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# Examining Faculty Retention in Mississippi's Public Universities

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# Background

- Growing concerns over faculty retention in the management of institutional resources.
- Excessive faculty turnover produces costs to an institution.
- IHL initiative for increases in faculty salaries:

“Attracting and retaining the best and brightest faculty and staff is no easy task. Our universities must compete with universities around the world... Our salaries must be competitive if we are going to continue to attract and retain top-notch faculty and staff.”

Aubrey Patterson, IHL Board President, 3/16/2015

# Review of the Literature

- Faculty turnover ranges from 2% to 10% per year. (Harrigan, 1999).
- High productivity costs associated with faculty turnover (Xu, 2008; Dee, 2004).
- Women and minority faculty more likely to leave a institution (Xu, 2008).
- Minorities more likely to leave their institution than white counterparts (Rosser, 2004).
- Race, rank, age, and salary significantly predict faculty resignation (Chen & Goodall, 2014).
- No significant differences in retention by gender, but there are some disciplinary variations. (Kaminski & Geisler, 2012).

# Purpose

- To understand faculty resignation from a system perspective, focusing in particular on differences regarding gender, race and broad discipline categories.
- To assist in developing institutional policies and practice that aim to retain faculty members.

# Research Questions

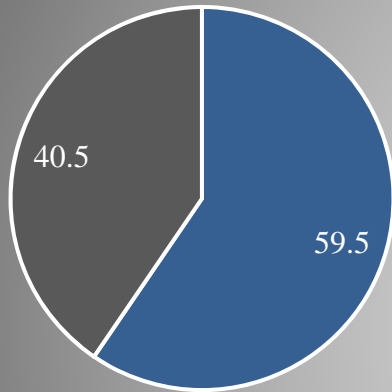
- At what point in their career do faculty on tenure-track resign?
- Do patterns of turnover differ between males and females and across race/ethnic groups?
- What other factors are significantly related to faculty resignation?

# Methodology

- Data Source
  - IHL management information system annually collects data on faculty salary, tenure status, academic rank, discipline assigned, and demographics of all instructional faculty.
- Event of Interest
  - Faculty resignation (not intent to resign)
- Censoring
  - Time of resignation is right censored if faculty were still employed at the university by the end of the 7-year study period
- Measure of Time
  - Years since first hired
- Sample
  - 430 tenure-track faculty hired from July 1, 2006 – October 31, 2008

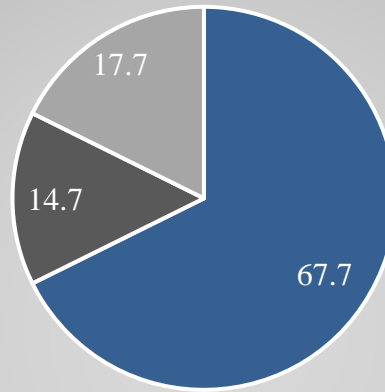
# Sample Description

Gender



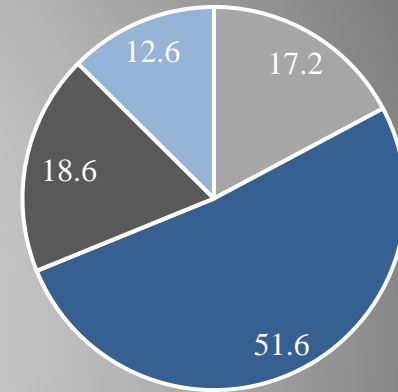
Male Female

Race



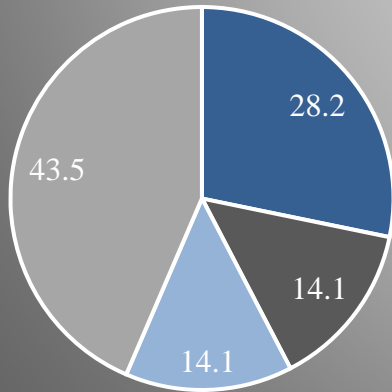
White Black Other

Age



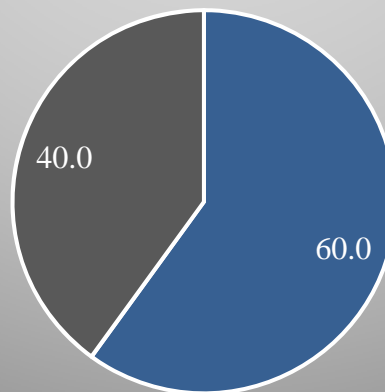
21 - 30 31 - 40 41 - 50 > 50

Discipline Cluster



STEM Education Business Other

Retained Over 7 Years



Retained Not Retained

Variable	Mean	SD
Monthly Salary	\$6,256	\$1,741

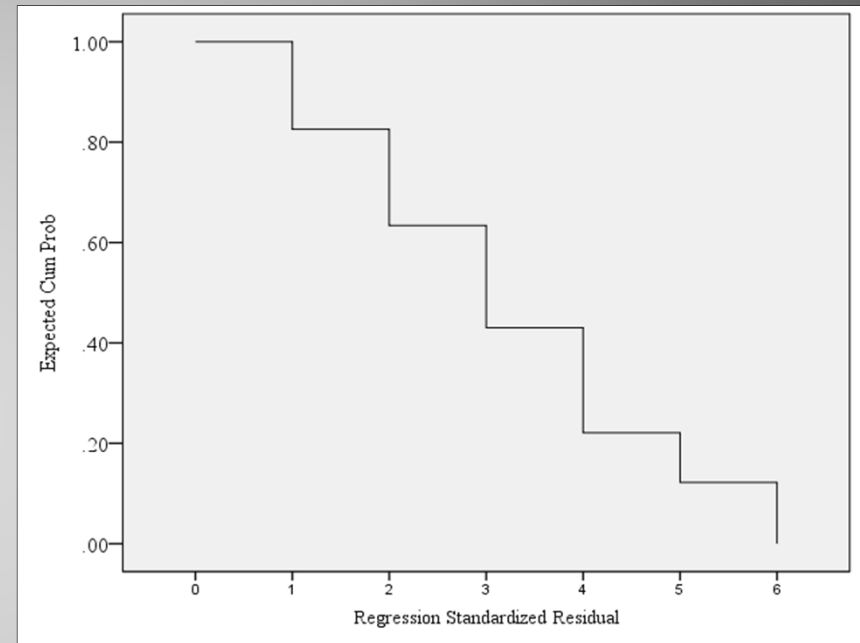
# Analytical Methodology

- Life-tables and survival plots to explore timing of faculty resignation in general, by gender, race, age, institution type, and discipline groups.
- Cox stepwise regression model to identify factors significantly related to hazard of faculty resignation.
- Cox regression aims to estimate the hazard ratio and can accommodate both discrete and continuous measures of event times.

# Results: Survival Plots

## Survival Plot: Overall

Years After Hire	Total	Resigned	Hazard Rate
1	430	30	0.072
2	400	33	0.086
3	367	35	0.100
4	332	36	0.115
5	296	17	0.059
6	278	21	0.079
7	257	0	0.000

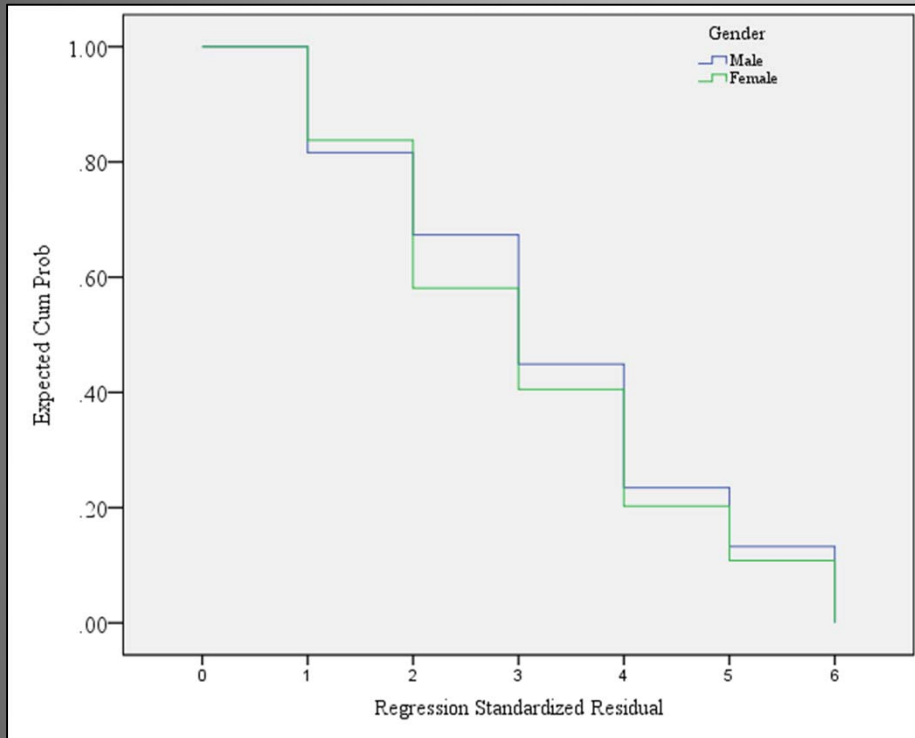


Overall	Mean	Std. Error
Time to Turnover	3.23	.122

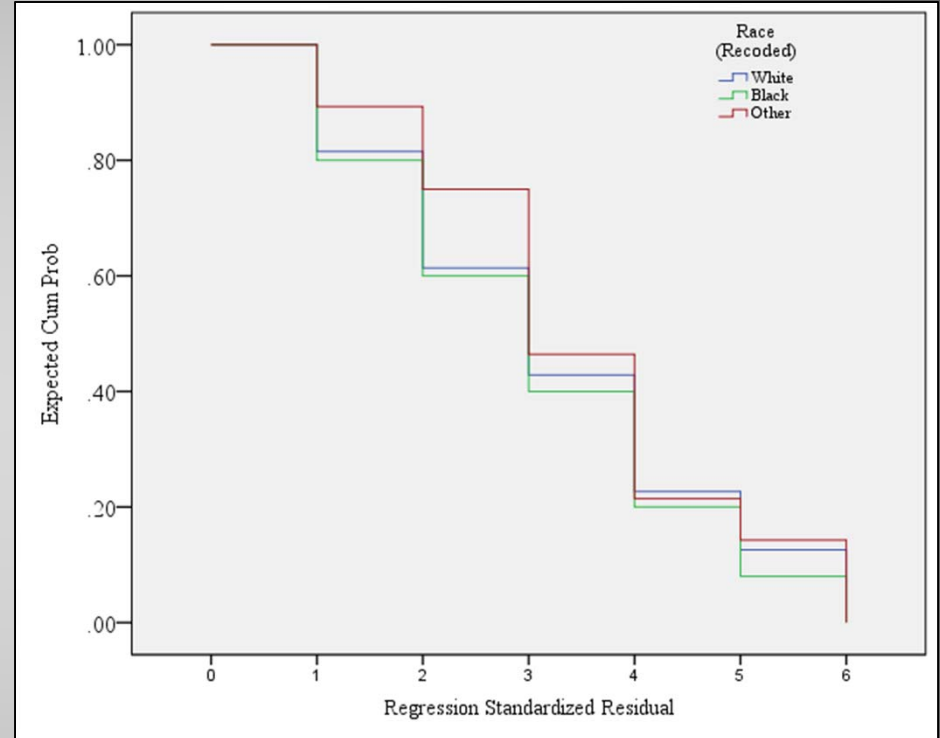
- Most resignations occur within 4 years of being employed (77.9%).
- The highest hazard rate occurs 4 years after hire (0.115).

# Results: Survival Plots

## Survival Plot: Gender



## Survival Plot: Race

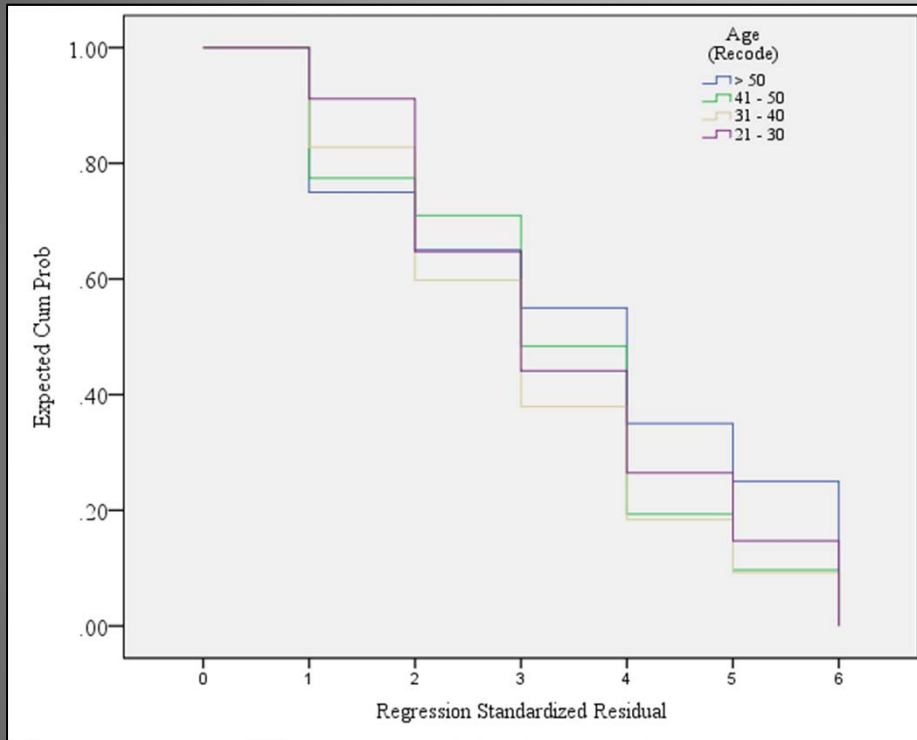


Gender	Mean	Std. Error
Male	3.31	.164
Female	3.14	.183

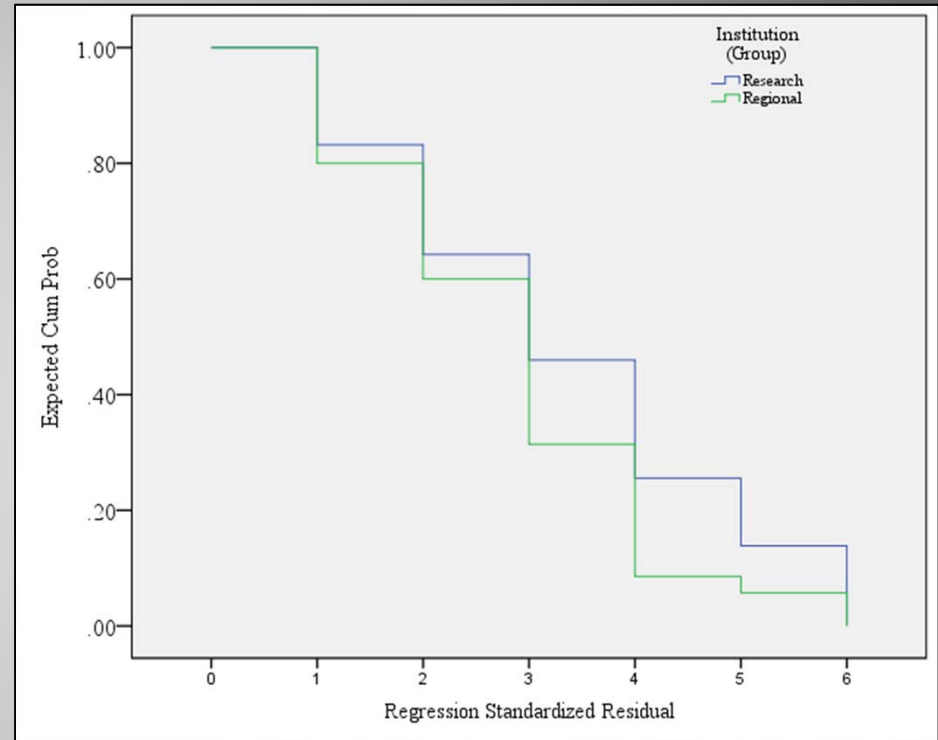
Race	Mean	Std. Error
White	3.21	.149
Black	3.08	.316
Other	3.46	.284

# Results: Survival Plots

## Survival Plot: Age Group



## Survival Plot: Institution Type

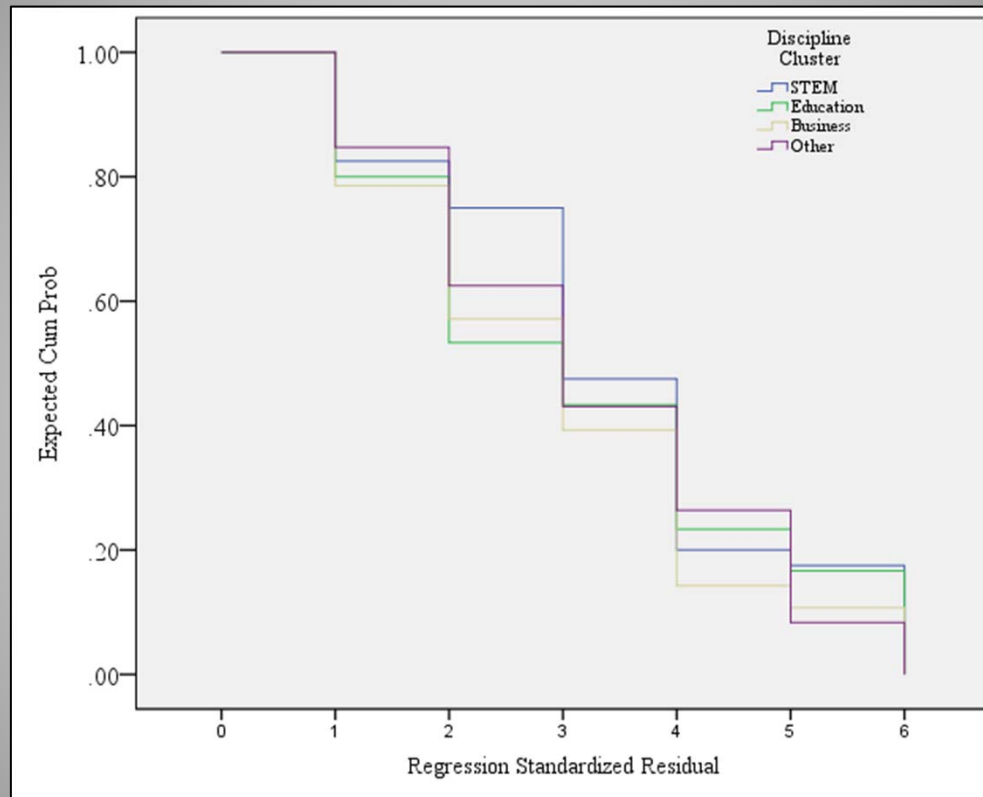


Age Group	Mean	Std. Error
21 - 30	3.41	.271
31 - 40	3.08	.164
41 - 50	3.26	.286
> 50	3.55	.438

Institution Group	Mean	Std. Error
Research	3.33	.140
Regional	2.86	.232

# Results: Survival Plots

## Survival Plot: Discipline Group



Discipline Group	Mean	Std. Error
STEM	3.43	.255
Education	3.17	.322
Business	3.00	.300
Other	3.25	.184

# Results: Regression Model

- Overall model yielded no significant results.
- Models for each discipline cluster were examined individually.
- Only the Education discipline category yielded significant model outputs.

# Results: Regression Model

- Block 1:
  - Gender
  - Race
  - Age Group
- Block 2:
  - Institution Group
- Block 3:
  - Monthly Salary

# Results: Regression Model

Block	-2 Log Likelihood	X <sup>2</sup>	df	P
Block 1:	224.971	7.614	2	.022
Block 2:	221.992	10.455	3	.015
Block 3:	220.914	11.748	4	.019

Block	Indicator	Coefficient (b)	e <sup>b</sup>	SE	P	95% C.I.
Block 1:	Race(2): Black	1.073	2.924	.548	.050	.999 – 8.565
	Race(1): White	-.750	.472	.544	.168	.163 – 1.371
Block 2:	Race(2): Black	1.199	3.317	.556	.031	1.116 – 9.860
	Race(1): White	-.986	.373	.565	.081	.123 – 1.129
	Institution Group	.907	2.477	.487	.062	.954 – 6.433
Block 3:	Race(2): Black	1.031	2.804	.575	.073	.908 – 8.660
	Race(1): White	-.948	.388	.562	.092	.129 – 1.167
	Institution Group	.681	1.975	.535	.204	.692 – 5.638
	Monthly Salary	.000	1.00	.000	.306	.999 – 1.000

# Discussion

- Differences observed within each survival plot do not yield statistically significant results within the regression model.
- In the 2<sup>nd</sup> iteration of the model for the Education discipline, black faculty members have a turnover hazard 3.32 times higher than white faculty members when also factoring in the institutional grouping.

# Limitations & Next Steps

- Limitations:
  - Does not account for voluntary vs involuntary turnover
  - Data not available for faculty origin
- Next Steps:
  - Focus on variation within discipline clusters
  - Account for institution of highest degree earned
  - Consider time varying factors such as salary change, course load, etc.

# References

Chen, J. & Goodall, P. (2014). A survival analysis on gender and racial differences in faculty resignation. Presented at the Association for Institutional Research Annual Forum.

Kaminski, D. & Geisler, C. (2012). Survival analysis of faculty retention in science and engineering by gender. *Science*, 335 (6070), 864-866.

Rosser, V. J. (2004). Faculty members' intentions to leave: A national study on their worklife and satisfaction. *Research in Higher Education*, 45 (3), 285-309.

Teodorescu, D. (2012). Examining faculty recruitment, retention, promotion, and retirement. In Howard, R. D., McLaughlin, G. W., Knight, W. E., *The Handbook of Institutional Research* (165-182). San Francisco: Jossey-Bass.