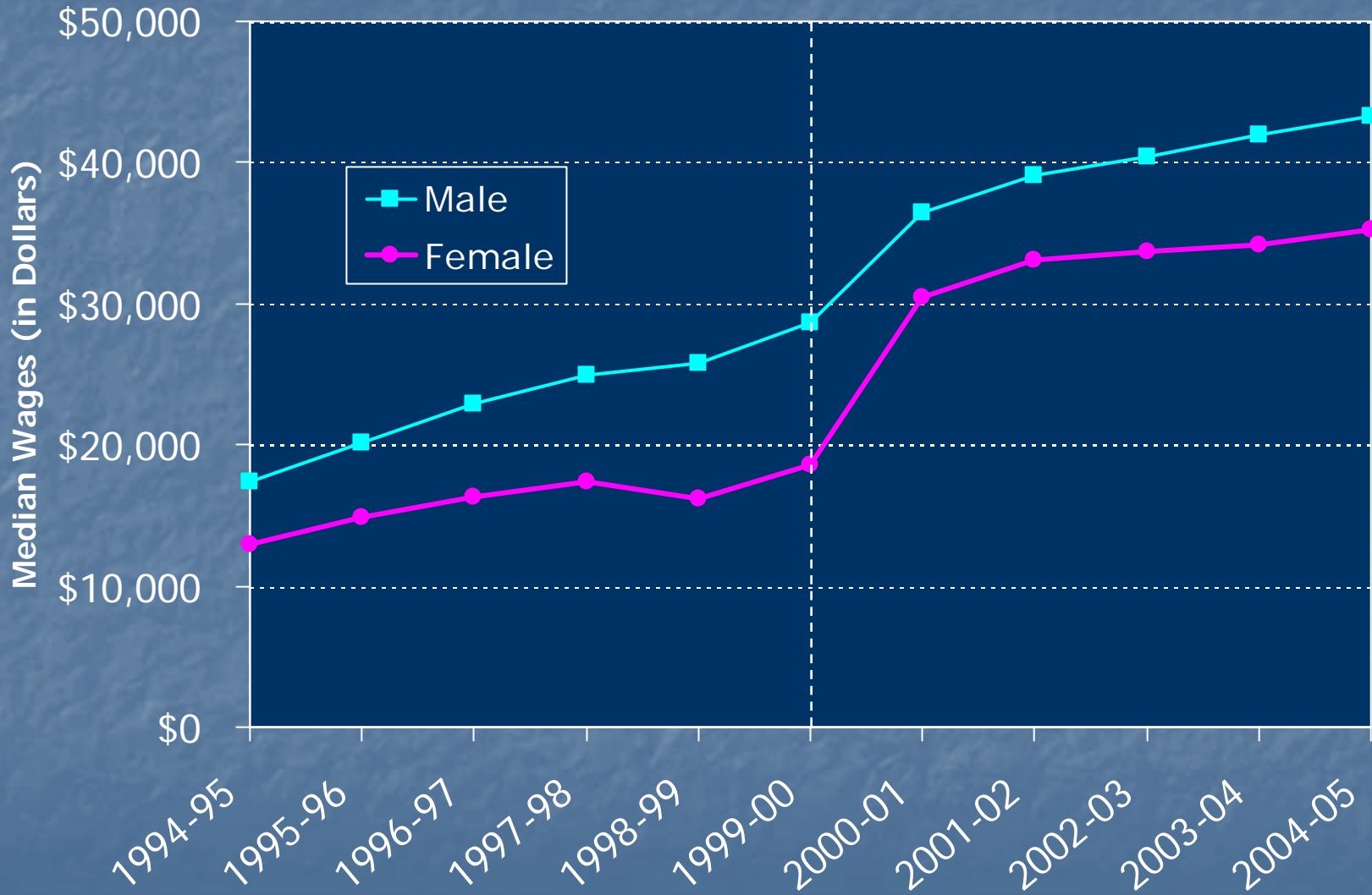
Wage Trend – By Age Groups



Relationship Between Gender and Wages

- Males began with higher median wages than females.
- Male wage trend level remained above that for females.
- Female wage “jump” percentage larger than male upon receiving award.
 - Females = 88.6%
 - Males = 41.2%

Wage Trend by Gender



Summary

- Raw data imply a real boost in wages.
- Adjusting for inflation does not change this basic conclusion.
- Adjusting for participation (PT/FT) modifies this basic conclusion.
- Examining age and gender show nuances in the basic conclusion.

Future Research

- Use the models developed in labor economics to guide efforts.
- Identify useful analyses or studies.
- Identify related data needs.

What The Data Don't Tell Us

- That various factors cause the reported wage changes to understate/overstate the real gain in welfare (i.e., well-being).

Current Data Limitations

- Measurement limitations (e.g., coverage).
- Non-experimental nature of the data.

Measurement Limitations

- No consideration for “present value of future earnings.”
[not a rate of return]
- Exclusion of self-employed leavers.
- Exclusion of wages paid by employers outside of California.
- Exclusion of employee wages that employers fail to report to the EDD.
- Omission of non-wage benefits from degree/certificate completion (incl. fringe benefits).
- Ignores social benefits (vis-à-vis private benefits)

Non-wage Benefits

- Compensation includes fringe benefits and stock options, etc.
- Non-pecuniary things (i.e., aside from compensation) such as work location, choice of hours, and type of work activity.

Non-experimental Nature of Data

- Repeated measurements, such as our wage data, do not automatically account for the many factors that affect wage levels of a cohort.
- A true experiment would isolate CCC effects on wages from other effects, but a true experiment is not feasible.
- So we try statistical adjustments.

Statistical Adjustments

- Using the *human capital earnings model*:

log earnings = schooling + other factors

Other Factors We Analyzed

- Age of worker.
- Gender of worker.
- Level of labor participation (inferred hours or weeks worked—more data needed).
- Inflation (general increase in cost of living).

Other Factors to Analyze

- Labor supply
- Labor demand
- Institutional effects

Labor Supply

- Population growth
- Immigration (incl. "outmigration")
- Globalization of labor (offshoring)
- Ability of worker

Labor Demand

- Industry shifts (e.g., more services)
- Technological change (e.g., IT)
- Licensing & certification policies
- Discrimination
- Size of public sector employment

Institutional Effects

- Union influence
- Minimum wage regulation

A Different Factor: Signalling

- In labor economics, a separate effect of schooling on wages can be signalling.
- This is also referred to as the “sheepskin effect.”
- Here, the student can increase future wages despite a mismatch between content of curriculum and job skills used.

Implication of Signalling

- Comparisons of education content to skills used on jobs may understate the wage benefits that education imparts to students.
- Signalling is a long-term effect that relates to broad trends in job types (i.e., general in skill and harder to monitor) and selection issues (esp. turnover and probation periods).

Policy and Planning Implications

- Current wage data and analysis do not tell the whole story about the benefits of CCC occupational education.
- Policy makers need to plan for additional data and analyses if they want the “big picture.”

A Couple of References

- Lawrence Mishel, Jared Bernstein, & Sylvia Allegretto. (2005). *The State of Working America*. ILR Press (Ithaca, NY).
- David Card. (1999). The Causal Effect of Education on Earnings in O.Ashenfelter & D.Card (eds.). *Handbook of Labor Economics, Vol. 3A*. Elsevier (Amsterdam).

Contact Information

- Willard Hom

- whom@cccco.edu
- (916) 327-5887

- Catharine Liddicoat

- cliddicoat@cccco.edu
- (916) 327-5908