

Using Human Resources Data in a Changing World

From *New Directions for Institutional Research*, Volume 140:
“Using Human Resources Data in a Changing World”
December 2008

Panel Speakers

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North Carolina – Greensboro

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Nevada - Reno

Dr. Melvin Letteer – Kentucky Higher
Education Assistance Authority

Dr. Gary Levy – Marquette University

Andrea Stigdon – The University of Texas
at Dallas

Dr. Lawrence J. Redlinger – The
University of Texas at Dallas

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University

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Community College - NMSU

Rocky Mountain Association for Institutional Research, Missoula, Montana: October 15 – 17, 2008

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Introduction: Why is it Important to Analyze and Use Human Resources Data?

Raymond Wallace

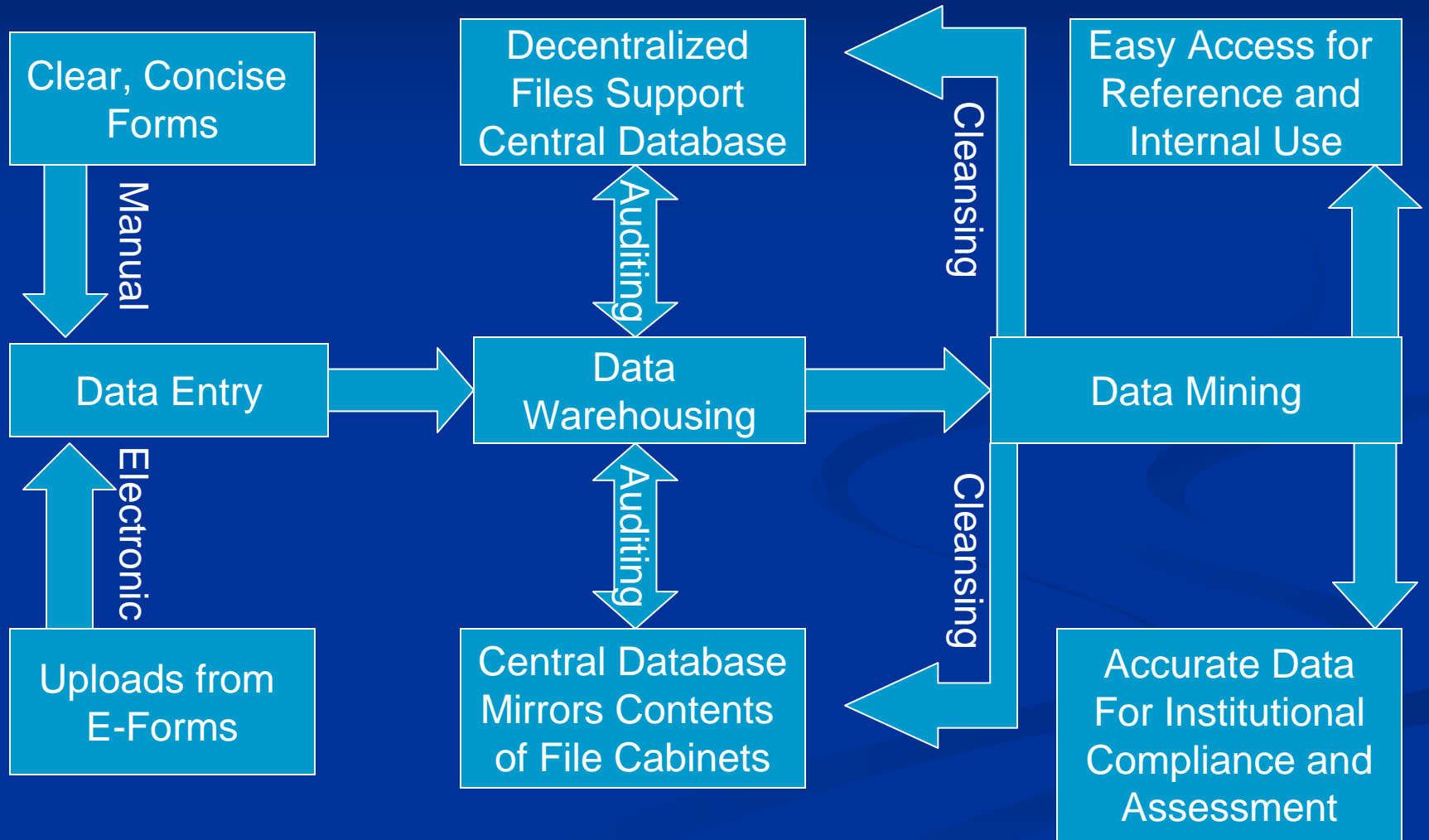
Washington State University

**Utilizing Personnel and Financial Data for Reporting Purposes:
What are the Challenges to Using Such Data Accurately?**

Dr. Nicolas A. Valcik and Andrea Stigdon

The University of Texas at Dallas

ONE SYSTEM, TWO PURPOSES



| | Administrative Assistant | Programmer | Institutional Researcher |
|------------------------------|---|---|---|
| Primary Responsibility | Direct support of academic or administrative unit | Maintenance and security of institution's IT infrastructure | Ensuring compliance with reporting obligations and dissemination of data for assessment and planning |
| Relationship to Data | Entry | Extraction | Analysis |
| Utilization of Data | Selective | Minimal | Holistic |
| Access to University Systems | Minimal | Complete | Variable |
| Need for Data Accuracy | High, but limited to specialized area | Low | High |
| Data Accuracy measured by: | Effectiveness in resolving local needs. | Successful execution of program | Passing audits designed to verify logic, consistency, degree of variance from previously reported results |

Administrative Assistant:

Why are certain procedures in place?

How does data I do not need being used by the rest of the institution?

How do other personnel's activities affect my data?

Who else uses the data that I need? Do they use my data differently than I do?

Are there tools that can reduce the time I spend on data entry and minimize data entry errors?

Programmer:

Why do certain individuals need access to certain systems?

How can I determine if the data I have extracted is accurate?

How will this data be used? Why is it important?

Why was the data input inaccurately? Are there controls that can be set to limit erroneous entries?

Institutional Researcher:

How can I effectively explain to other personnel how this data is utilized?

How can I involve other personnel in the reporting and assessment process so that it becomes meaningful and useful to them?

What challenges do other personnel face when entering or extracting data? How can I assist them with these challenges?

**A Beginner's Guide to Integrating Higher Education Human
Resources Faculty Data and Cost Data**

Dr. Gary Levy

Marquette University

Common Higher Education Human Resources Faculty Data: Instruction, Faculty, Instructional Faculty

- ✓ **IPEDS Fall Staff Survey breaks down faculty data as a function of part-time/full-time status, primary function and/or occupational activity (such as primarily instruction, primarily research, etc.), gender, contract length, academic rank for tenured/tenure-track faculty, salary range, and fringe benefit information.**
- ✓ **Integrating cost data with different categories of human resources faculty data are where institutional research offices can add value above and beyond simple reporting of cost data and faculty data**

Common Higher Education Cost Concepts: Cost Objects & Cost Functions

- ✓ **Cost objects and functions are potentially helpful metrics for understanding ways resources are used within an organization.**
- ✓ **Examination of a unit's cost objects and functions illuminate the priorities or foci of that unit.**
- ✓ **Changes in the distribution of monies across cost objects and functions over time tell a story about changes or stability in a units operations and organizational priorities.**

First Steps in Integrating HR Faculty Data and Cost Data : Simple Ratios

- ✓ **Some good beginning points are to examine standard cost functions along with categories of human resources faculty data used to complete IPEDS Human Resources surveys.**
- ✓ **Cost ratios, cost functions, cost objects, and human resources faculty data are useful in enhancing decision-makers' understanding of resource allocation and productivity at the departmental and college levels .**
- ✓ **“Departmental Scorecards” and “Faculty Scorecards” both contain some similar metrics, and benchmarks, using a variety of information relating to costs, instructional activity, and faculty.**

From Equity Analysis to Adjustment: A Four-Step Faculty Compensation Model

Dr. Serge Herzog

Director, Institutional Analysis

Consultant, CRDA Statlab

The University of Nevada – Reno

Purpose of Presentation

- **Describe process of ensuring equitable and competitive faculty salary compensation at a public research-extensive university**
- **Detail steps to identify potential inequities in faculty compensation**

Goals of a Faculty Compensation System

- **Attract and retain the most qualified faculty**
- **Equitable pay within the institution**
- **Competitive pay vis-à-vis other institutions**
- **Affordable and cost effective**
- **Legally defensible**
- **Appropriate for the variety of academic and administrative faculty appointments**

Equity in Faculty Compensation

- **Equal Pay Act (EPA) of 1963 to protect against gender-based discrimination, requiring “equal pay for equal work”**
- **Title VII of Civil Rights Act of 1964 (and 1972 amendment) to protect, either in form or practice, against discrimination on basis of gender, race/ethnicity, national origin, or religion**

But,

- **EPA allows for “affirmative defenses” if based on merit, seniority, quantity/quality, or systematically applied factors other than gender (e.g., market)**

Statistical Salary Equity Model

- Informed by human capital theory (economics)
- Faculty salary is a function of factors that contribute to productivity, e.g., educational attainment, academic experience, research output, etc.
- To simultaneously account for multiple factor (variable) effects on salary, some form of multiple regression is typically used to calculate a predicted salary, including models based on
 - total population of faculty with actual salary as dependent variable
 - total population of faculty with natural logarithm (\ln) salary as dependent variable (proportional measure)
 - *Caucasian male faculty only* with actual or n-log salary; model coefficients applied separately to all other faculty
- Difference in predicted vs. actual salary is the starting point in determining possible inequities

Variables Examined in the UNR Models

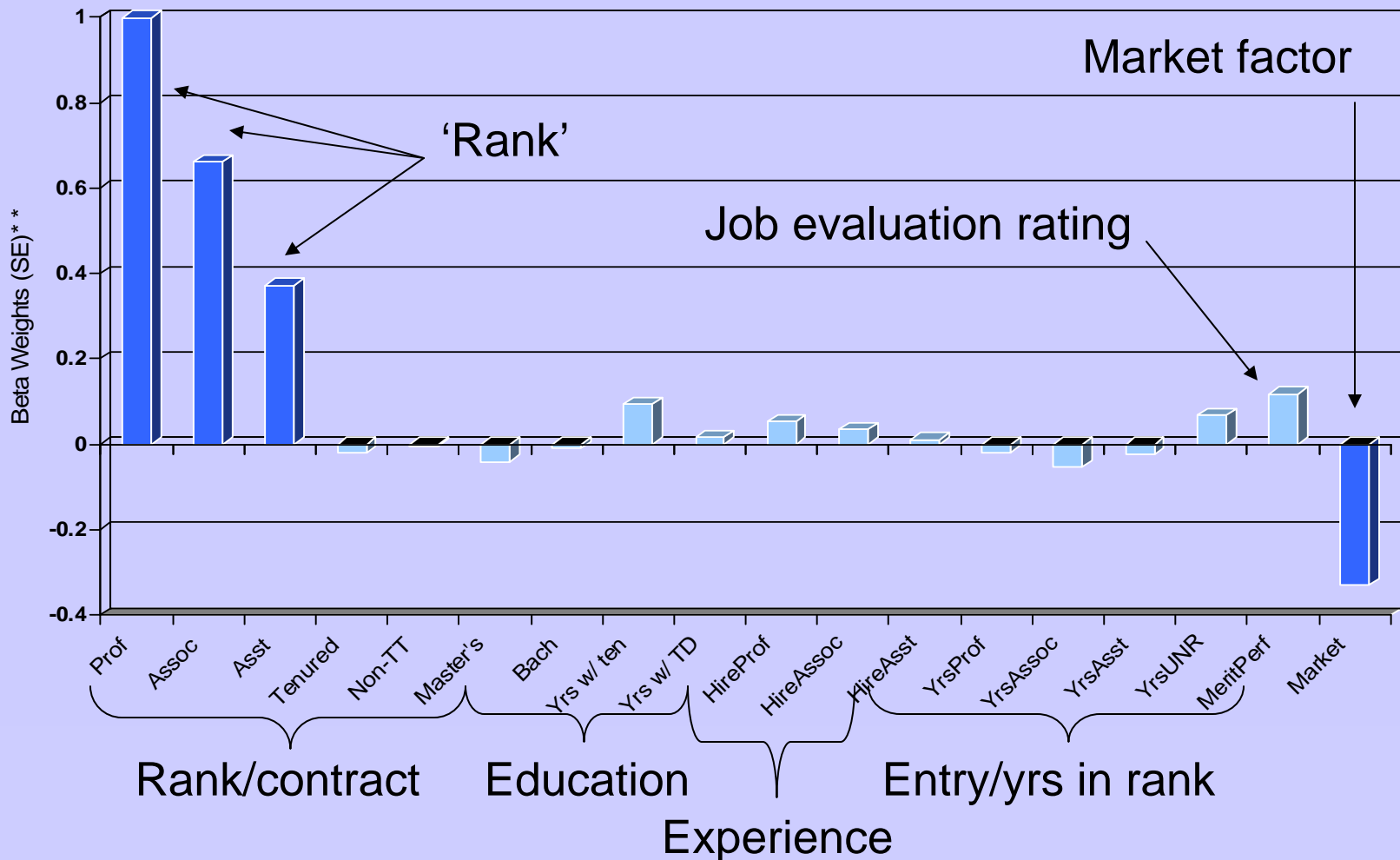
- **Academic faculty**
 - Gender
 - Age
 - Ethnicity/race
 - Current rank
 - Entry rank
 - Highest degree
 - Appointment type
 - Years at institution
 - Years in current rank
 - Years with tenure
 - Years with doctorate
 - Academic discipline
 - Average performance rating
 - Market factor
 - Actual contract salary (DV)
- **Administrative faculty**
 - Gender
 - Age
 - Ethnicity/race
 - Years in current range (rank)
 - Job range/responsibilities
 - Average performance rating
 - Market factor
 - Actual contract salary (DV)

Rank and promotion-related variables ought to be included, and possible inequities associated with rank and promotion decisions should be separately tested.

Statistical Method and Results

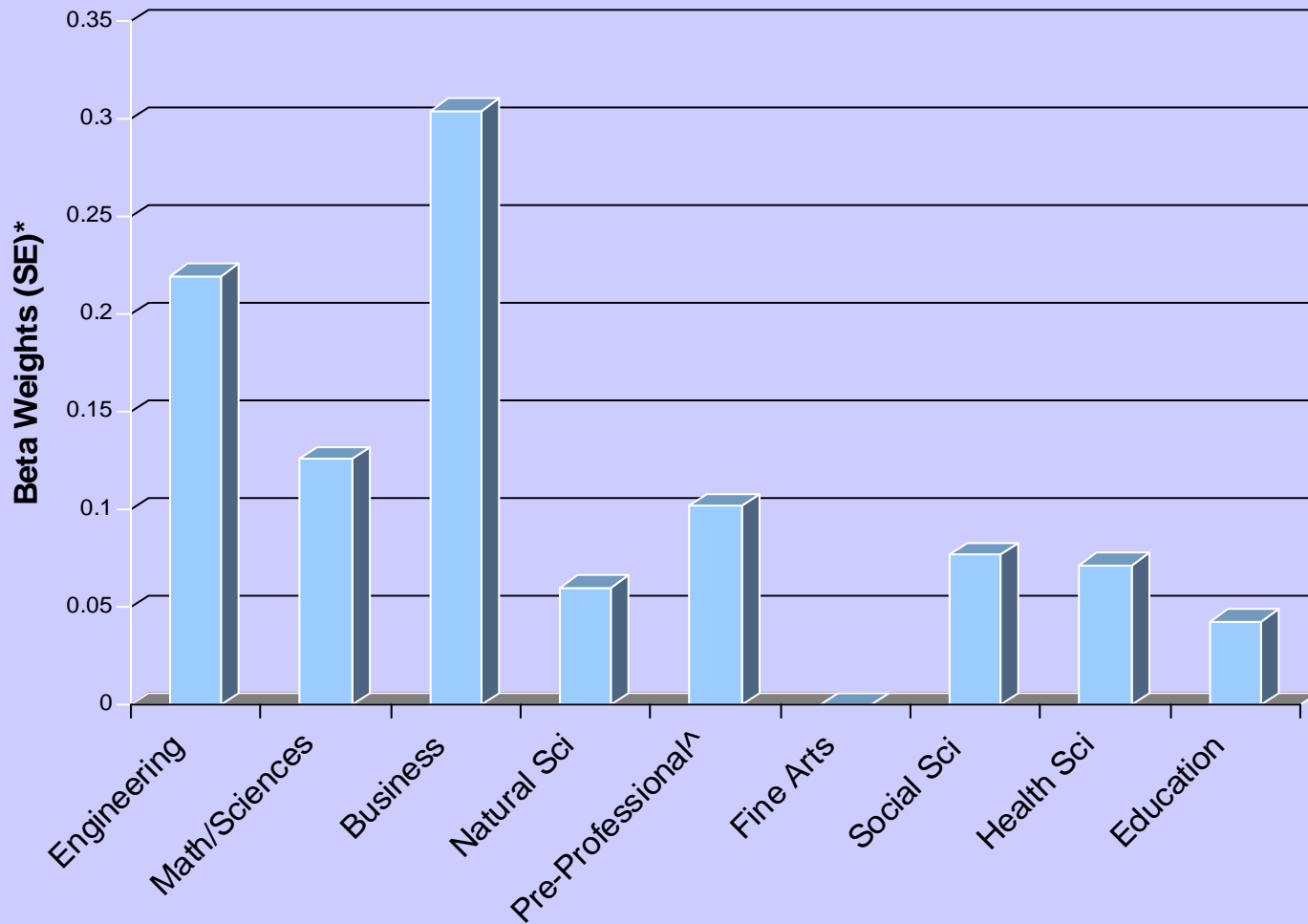
- **Data reliability confirmed via:**
 - **Collinearity diagnostics (VIF, condition index, variance decomposition)**
[Results: $VIF < 15$, since focus is on reducing standard error]
 - **Outlier and residual analysis (e.g., Cook's D, scatter diagram)**
- **Four-step process: (see report)**
 1. **Canonical correlation to identify general age, gender, ethnicity/race bias**
 2. **Binary logistic regression to identify possible bias in tenure promotion**
 3. **Multinomial logistic regression to identify possible bias in rank promo.**
 4. **Multiple linear regression to identify possible inequity in compensation after removing age, gender, ethnicity/race variables (based on statistical non-significance, i.e, R^2 , F-statistic, $\alpha = .05$.)**
- **Model results:**
 - **Three misclassifications on rank (with 1 potential adjustment), 5 misclassifications on tenure (with 3 potential adjustments)**
 - **The academic faculty model explains about 94 percent of variation in salary ($R^2 = .937$), the administrative staff model about 85 percent**

Relative Importance of Variables vis-à-vis Instructor-Level Rank in Humanities



*Reference position: Instr., tenure-track, doctoral degree, hired as instructor., years as Instructor

Relative Importance of Academic Field (vis-à-vis Humanities)



^AIncludes Journalism, Social Work, Health Ecology, Interior Design, Library Science

Determination of Salary Adjustment

- **Criteria used:**
 - An actual salary that is 90 percent or less than the predicted salary indicates a potential need for adjustment
 - Base salary of adjusted faculty would be raised to 90 percent of the predicted amount (i.e., predicted salary*0.9 – actual salary)
 - Discretionary judgment by supervisor(s) in cases of substantial difference between actual and predicted salary, low performance, or special circumstances
 - Available funds as determined by the University Planning Committee
- **If adjustment is not fundable at 100 percent due to insufficient resources, additional criteria may be applied:**
 - Market salary must be higher than contract base salary
 - Person must have minimum average job performance rating of ‘commendable’
 - Adjustment may be the smallest amount among the following
 - Difference between actual salary and 90 percent of predicted salary
 - Difference between actual salary and market salary
 - Ten percent of actual salary (i.e., no larger than promotion amount)

Issues to Consider

- **Salary compression associated with newly hired faculty**
- **Relative value of teaching vs. research**
- **Attracting quality, diverse faculty**
- **Ensuring fair, transparent performance-based pay for meritorious faculty**
 - **Allocation of funds for meritorious performance among university units**
 - **Flat amounts vs. percentage-derived amounts**
 - **Plutocracy vs. meritocracy: Skewed at top or balanced across all levels**
- **Applying proper ‘position-matching’ to determine market salary**
- **Analysis of executive administration and faculty in athletic programs, medical school, and research faculty paid through outside grants and contracts**
- **Limited resources to fully fund salary adjustments**
- **Improvement of statistical models**

Words of Caution

- **No model explains anything in a causal way**
- **Statistical models identify systematic issues, not individual problems in compensation**
- **Compensation models should reflect institutional mission, e.g. relative importance of teaching vs. research**
- **Internal vs. external equity**

**Formula Funding, the Delaware Study, and the University of
North Carolina**

Dr. Sarah Carrigan

The University of North Carolina - Greensboro

Formula Funding, the Delaware Study, and the University of North Carolina

1971 to 1998: the University of North Carolina (UNC) system funding formula is based on a student FTE change model.

1995: the North Carolina General Assembly directs the UNC Board of Governors (BOG) to review/propose a new funding system

BOG identifies the Delaware Study as the primary source for externally tested instructional costs

Formula Funding, the Delaware Study, and the University of North Carolina

1998: the UNC system introduces a budgeting plan built on Delaware cost figures

This creates a credit hour cost matrix for establishing budgets at each of the UNC campuses

The a 12 cell matrix is defined by four discipline cost categories and three instructional levels (undergraduate, masters, and doctoral).

Cost levels are based on weighted averages per discipline, ordered and grouped into low, medium, high and very high costs

Average costs across instructional levels set the weight for each cell

Projected Change in SCHs compared with Budgeted

| | Undergrad | Masters | Doctoral |
|----------|-----------|---------|----------|
| Cost I | 1,285 | -1,175 | 746 |
| Cost II | 9,446 | -18 | 1,167 |
| Cost III | 7,104 | 525 | 325 |
| Cost IV | 512 | 353 | 240 |

Cost Factors to produce One faculty FTE

| | Undergrad | Masters | Doctoral |
|----------|-----------|---------|----------|
| Cost I | 708.6 | 169.5 | 115.6 |
| Cost II | 535.7 | 303.9 | 110.2 |
| Cost III | 406.2 | 186.2 | 109.9 |
| Cost IV | 232.3 | 90.2 | 80.9 |

Instructional Positions Required

| | Undergrad | Masters | Doctoral |
|-----------------------|-----------|---------|----------|
| Cost I | 1.785 | -6.931 | 6.456 |
| Cost II | 15.765 | -0.059 | 10.594 |
| Cost III | 17.487 | 2.819 | 2.958 |
| Cost IV | 2.205 | 3.915 | 2.966 |
| Sub-totals | 37.242 | -0.256 | 22.974 |
| Positions Required | | | 59.960 |

2007 Enrollment/Credit Hour Production Targets

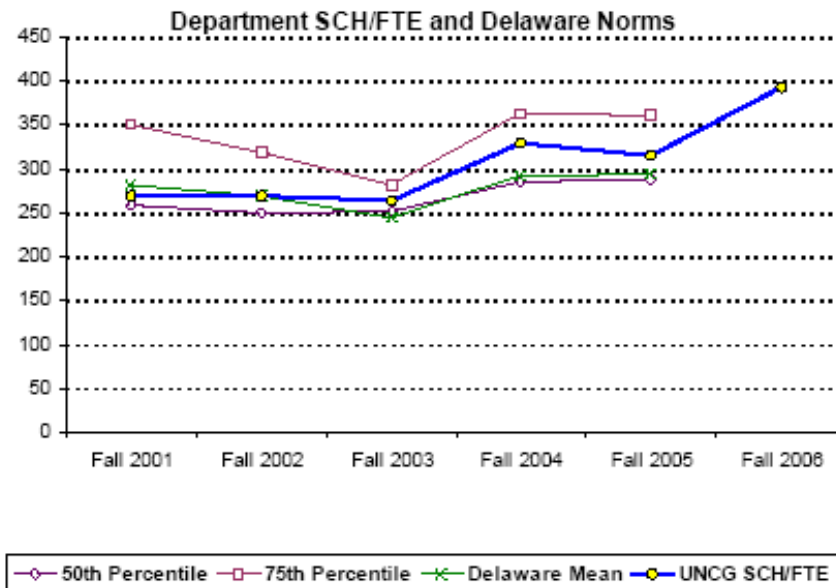
| Department | 2003 | | 2004 | | 2005 | | Three Year AVG | | 2006 | | 2007 | | | |
|---------------------------------|----------|------------|----------|------------|----------|------------|----------------|------------|---------|------------|------------------------|---------|------------|------------------------|
| | Del Norm | Target SCH | Del Norm | Target SCH | Del Norm | Target SCH | Del Norm | Target SCH | SCH/FTE | Target SCH | Faculty FTE Production | SCH/FTE | Target SCH | Faculty FTE Production |
| Underwater Basketweaving | | | | | | | | | | | | | | |
| 75th Percentile | 282.0 | 2,419.6 | 363.0 | 2,631.8 | 362.0 | 3,439.0 | 335.7 | 2,830.1 | | 3,188.8 | 11.2 | | | |
| 50th Percentile | 252.0 | 2,162.2 | 286.0 | 2,073.5 | 289.0 | 2,745.5 | 275.7 | 2,327.1 | | 2,618.8 | 13.6 | | | |
| Delaware Mean | 244.0 | 2,093.5 | 292.0 | 2,117.0 | 294.0 | 2,793.0 | 276.7 | 2,334.5 | | 2,628.3 | 13.5 | | | |
| UNCG SCH/FTE | 264.5 | | 329.8 | | 315.5 | | 303.2 | | 394.0 | | | | | |
| UNCG SCH | 2,269.0 | | 2,391.0 | | 2,997.0 | | 2,552.3 | | | 3,743.0 | | | | |
| UNCG Faculty FTE | 8.6 | | 7.3 | | 9.5 | | 8.4 | | | 9.5 | | | | |

Is Underwater Basketweaving performing at or above the Mean, 50th Percentile, or 75th Percentile on credit hour production? Compare Fall 2007 UNCG SCH, 3783, to the three Target SCH values, highlighted in green. The Target SCHs compute the number of credit hours that Underwater Basketweaving's 11 Faculty FTE would have produced at each normative level. It is preferable to be at or higher than the Mean and 50th Percentile Target SCHs.

Is Underwater Basketweaving's Faculty FTE comparable to the Mean, 50th Percentile, or 75th Percentile Faculty FTE? Compare Fall 2007 UNCG Faculty FTE, 11, to the three Faculty FTE Production values, highlighted in yellow. The Faculty FTE Production values compute the FTE that would have produced Underwater Basketweaving's 3783 SCH at each normative level. It is preferable to be at or smaller than the Mean and 50th Percentile FTEs.

*Delaware Study Trend Report:
Home Department SCH/FTE compared with Five
Year Norms*

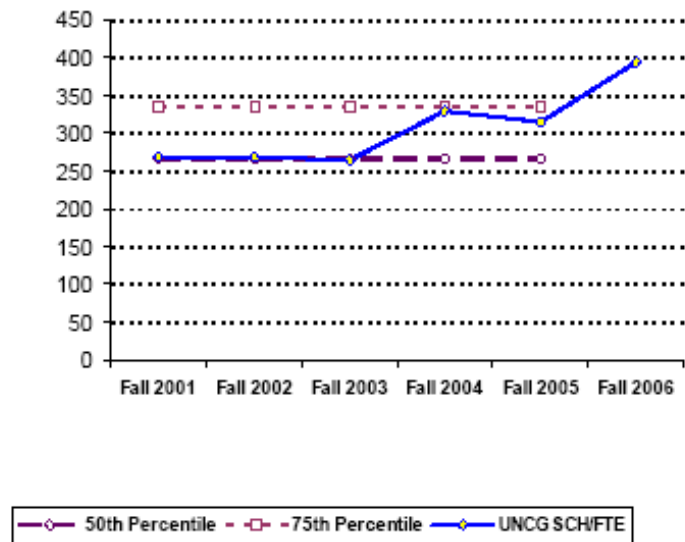
| Underwater Basketweaving | Fall 2001 | Fall 2002 | Fall 2003 | Fall 2004 | Fall 2005 | Fall 2006 |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| 00.00 (B) | | | | | | |
| 75th Percentile | 350.0 | 319.0 | 282.0 | 363.0 | 362.0 | |
| 50th Percentile | 259.0 | 250.0 | 252.0 | 286.0 | 289.0 | |
| Delaware Mean | 282.0 | 270.0 | 244.0 | 292.0 | 294.0 | |
| UNCG SCH/FTE | 269.0 | 268.8 | 264.5 | 329.8 | 315.5 | 394.0 |
| UNCG SCH | 2,098.0 | 2,486.0 | 2,269.0 | 2,391.0 | 2,997.0 | 3,743.0 |
| UNCG Faculty FTE | 7.8 | 9.3 | 8.6 | 7.3 | 9.5 | 9.5 |



*Delaware Study Trend Report:
Home Department compared with Five Year
Average Norms*

| Underwater Basketweaving | Fall 2001 | Fall 2002 | Fall 2003 | Fall 2004 | Fall 2005 | Fall 2006 |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| 00.00 (B) | | | | | | |
| 75th Percentile | 350.0 | 319.0 | 282.0 | 363.0 | 362.0 | |
| 50th Percentile | 259.0 | 250.0 | 252.0 | 286.0 | 289.0 | |
| Delaware Mean | 282.0 | 270.0 | 244.0 | 292.0 | 294.0 | |
| UNCG SCH/FTE | 269.0 | 268.8 | 264.5 | 329.8 | 315.5 | 394.0 |
| UNCG SCH | 2,096.0 | 2,486.0 | 2,269.0 | 2,391.0 | 2,997.0 | 3,743.0 |
| UNCG Faculty FTE | 7.8 | 9.3 | 8.6 | 7.3 | 9.5 | 9.5 |

Department SCH/FTE and Average Delaware Norms



This chart presents Percentile figures that are averaged across the past five cycles.



Delaware Study in North Carolina

- System-wide budget requests and allocations**
- at campus level it reveals program/department efficiencies**
- planning /goal-setting by provost, deans and department heads**

Budgeting for the Kentucky Educational Excellence Scholarship

Dr. Melvin Letteer

Kentucky Higher Education Assistance Authority

Kentucky Educational Excellence Scholarship

Senate Bill 21 passed 1998

- Dedicated net state lottery revenue as funding source:
 - \$1.2 million - Collaborative Center for Literacy Development
 - \$1.8 million - Reading Diagnostic and Intervention Fund
 - 55% of remainder - state need-based postsecondary grant programs
 - 45% of remainder - Kentucky Educational Excellence Scholarship
- State legislature appropriates funds biennially based upon projected utilization.

Kentucky Educational Excellence Scholarship

All high schools report all students GPAs to KHEAA over secure web server.

KHEAA calculates earned KEES award:

| GPA | Award | GPA | Award | ACT | Award |
|-------------|--------|-------------|--------|------|--------|
| 2.50 - 2.59 | \$ 125 | 3.25 - 3.29 | \$ 312 | 15 | \$ 36 |
| 2.60 - 2.69 | \$ 150 | 3.30 - 3.39 | \$ 325 | 16 | \$ 71 |
| 2.70 - 2.74 | \$ 175 | 3.40 - 3.49 | \$ 350 | 17 | \$ 107 |
| 2.75 - 2.79 | \$ 187 | 3.50 - 3.59 | \$ 375 | 18 | \$ 143 |
| 2.80 - 2.89 | \$ 200 | 3.60 - 3.69 | \$ 400 | 19 | \$ 179 |
| 2.90 - 2.99 | \$ 225 | 3.70 - 3.74 | \$ 425 | 20 | \$ 214 |
| 3.00 - 3.09 | \$ 250 | 3.75 - 3.79 | \$ 437 | 21 | \$ 250 |
| 3.10 - 3.19 | \$ 275 | 3.80 - 3.89 | \$ 450 | 22 | \$ 286 |
| 3.20 - 3.24 | \$ 300 | 3.90 - 3.99 | \$ 475 | 23 | \$ 321 |
| | | 4.00 + | \$ 500 | 24 | \$ 357 |
| | | | | 25 | \$ 393 |
| | | | | 26 | \$ 428 |
| | | | | 27 | \$ 464 |
| | | | | 28 + | \$ 500 |

Kentucky Educational Excellence Scholarship

KHEAA notifies students/parents each year of annual earned amount and cumulative earned KEES via letter.

Students may verify earned KEES awards at *GoHigherKY.org* website.

Postsecondary institutions may verify applicant's or enrolled student's KEES eligibility and earned KEES award amount for financial aid packaging.

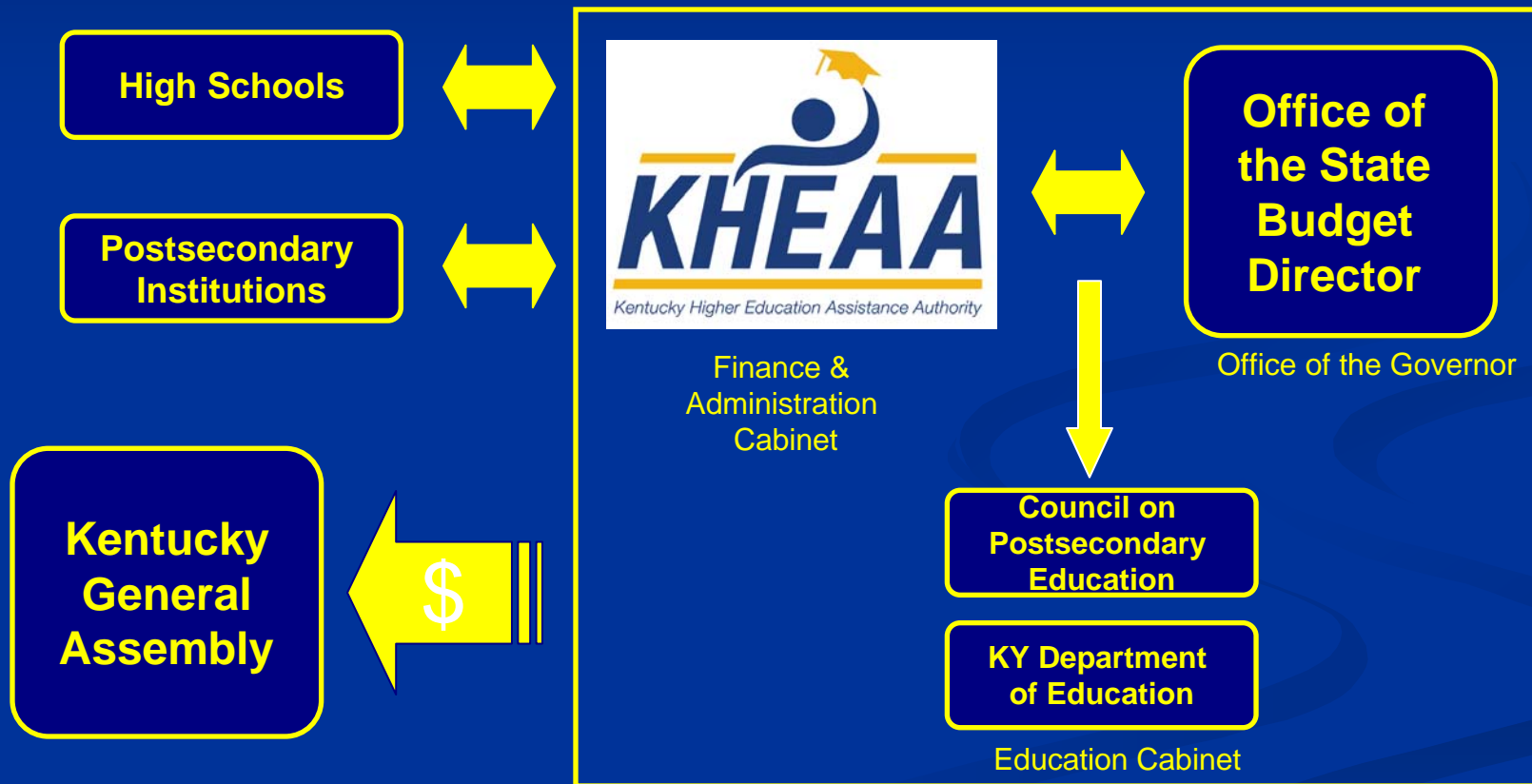
Kentucky Educational Excellence Scholarship

Paperless Postsecondary Enrollment and Disbursement:

- Institutions electronically report enrolled KEES-eligible students, course load (hours) at beginning of each semester.
- KHEAA verifies KEES eligibility, calculates KEES scholarship, and remits funds to institutions via EFT.
- Institutions must electronically remit cumulative GPA for each KEES recipient at end of semester.
- June each year, KHEAA determines each student's KEES renewal status for subsequent academic year and posts to *GoHigherKY.org* web site.

Kentucky Educational Excellence Scholarship

KEES Consensus Forecast Group



**Using Return on Investment Models of Programs and Faculty
for Strategic Planning**

Dr. Lawrence J. Redlinger and Dr. Nicolas A. Valcik

The University of Texas at Dallas

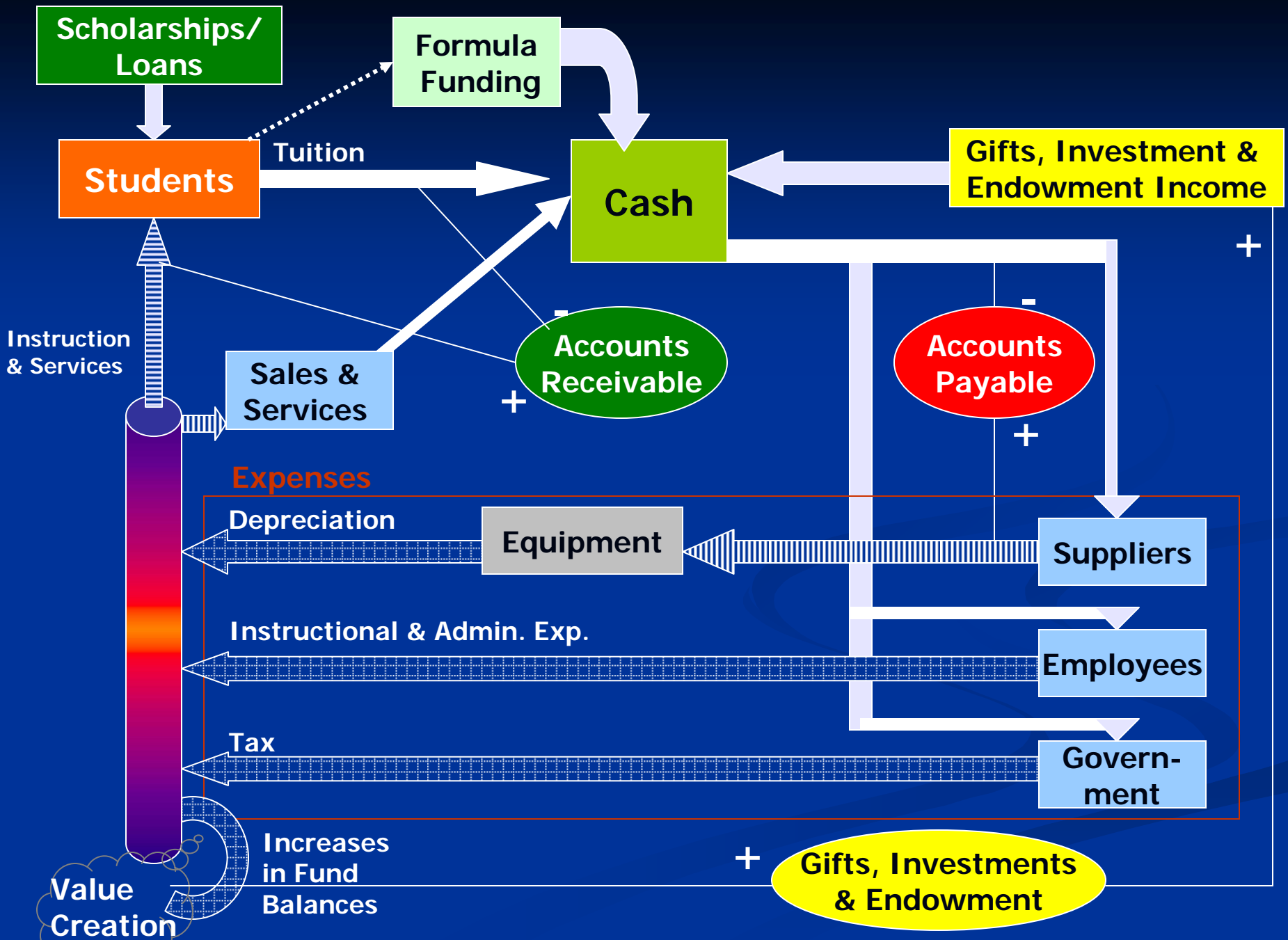
FORMULA FUNDING: REVENUE STREAMS IN TEXAS PUBLIC HIGHER EDUCATION

FORMULA VARIABLES

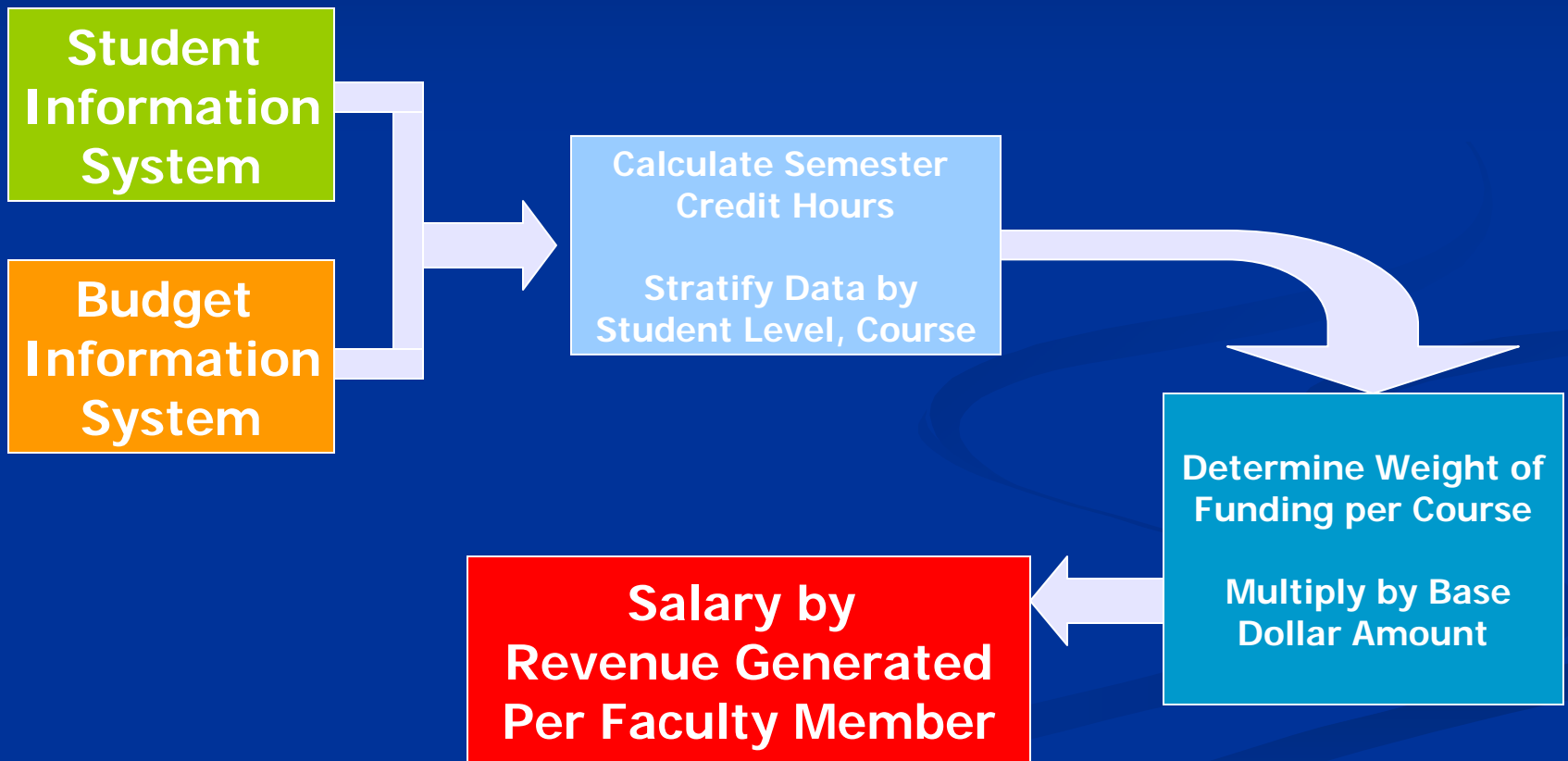
- (F) – Funding
- (M) – Multiplied Result
- (D) – Dollar for Approved Funding Level
- (L) – Lowest Common Denominator Funding
- (W) – Weight Assigned to Course Type
- (S) – Semester Credit Hours of the Course

$$(W) * (S) = (M)$$

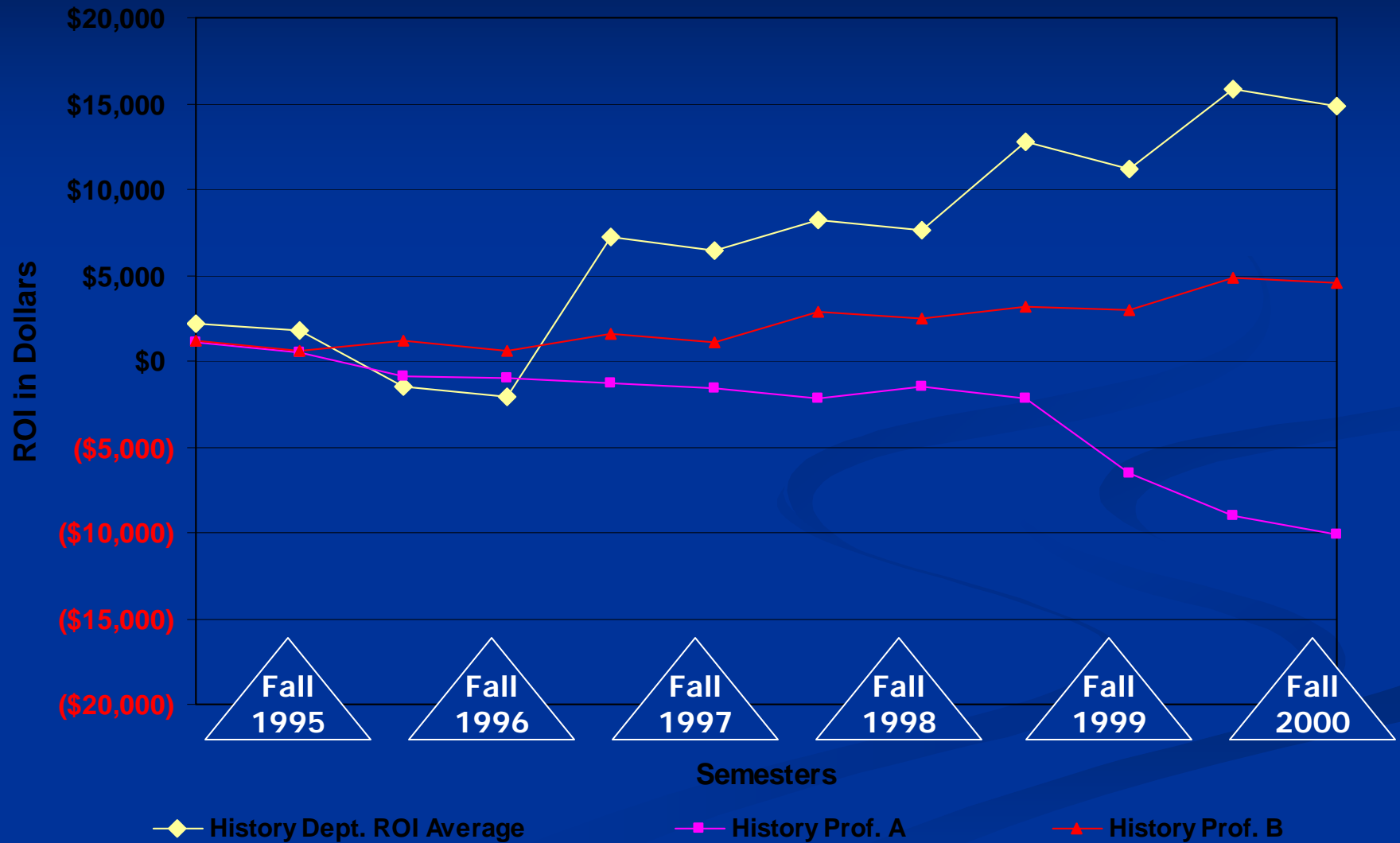
$$(L) * (M) * (D) = (F)$$



METHODOLOGY FOR RETINA



RETURN ON INVESTMENT



The Role Institutional Research Plays in Navigating the Current Economic Uncertainty

Mary Beth Worley

Doña Ana Community College – New Mexico State University

The Role Institutional Research Plays in Navigating the Current Economic Uncertainty

- Examples in:
 - Legislative Funding
 - Economic Market and Retaining Faculty
 - Merit-Based Scholarships and Private Loans

Legislative Funding

- May 2008, U of F president announced a plan to cut \$47-million from the university's 2008-2009 budget
 - Approximately 430 positions (20 NT faculty; 118 staff laid-off) expected to be eliminated;
 - Undergraduate enrollment expected to be reduced by 4,000 students over a four year period. This may affect CC transfer students to university;
 - August 2008, Board of Trustees announced they expect 3-4% in cuts in the 09-10 budget year.

Legislative Funding

- April 2008, CA governor announced a 10 percent cut in annual budgets:
 - University of California (UC) and California State University (CSU) systems, as well as the state's Community Colleges, will receive no adjustments for inflation.
 - In May, the UC system raised tuition by 7.4 percent and the CSU system raised tuition by 10 percent;
 - Both university systems will still be \$100 million short of what they need to sustain services.
 - The UC system class sizes would increase.
 - At the CSU system, authorities declared that thousands of students would be turned away.

Economic Market and Retaining Faculty

- In 2007, the University of Wisconsin System reported:
 - that, after adjusting for inflation, state appropriations to the UW System have declined since 2000 while enrollment at UW institutions has increased.
 - the decrease in state appropriated funds will make it difficult for the UW System to “maintain funding for student instruction” (Clark, 2007).
 - In April 2008, The CHE reported that the U of W is forced to keep faculty salaries far below average.
 - Professors are finding it easier to increase their salaries by relocating to other institutions.

Merit-Based Scholarships and Private Loans

- Kentucky Educational Excellence Scholarship (KEES)
 - Amount earned by merit-based scholarship program has more than tripled from \$13 million (1999) to more than \$44 million (2007);
 - The number of students receiving at least one base award has increased from 29,835 to 37,741;
 - Ticket sales for 2007 were at an all time high resulting greater operating revenues;
 - Due to an increase in prize payouts in 2007, there was a decrease of approximately \$1.7 million in payments made to the KEES scholarship reserve fund for 2007.

Concluding Remarks