WELCOME! THE WEBINAR WILL BEGIN AT 12 PM ET.

How to Build & Keep Your Team: Understanding HR Analytics

Nick L. Anderson, Associate Consultant at Mercer and Adjunct Professor of Statistics at Columbia University

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THE OHIO STATE UNIVERSITY
CENTER FOR OPERATIONAL EXCELLENCE

Evidence-based HR: Leveraging HR Analytics to Inform Business Strategy

September 2023

Nick Anders, PhD
Mercer's Workforce Sciences & Analytics

Agenda

1. What kinds of questions can a mature HR Analytics function answer?
2. Leveraging external evidence: Reviewing meta-analytic evidence about the value of general experience and organization tenure for driving performance

What kinds of questions can a mature HR Analytics function answer?

How does a mature HR analytics strategy help?
Four questions to guide us

How can HR analytics help?

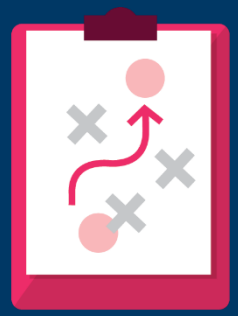
A mature HR analytics approach bolsters the credibility of the HR function and can impact core business outcomes.

Other parts of the organization, like marketing, customer service, finance, operations and sales use data and quantitative methodology extensively to connect their functions to core business outcomes.

What's the problem?

Although the big data revolution has ushered in more data about workforces than ever before, the value of this data is limited by HR's ability to extract information and insights.

Modern HR functions need to shift from focusing on HR processes to understanding the impact of talent on broader business strategy.



Where's the opportunity?

Providing a linkage between human capital (i.e., people data) and business outcomes.

This is what executives ultimately care about. As much as 50% of a firm's expenses can be tied up in salaries paid to talent, so organizations should be quantitatively assessing how human capital is contributing to core business strategies.

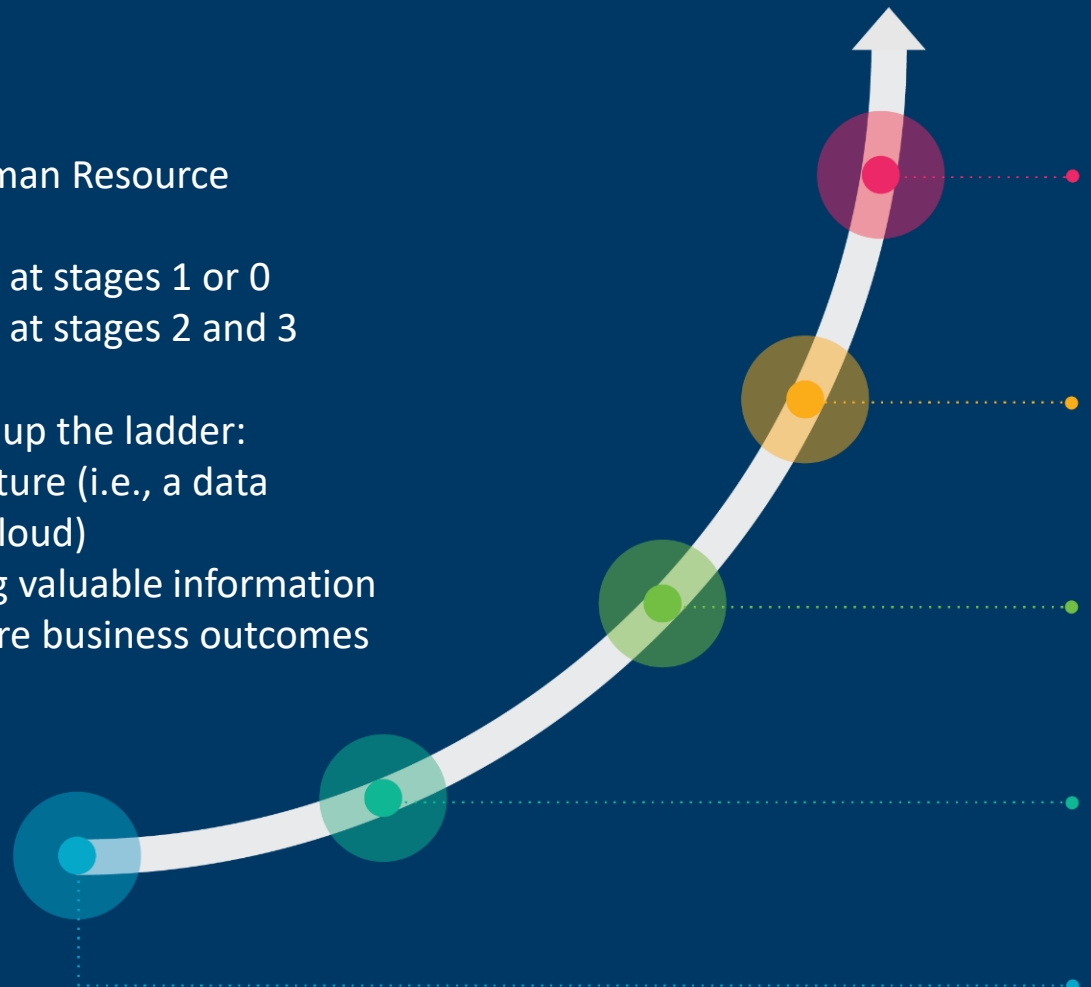
What exactly is "HR analytics"?

"HR analytics use measurement and analysis techniques to understand, improve, and optimize the people side of the business… Metrics focus on counting, tracking, and presenting past data. Analytics uses statistics to help you see pattern in the data."[1]

[1] Source: SHRM, 2018

Mercer’s HR analytical maturity Model

- According to the Society for Human Resource Management (SHRM) (2018):
  - 56% of organizations operate at stages 1 or 0
  - 30% of organizations operate at stages 2 and 3
- Two things are needed to move up the ladder:
  - A modern data / IT infrastructure (i.e., a data warehouse, probably in the cloud)
  - Analysts capable of extracting valuable information which links people data to core business outcomes



Stage 4: Predictive Modeling

Developing statistical models to identify and root-cause drivers, getting closer to cause-and-effect (“every additional year of tenure is related to x% increase in turnover likelihood”)

Stage 3: Correlations

Analyzing relationships between factors of interest and workforce outcomes (“there is a correlation between higher levels of tenure and turnover rates”)

Stage 2: Benchmarks

Comparing internal trends against external norms (“our turnover rates are higher/lower relative to comparable organizations”)

Stage 1: Ongoing Reporting

Reviewing key metrics on a regular basis (“turnover rates have been increasing over time”)

Stage 0: Anecdotes / Reactive Checks

Responding to qualitative perceptions (“I’ve heard turnover is higher among tenured employees”)

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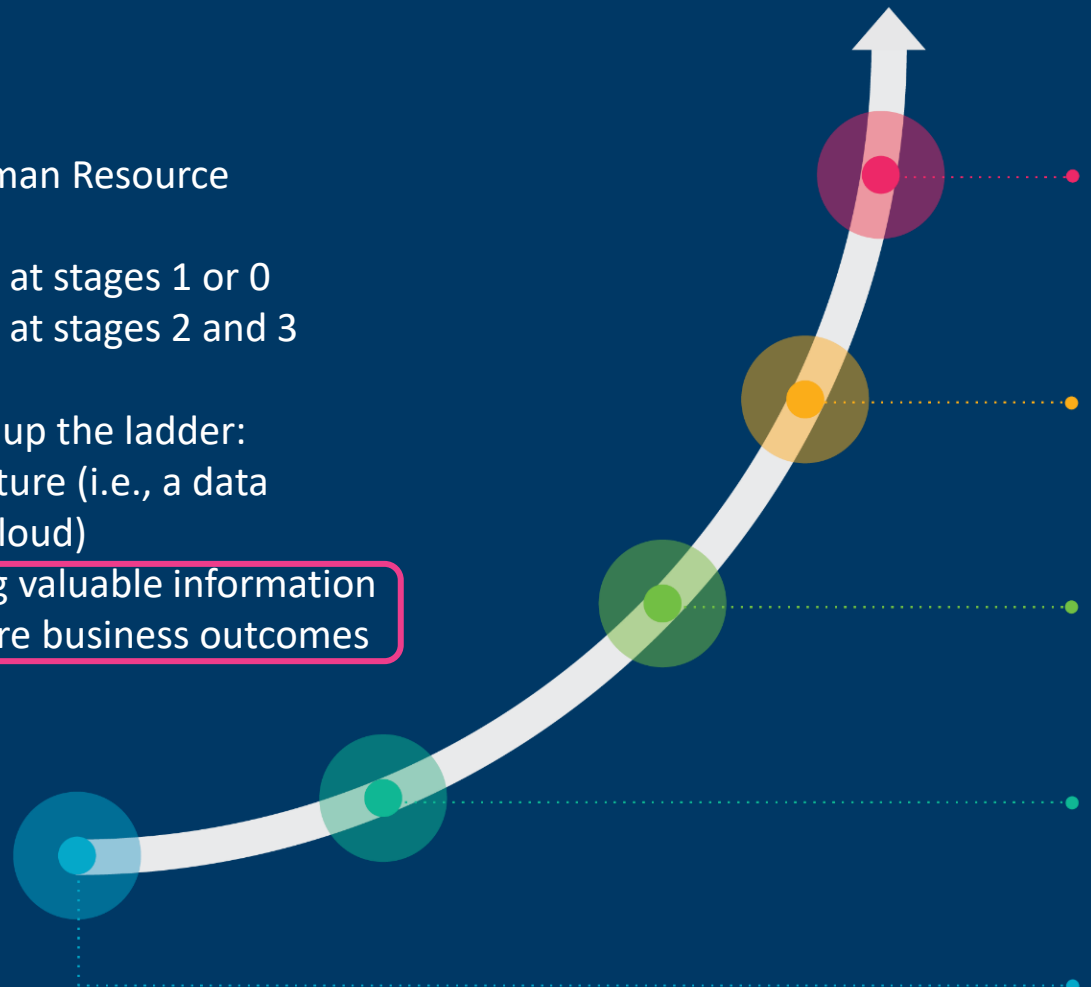

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The types of projects Mercer's WSA helps clients with

To drive people strategies

Internal Labor Market (ILM)® Analysis

Diagnose your internal workforce dynamics—how employees flow into, through, and out of your organization, and how they are rewarded—to drive action planning

External Labor Market (ELM)® Analysis

Look beyond your existing workforce to quantify talent availability and understand external labor trends/forecasts in the areas in which you currently, or plan to, operate

Strategic Workforce Planning

Plan for your organization's future by assessing your current labor supply against anticipated future demand to identify any critical gaps that need to be proactively addressed

Business Impact Modeling (BIM)®

Link your talent management practices to hard financial and productivity metrics such as revenue/sales achievement, customer satisfaction scores, quality measures, etc.

Diversity & Inclusion (D&I) Analytics

Use our ILM methodology to drill further into how talent flows and root-cause drivers differ across groups to support more targeted strategies and solutions

Pay Equity Analysis and Remediation

Assess the current state of pay equity, by gender and race/ethnicity, across your entire organization and test the impact of remediation strategies using a robust statistical approach

Conjoint Analysis + ILM (Say-Do)

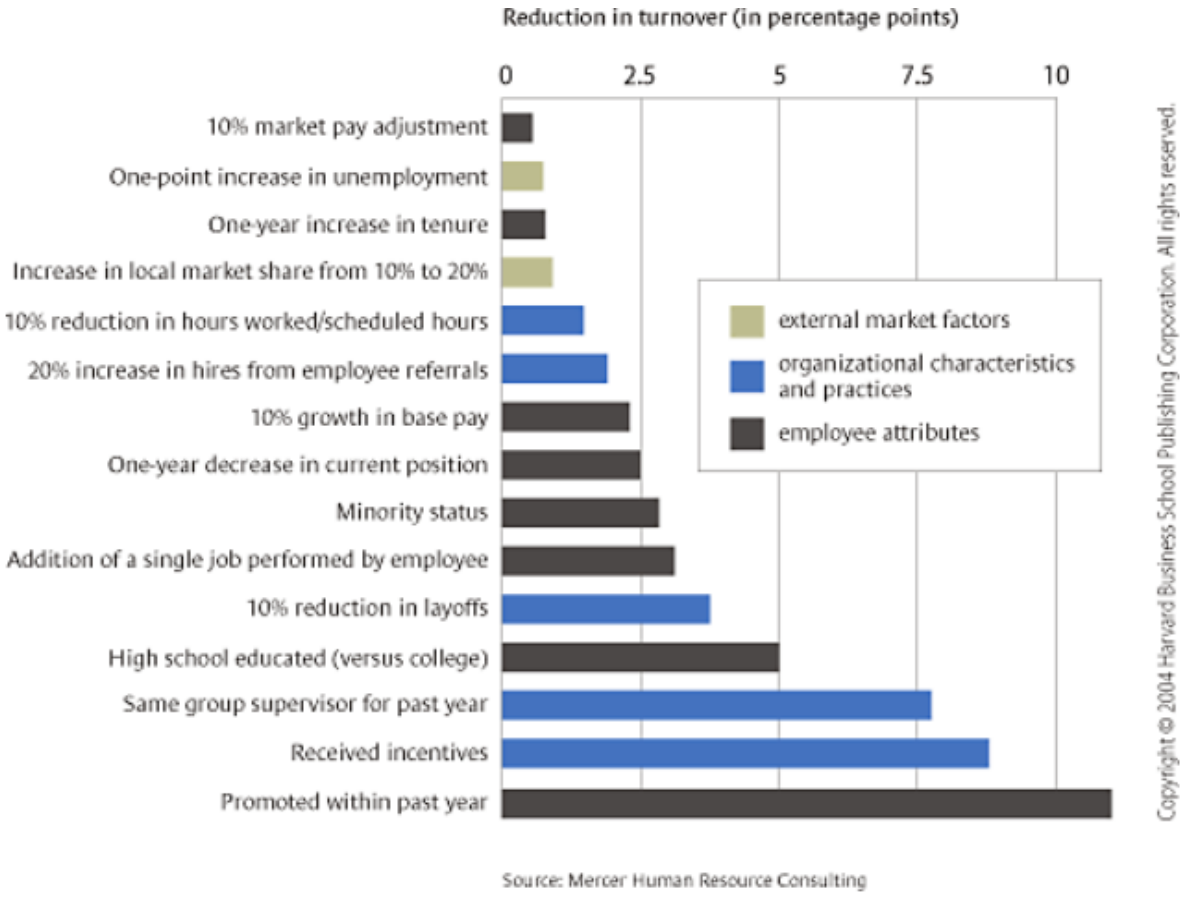
Compare what employees SAY they value against what they actually DO to provide a complete picture of how programs and offerings should be structured

Social Network Analysis (SNA)

Understand the ways in which employees connect with one another inside your organization, the impact of such connections, and critical team dynamics

Example I: Fleet Bank

Turnover had more to do with career opportunity and management stability than with pay



Source: Mercer Human Resource Consulting

Previous surveys of perceptions and exit interviews suggested that pay and workload were the most critical to employee commitment and retention at BankCo. Our analysis of actual behavior showed that career development and management stability most affected retention

Source: Nalbantian, H.R. and A. Szostak. "How Fleet Bank Fought Employee Flight." Harvard Business Review, 2004.

Example II: Internal labor market analysis

Goal: Determine if there are any Diversity, Equity and Inclusion (DEI) risks for the protected classes

- Client was a large company who manufactures goods and sells consulting services to the scientific community
  - Analysis population: ~35,000 US employees
- **Uncover potential sources or "root causes"** of gender and race/ethnicity differences, if any, at play in the internal labor market
- **Assesses the overall size of disparities,** if any

ILM Dynamics: A Tale of Two Demographics

Demographic effects

	Drivers: Percent (%) Impact on ILM Outcomes	Performance Rating	Grade Promotion	Promotion (TFS defined)	Retention	Involuntary Turnover†	Involuntary Turnover‡
	Number of Observations:	112,788	116,373	101,573	110,836	100,524	95,673
	AUC Value:	75.2%	82.1%	78.1%	76.1%	81.9%	86.5%
4	**Female** (vs. Male)	18.9%	8.0%	7.6%	n/s	-0.2%	n/s
5	**Asian** (vs. White)	n/s	-13.2%	-7.1%	n/s	n/s	n/s
6	**Black/African American** (vs. White)	-23.0%	-20.4%	-16.9%	-0.6%	0.4%	0.1%
7	**Hispanic/Latino** (vs. White)	n/s	-15.5%	-13.6%	n/s	n/s	n/s
8	**Other Race/Ethnicity** (vs. White)	n/s	-12.0%	n/s	-1.5%	0.4%	n/s

Key Observations:

Strong demographic effects on ILM outcomes enhance opportunities for women but impede the client's ability to secure racial diversity in leadership and the overall workforce, particularly for Black employees.

Adverse consequences for lateral moves

	Drivers: Percent (%) Impact on ILM Outcomes	Performance Rating	Grade Promotion	Retention	Involuntary Turnover†
	Number of Observations:	112,788	116,373	110,836	100,524
	AUC Value:	75.2%	82.1%	76.1%	81.9%
54	**Promoted to Higher Grade in Period** (vs. Not Promoted to Higher Grade in Period)	-40.8%	-48.4%	n/s	-0.6%
55	**Demoted to Lower Grade in Period** (vs. Not Demoted to Lower Grade in Period)	-47.2%	-21.2%	n/s	n/s
56	**Transferred in Period** (vs. Not Transferred in Period)	-26.9%	-97.3%	-12.9%	2.1%
57	**Promoted to Next Grade in Previous Period** (vs. Not Promoted to Next Grade in Previous Period)	n/s	-9.9%	n/s	n/s
58	**Demoted to Next Grade in Previous Period** (vs. Not Demoted to Next Grade in Previous Period)	n/s	36.0%	n/s	n/s
59	**Transferred in Previous Period** (vs. Not Transferred in Period)	-26.1%	-95.4%	-9.8%	1.4%
60	**Track Change in Period** (vs. No Track Change in Period)	-25.9%	-26.4%	n/s	n/s
61	**Base Pay** (+5% Base Pay)	3.5%	9.4%	n/s	0.0%

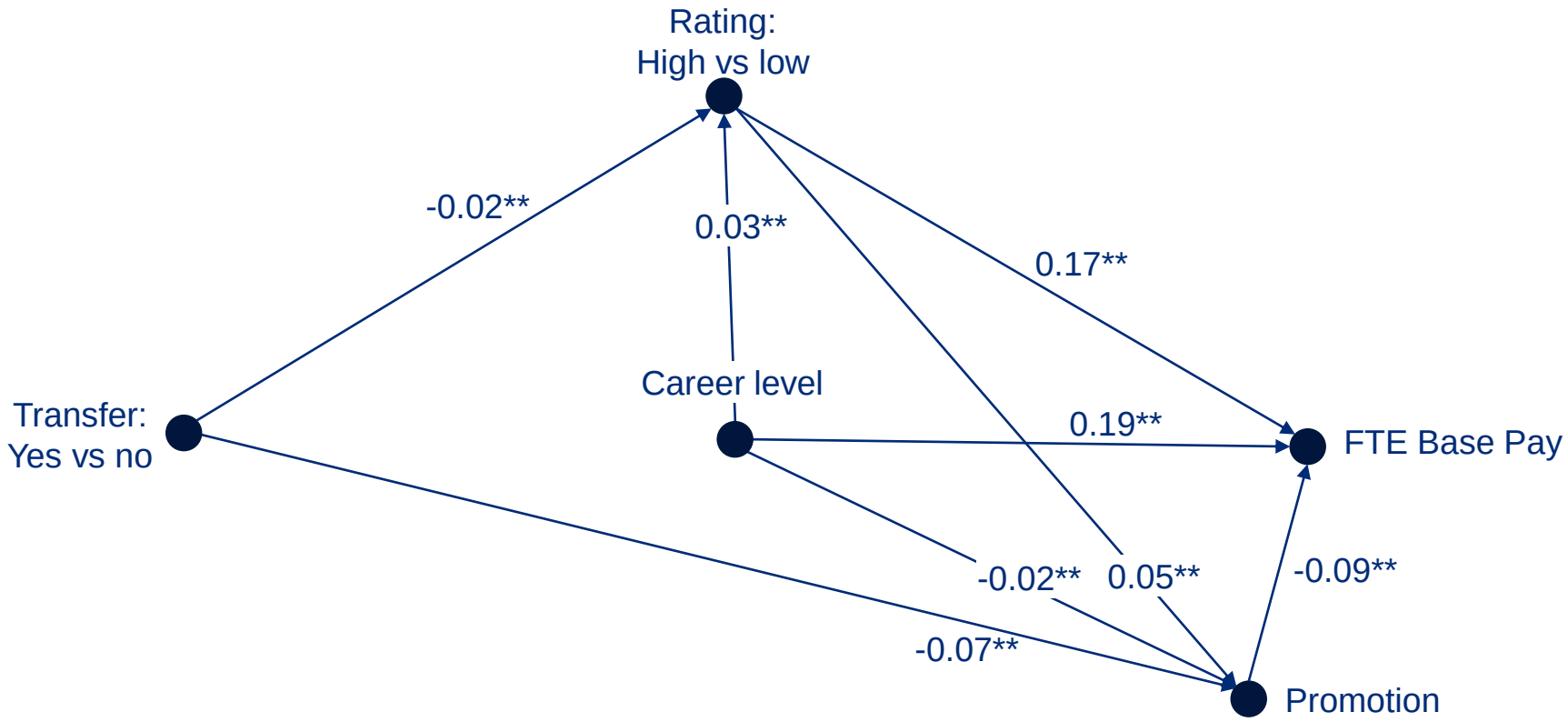
Key Observations:

Nearly 1/3 of the workforce was transferred in 2021, a movement that carries with it adverse consequences in the short and medium term.

* indicates effects are estimates from supplemental models.
† This model defines "involuntary turnover" as any terminations due to "Business Transformation" or "Job Performance."
Note: All observations can be assumed to start with the phrase "all else equal". Significance level is set to 5%.

Internal Labor Market Dynamics

Key dynamics, minus demographic effects



Fit Indices

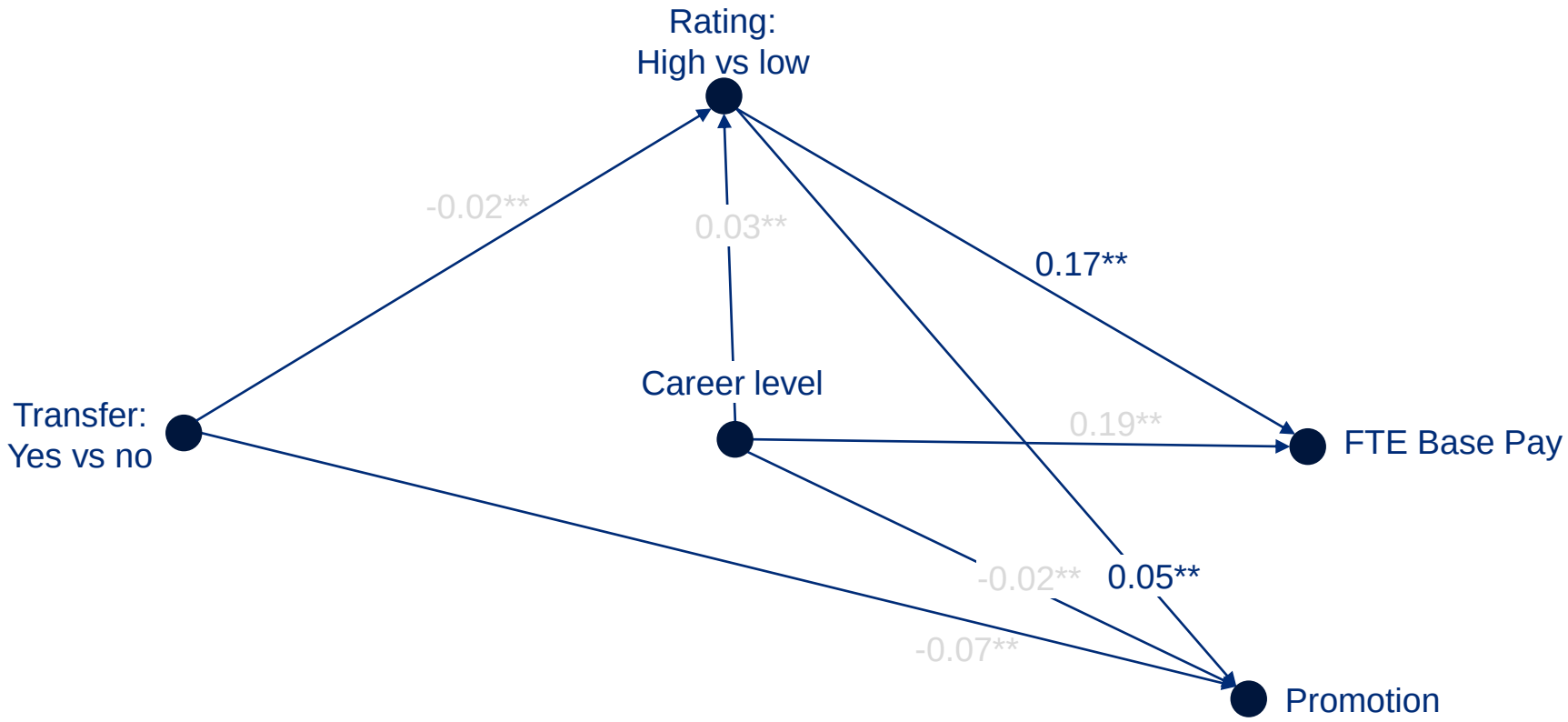
CFI=.973

RMSEA=.029

TLI=.949

Internal Labor Market Dynamics

Rating: Strong direct effects on base pay and promotion



Fit Indices
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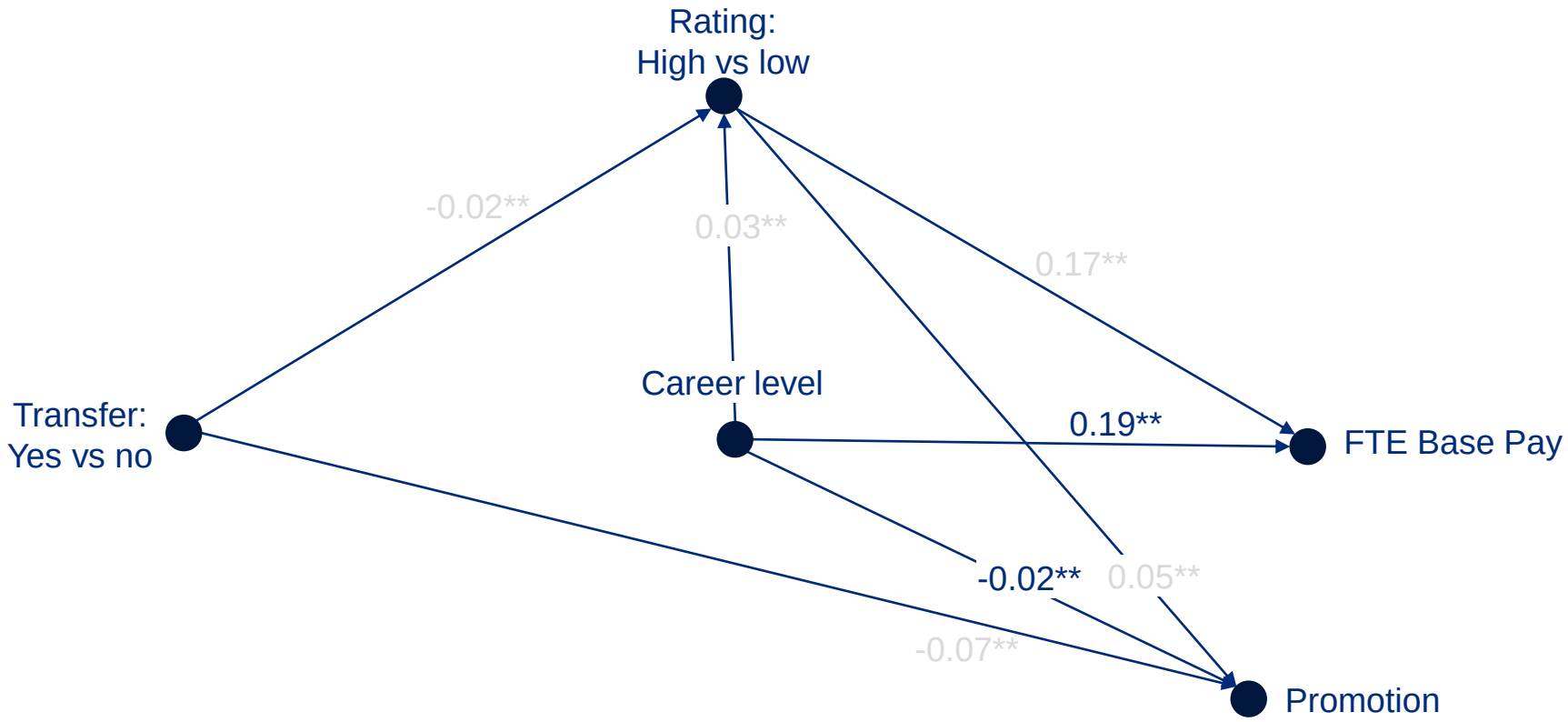
Internal Labor Market Dynamics

Career level: Strong direct effects on base pay but it's more difficult to advance as you move up



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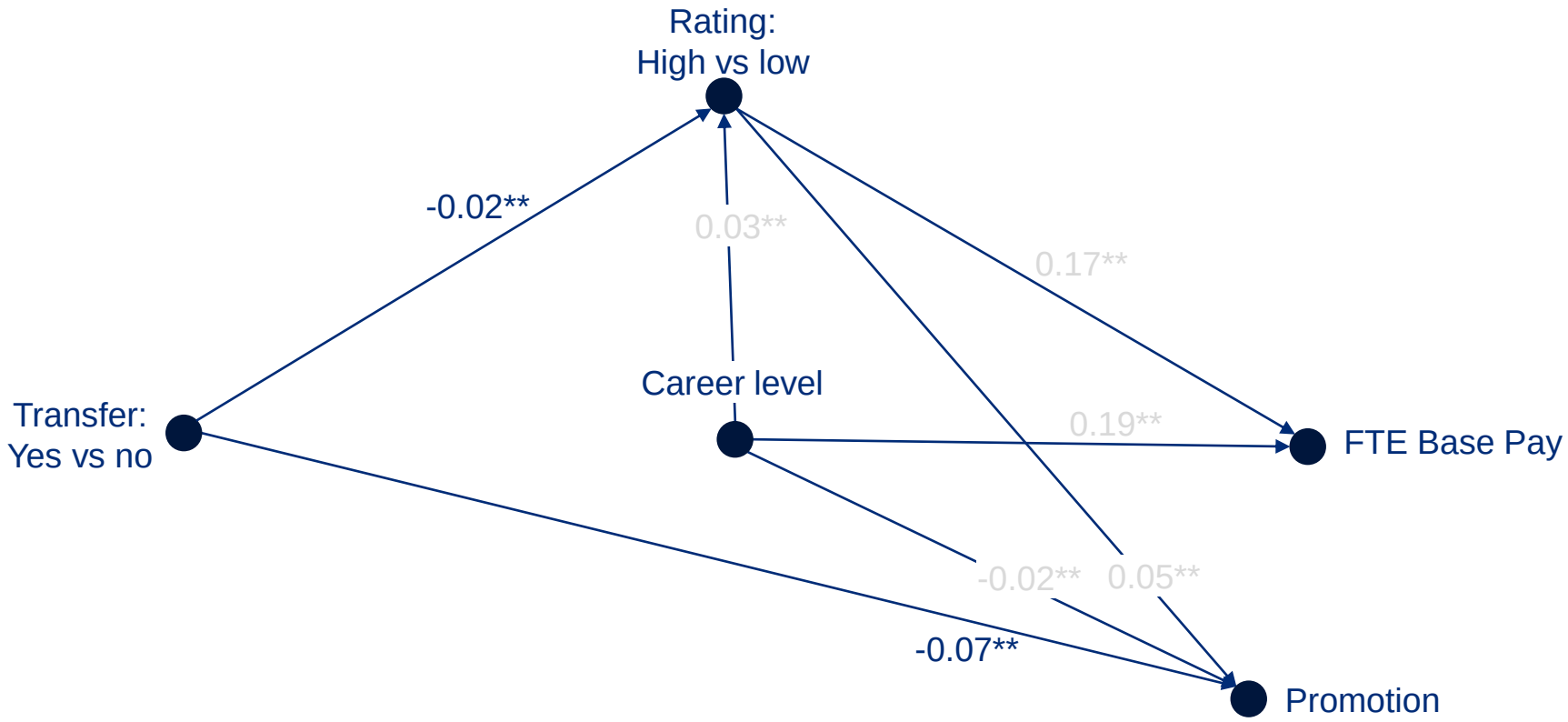
Internal Labor Market Dynamics

Lateral moves are being used in place of promotions, and is also predictive of not getting a high rating



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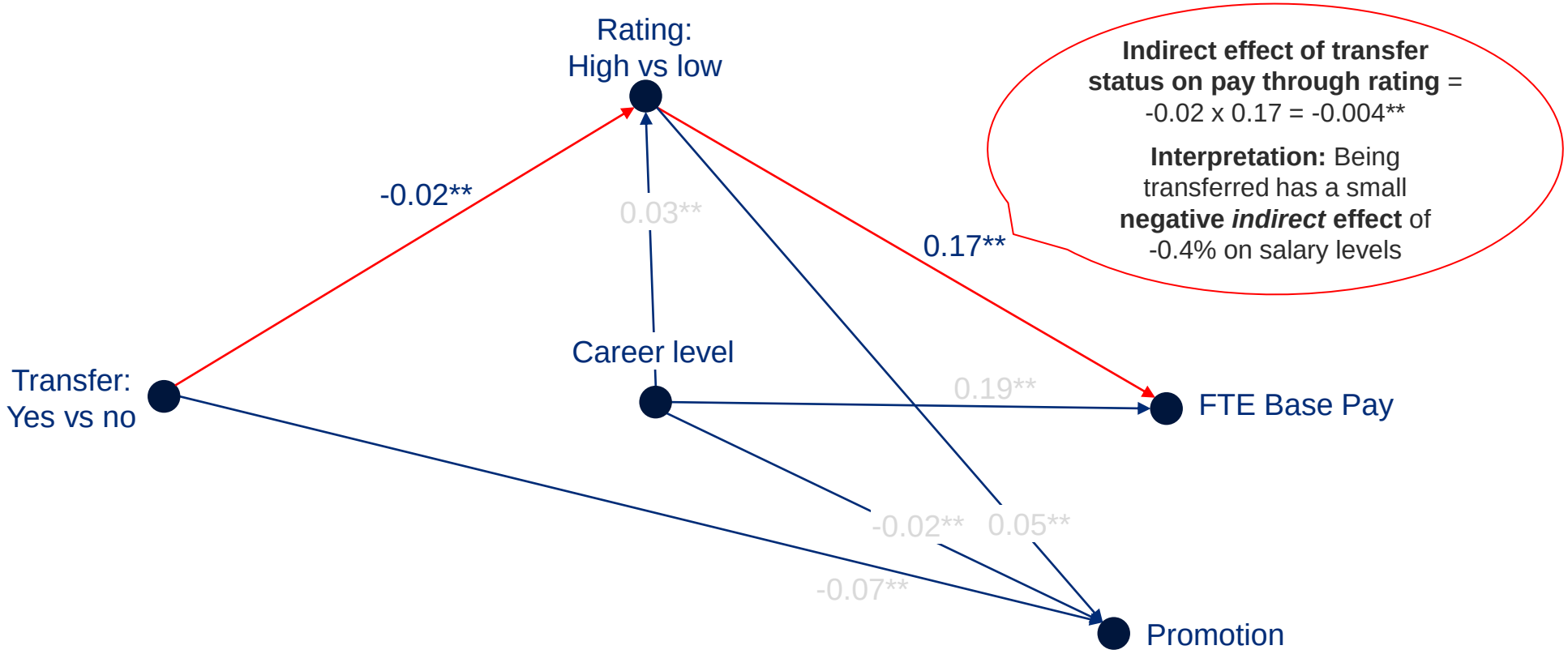
Internal Labor Market Dynamics

Lateral moves are associated with lower annual salaries, indirectly through ratings and promotions



Indirect effect of transfer status on pay through rating = -0.02 x 0.17 = -0.004**

Interpretation: Being transferred has a small **negative *indirect* effect** of -0.4% on salary levels

Fit Indices

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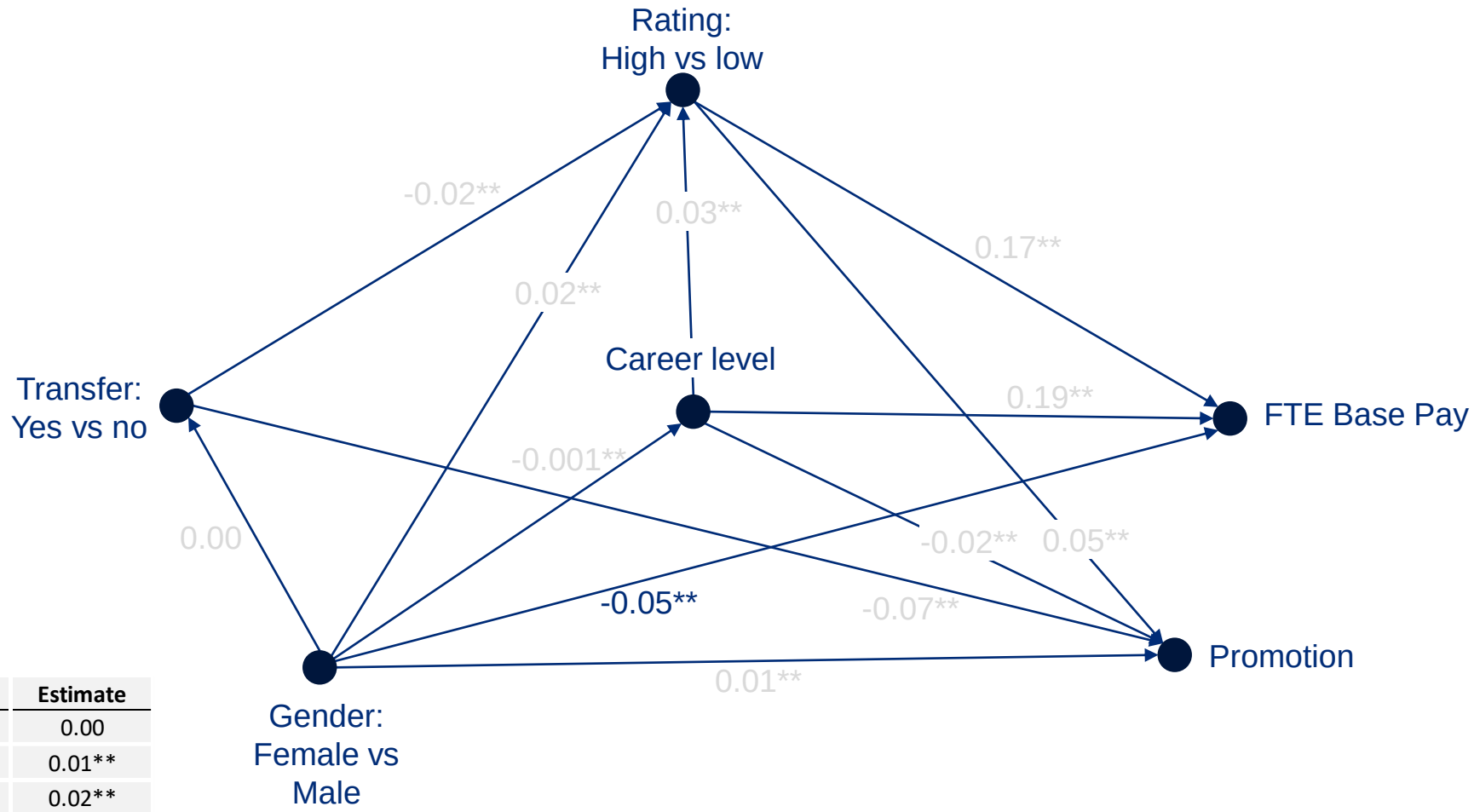
ILM Dynamics

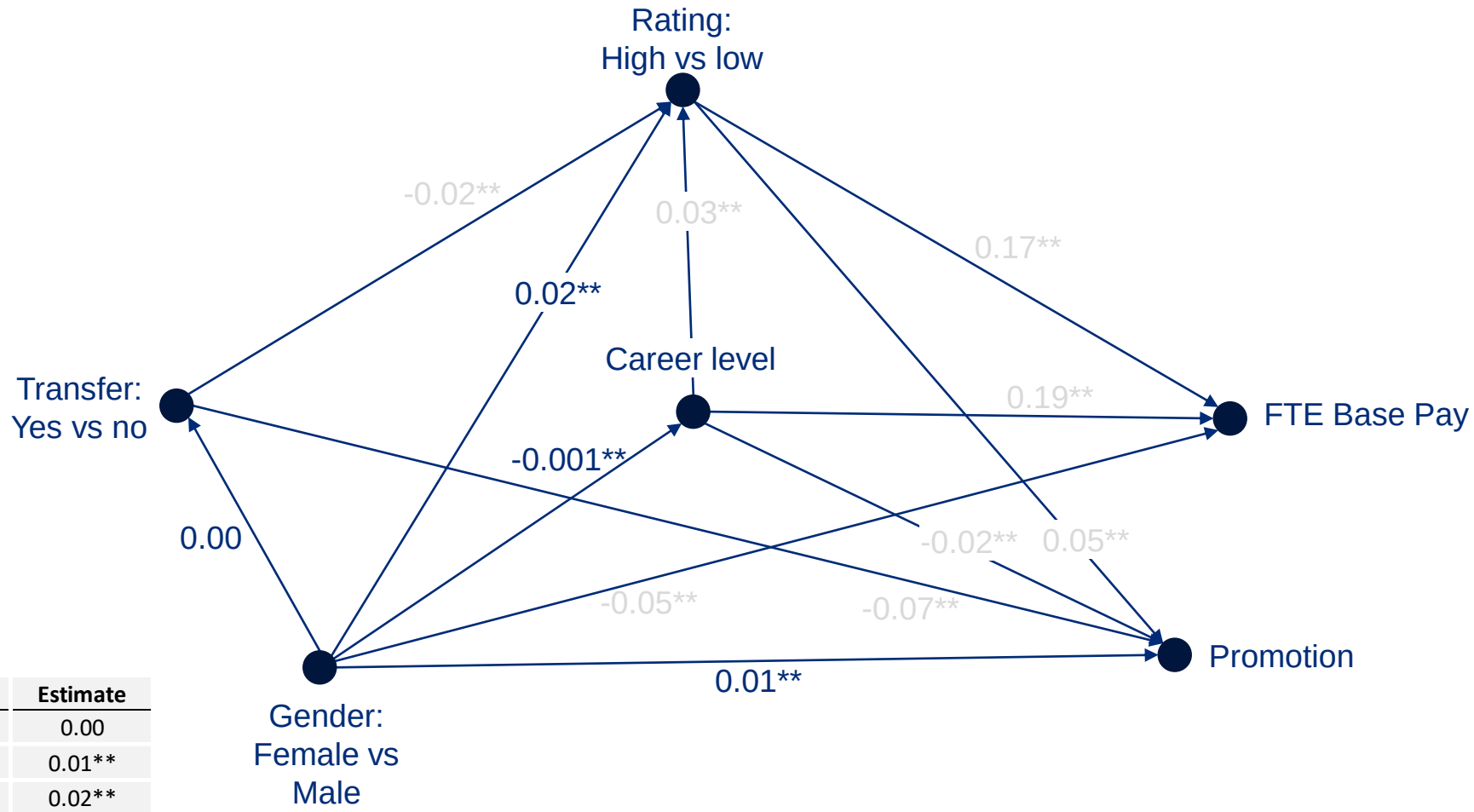
Females earn 5% less, all else equal



Direct Effects of Gender for Females	Estimate
Transfer status	0.00
Promotion probability	0.01**
High rating probability	0.02**
Career level	-0.001**
Base Pay	-0.05**

ILM Dynamics

While there is a gender pay gap, the ILM story for females is largely positive



Direct Effects of Gender for Females	Estimate
Transfer status	0.00
Promotion probability	0.01**
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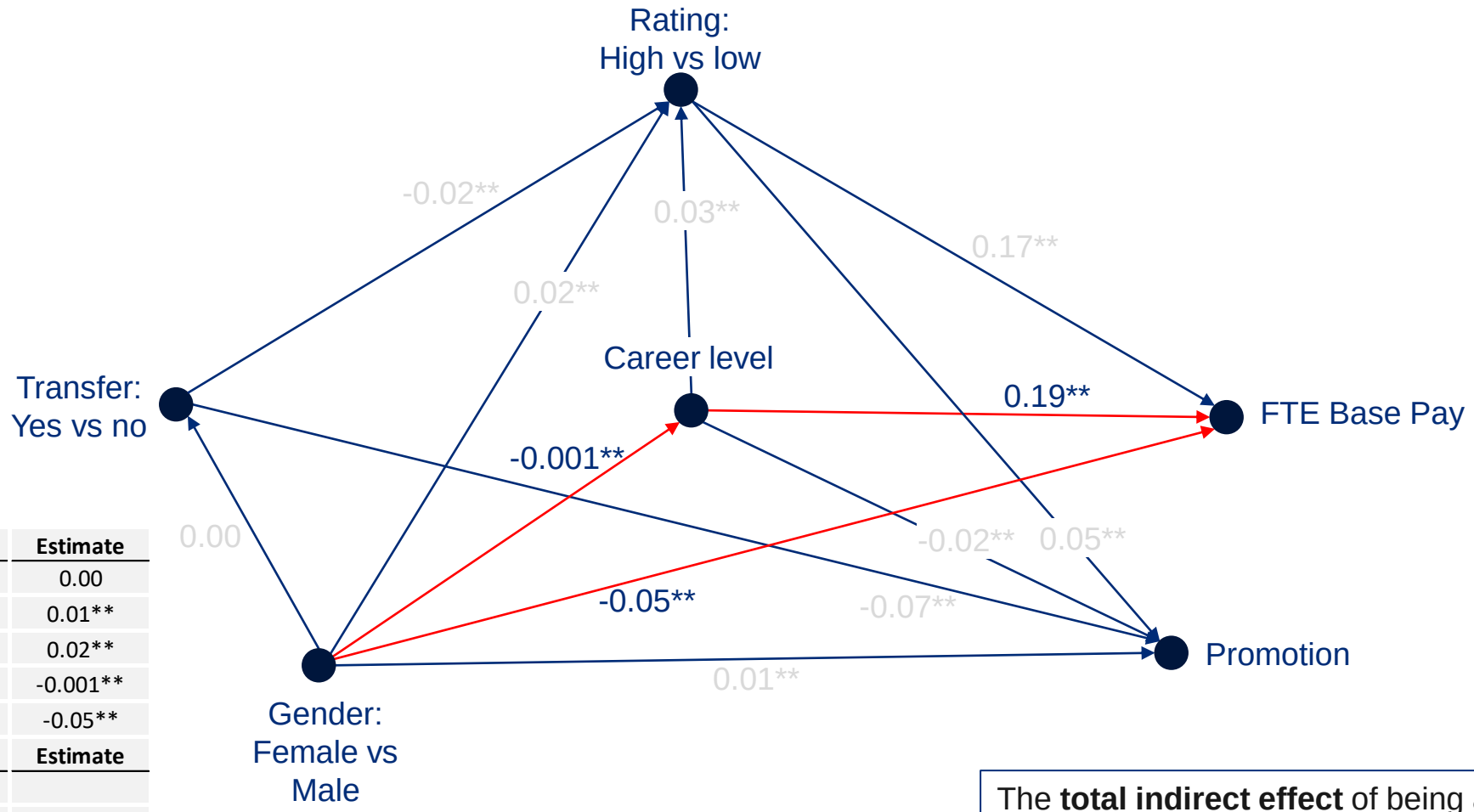
Career level	-0.001**
Base Pay	-0.05**

ILM Dynamics

After accounting for wider career equity dynamics, females earn about 8% less than males

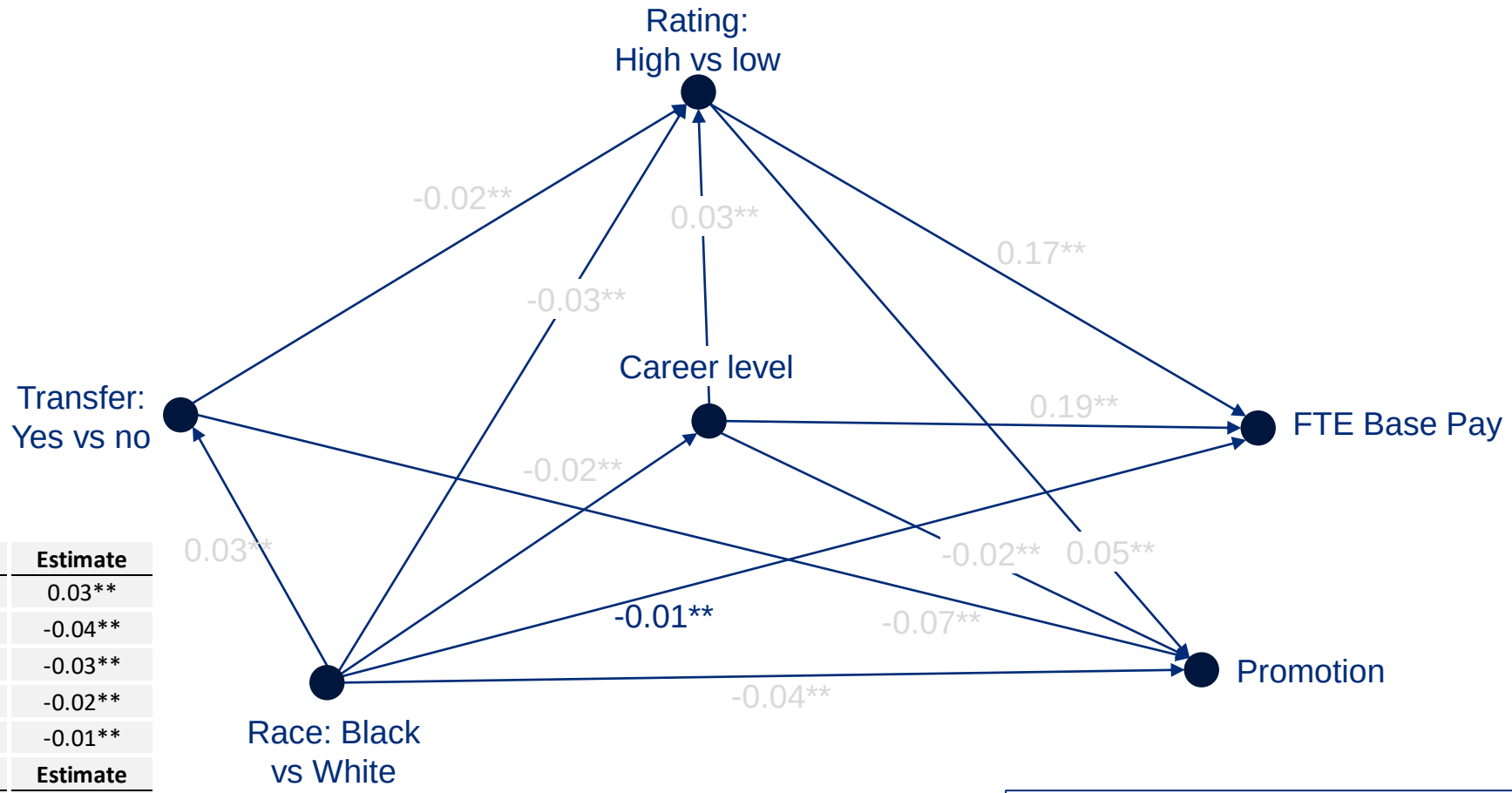


Direct Effects of Gender for Females	Estimate
Transfer status	0.00
Promotion probability	0.01**
High rating probability	0.02**
Career level	-0.001**
Base Pay	-0.05**
Indirect Effects of Gender for Females	**Estimate**
Indirect effects on base pay through...	
Rating --> Base pay	0.004**
Transfer --> Rating --> Base pay	0.00
Grade --> Base pay	-0.03**
Total Effects of Gender on Base Pay	**Estimate**
Female vs male	-0.08**

The **total indirect effect** of being a female employee (vs. male) on base pay through key ILM dynamics is -3%, which accounts for **38% of the total effect**

ILM Dynamics: A Tale of Two Demographics

For Black employees, the difference in base salary all else equal appears a lot smaller than the female gap



Direct Effects of Black vs White	Estimate
Transfer status	0.03**
Promotion probability	-0.04**
High rating probability	-0.03**
Career level	-0.02**
Base Pay	-0.01**
Indirect Effects of Black vs White	**Estimate**
Indirect effects on base pay through...	
Rating --> Base pay	-0.003**
Transfer --> Rating --> Base pay	-0.000**
Grade --> Base pay	-0.30**
Total Effects of Black vs White	**Estimate**
Black vs White	-0.31**

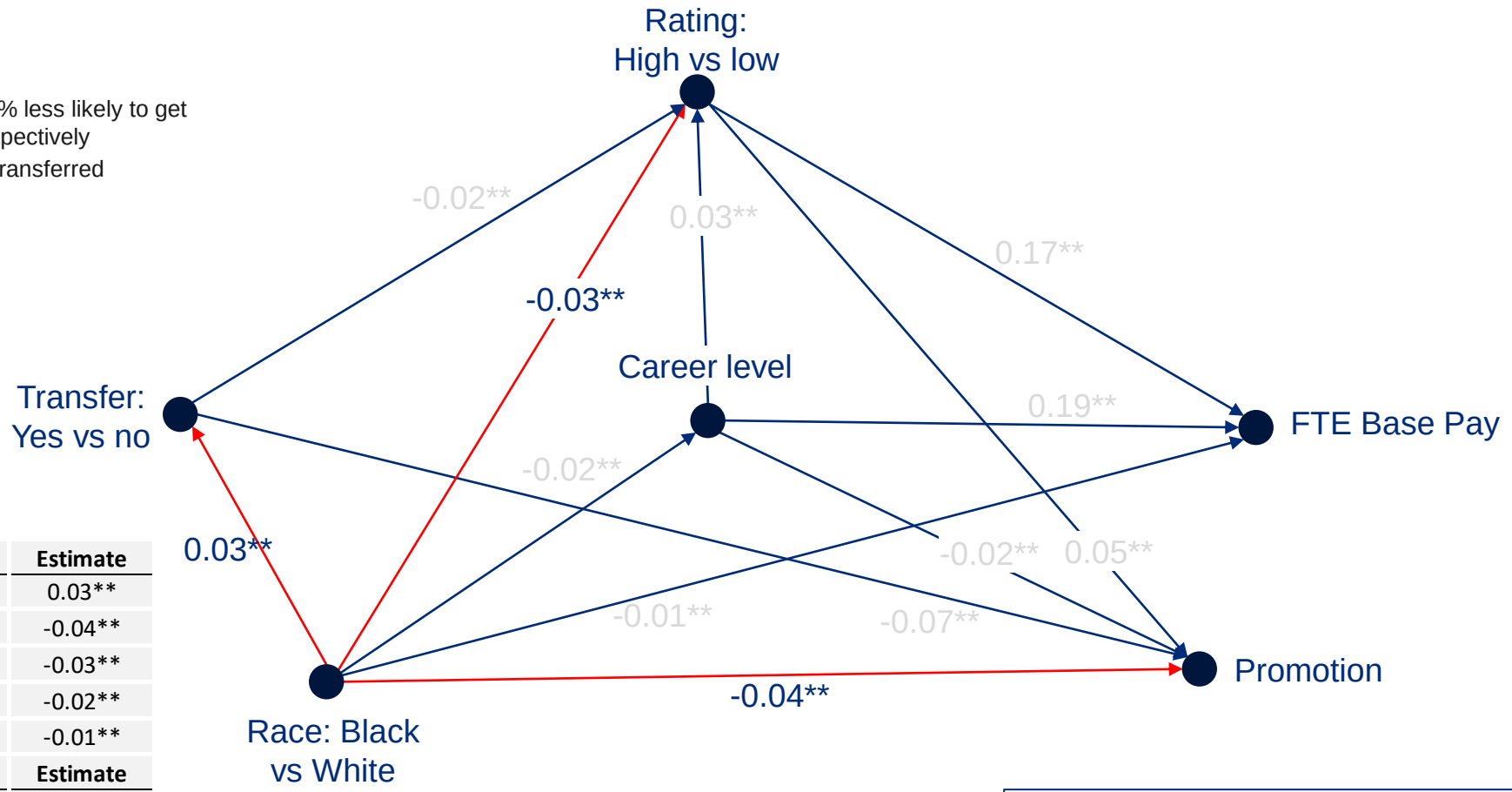
The **total indirect effect** of being a Black employee (vs. White) on base pay through key ILM dynamics is -30%, which accounts for **97% of the total effect**

ILM Dynamics: A Tale of Two Demographics

But internal labor market dynamics are a challenge for them

Key Observations:

- Black employees are less 4% and 3% less likely to get promotions and get a high rating respectively
- They are also 3% more likely to be transferred



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Black vs White	-0.31**

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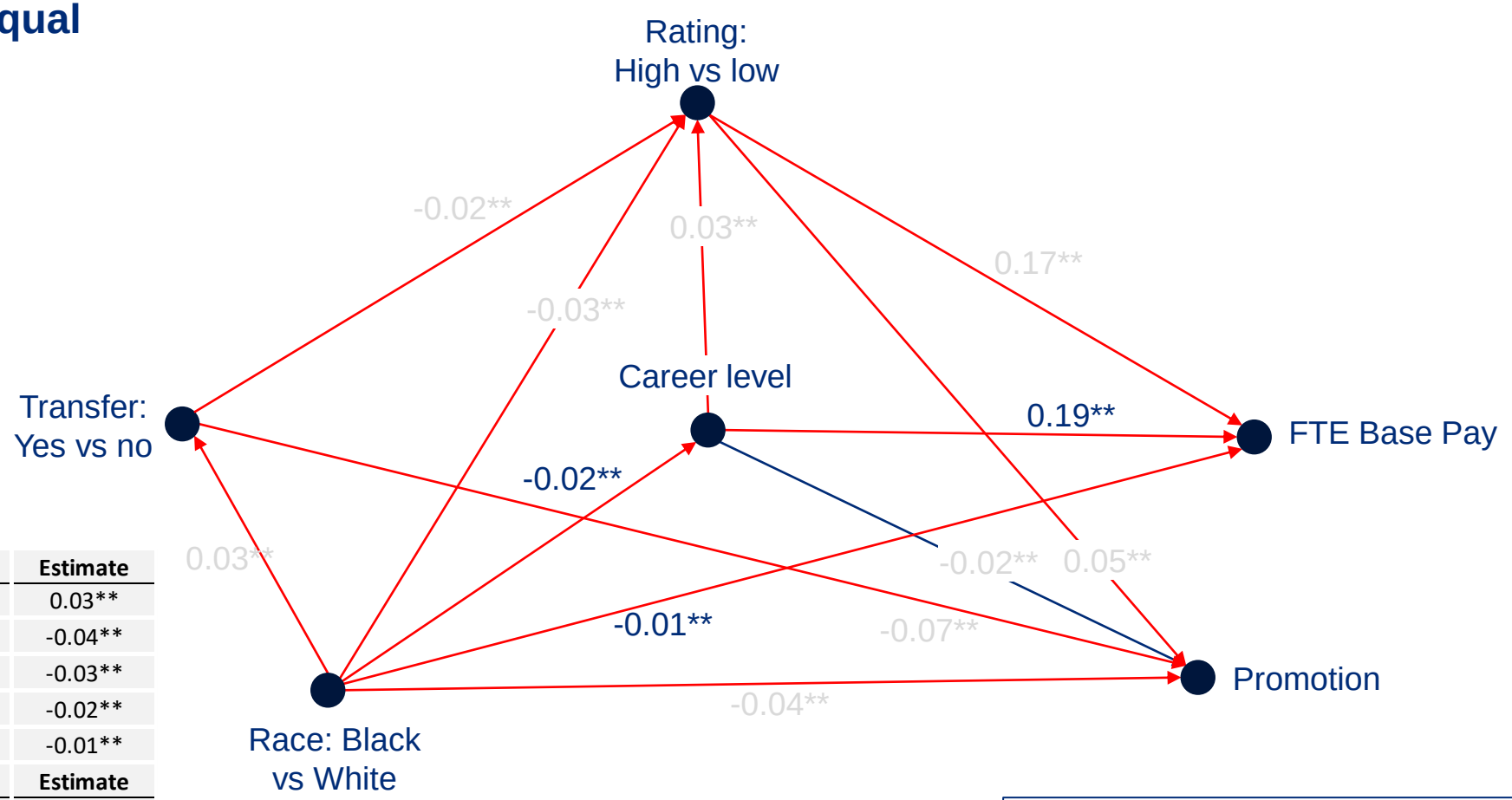
ILM Dynamics: A Tale of Two Demographics

After accounting for all internal labor market dynamics, Black employees earn 31% less than White employees all else equal



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What should a Strategic Workforce Planning project look like?

1 Gain Insights

Gain strategic insights through interviews, strategy review and data analysis

- Business Strategy
- Executive Insights
- Talent Implications
- Mercer Research
- HRIS Data Analysis

2 Measure Gaps

Model future supply and demand to understand areas of risk and opportunity

- Talent Supply Model
- Workforce Gaps and Risks
- Talent Demand Model

3 Model Solutions

Develop workforce plan to address identified gaps

- Build
- Buy
- Talent Sources
- Borrow
- Bot
- Optimal Solutions
- Talent Dimensions
- Quantity
- Location
- Quality

4 Take Action

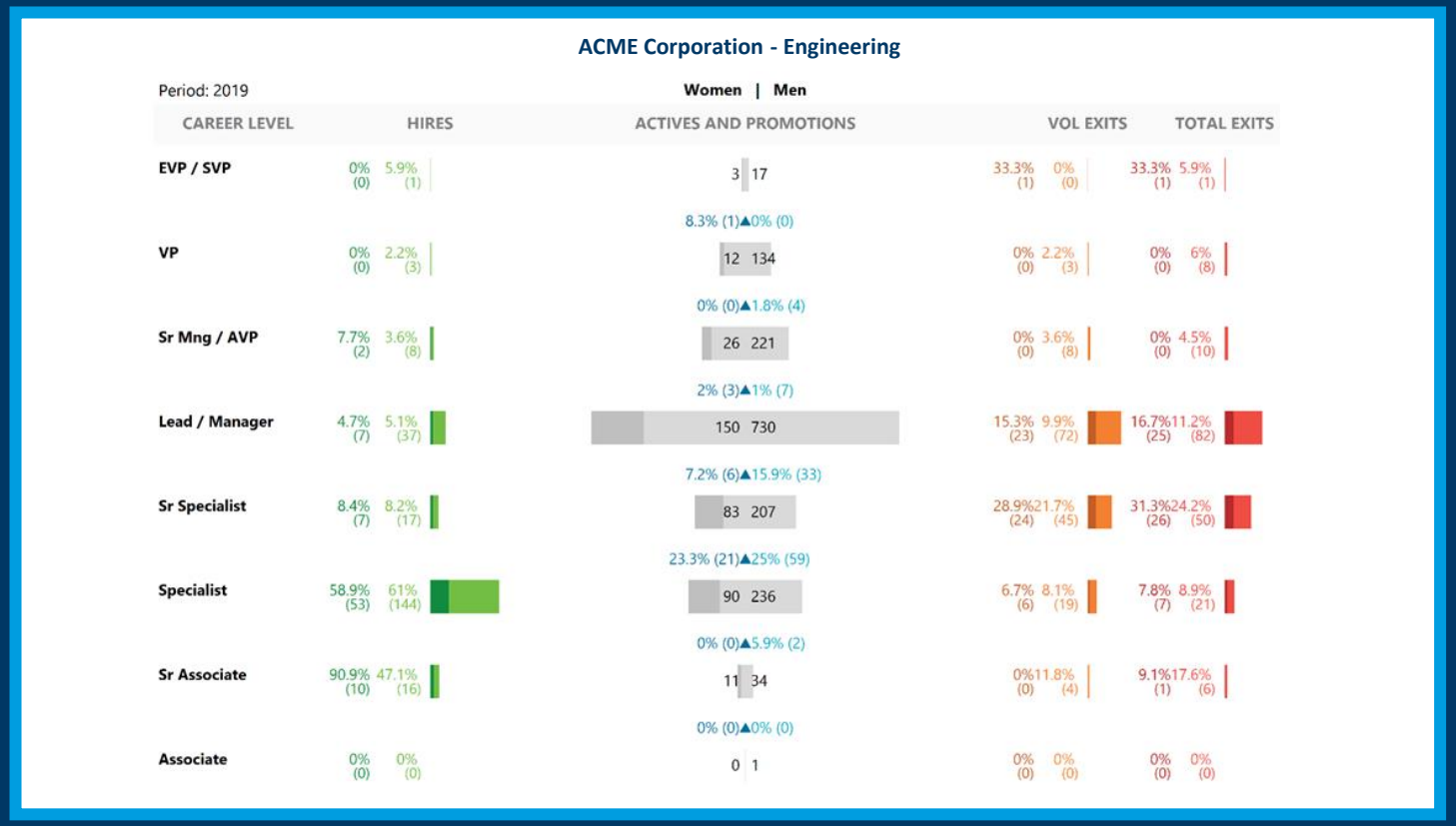
Handover training, materials and capabilities to client team to give ownership of process

- Attraction
- Retention
- Career Development
- Performance
- Rewards
- Leadership
- Culture

Workforce descriptives enable data-driven confirmation or refutation of the qualitative insights

1 Gain Insights 2 Measure Gaps 3 Model Solutions 4 Take Action

Workforce Analytics Sample Output



The second stage is to forecast supply and demand, and therefore identify key gaps

1 Gain Insights | 2 Measure Gaps | 3 Model Solutions | 4 Take Action

Supply and Demand Analysis

- Determine future expected headcount under different assumptions and scenarios
- Brings together supply and demand scenarios to analyze quantitative and qualitative gaps under different business scenarios

Risk Assessment Analysis

- Compute the potential cost savings and benefit gains of taking proactive steps to fill future gaps, rather than waiting until a position opens and filling it on an ad-hoc basis

Objectives

- Identify gaps between the current critical and aggregate talent and the future needs
- Identify the risk of taking actions or not

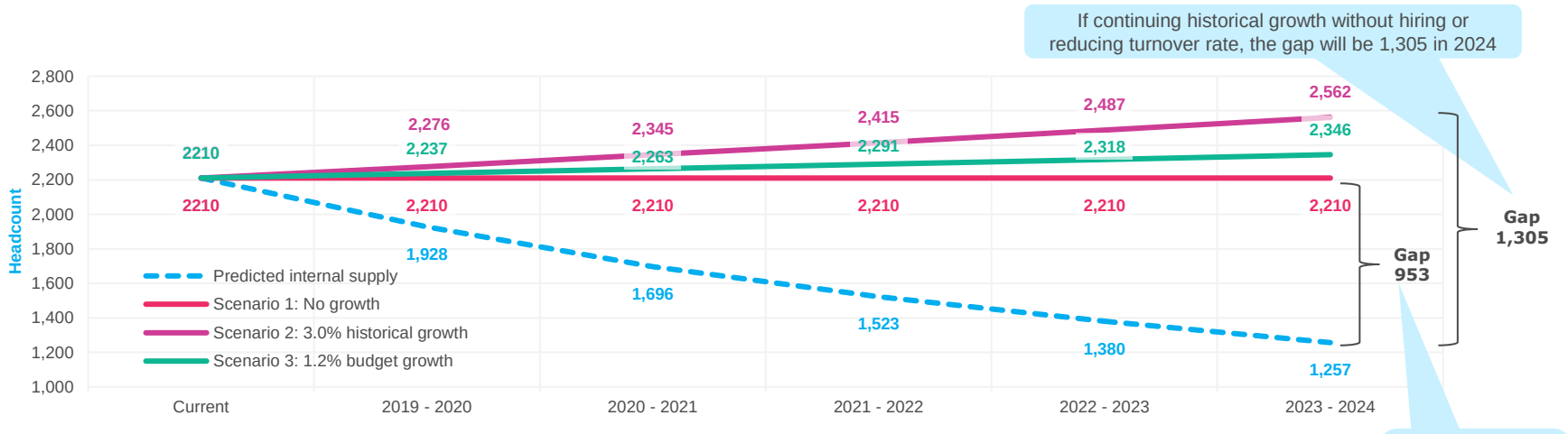
Deliverables

- Identification of the types of risks associated with the gaps (pipeline, age, etc.) and weighing of the potential business impact and costs of both action and inaction
- Economic parameters for interventions

Mercer's proprietary forecasting algorithms enable gaps to be quantitatively identified

1 Gain Insights 2 Measure Gaps 3 Model Solutions 4 Take Action

Forecasting Algorithm Sample Output

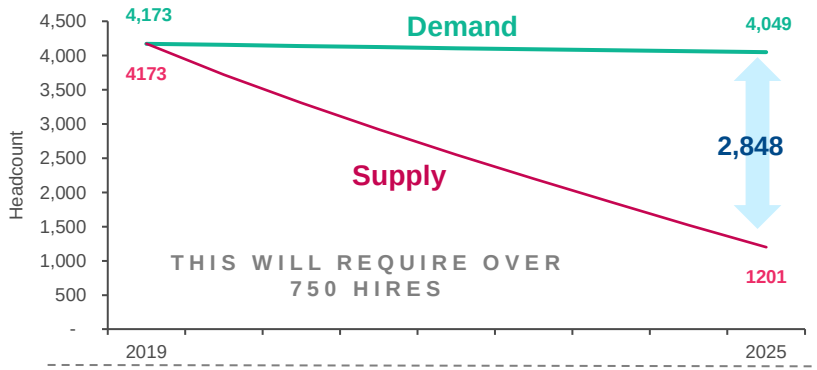


	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
Projected Supply	**1,928**	**1,696**	**1,523**	**1,380**	**1,257**
Projected Demand scenario 1 – 0%	2,210	2,210	2,210	2,210	2,210
Projected Gap scenario 1 – 0%	(282)	(514)	(687)	(830)	(953)
Projected Demand scenario 2 – 3.0%	2,276	2,345	2,415	2,487	2,562
Projected Gap scenario 2 – 3.0%	(348)	(649)	(892)	(1,107)	(1,305)
Projected Demand scenario 3 – 1.2%	2,237	2,263	2,291	2,318	2,346
Projected Gap scenario 3 – 1.2%	(309)	(567)	(768)	(938)	(1,089)

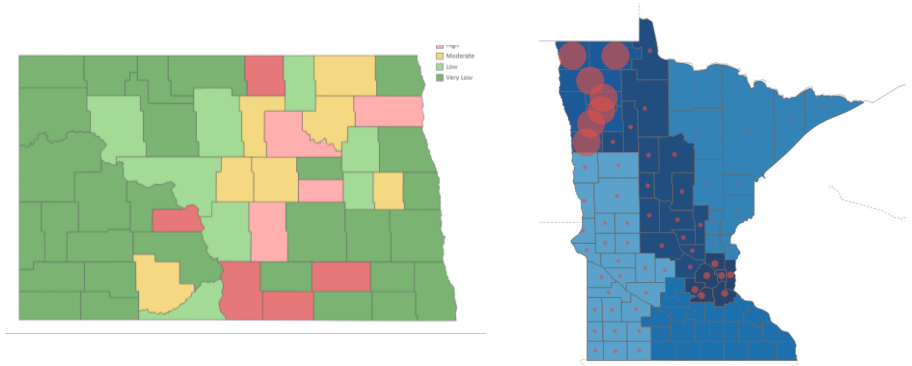
Combining analysis of gaps with external labor market analysis underpins solution design

1 Gain Insights 2 Measure Gaps 3 Model Solutions 4 Take Action

Workforce Gap



External Labor Market



Observations

- Workforce Gap: **Red light –** 750 software engineer hires needed due to projected turnover by 2025
- External Labor Market: **Red Light -** Stronger competition for software engineering talent over the next 5 years
- Turnover Behavior: **Yellow Light** -
  - ✓ Turnover is high, but controllable:
  - ✓ Quick quits have a compounding effect.
  - ✓ Younger (age 35 and below) and shorter-tenured employees are much more likely to turnover.
  - ✓ Increasing pay has a strong effect on early career employees: career incentives work better past year 1.

Solutions

- **Develop, and retain**
- Consider micro-targeting of “age 35 and below” cohort; adjusting the employee value proposition for this group to improve early career retention.
- Ensure pay is competitive for early retention. Once employees are comfortable with their role, allow access to increased hours to ensure earnings are maintained.
- Targeting high potential employees for supervisory roles should reduce turnover risk by reducing span of control and ensuring direct supervisors are closer peers to supervisees.
- An oversupply of software engineers in MN suggests an opportunity to build talent

The final stage identifies a comprehensive approach for delivering the solutions

1 Gain Insights 2 Measure Gaps 3 Model Solutions 4 Take Action

Talent Management Solutions

- Tailor a talent management program that dovetails with identified workforce planning needs and targets

Ownership Models

- Determine delivery structure and responsible parties

Technology Platform

- Determine technology requirements, which can vary widely from basic business intelligence tools and analysis to highly sophisticated integrated systems.

Business Processes

- Transfer workforce-planning knowledge to process owners

Objectives

- Translate the plan into actual workforce planning solutions and business processes
- Identify the tools and models by which HR can best enable workforce planning

Deliverables

- Comprehensive, measurable talent management strategies that provide granular details about each solution
- Ownership models, acceptance of models and understanding of roles
- Identification of technological solutions that maximize the ability to automate extraction, cleaning and processing of employee data
- Business units self-sufficiency or self-leadership

Leveraging external evidence: Reviewing meta-analytic evidence about the value of general experience and organization tenure for driving performance

A fresh look at age and work performance
Are older workers less productive?

Older workers are less likely to be highly rated in subjective performance reviews

Bias or reality?

What about objective measures of performance?

The research of labor economists and of work psychologists disagrees!

Mercer has a unique database – a library of client cases – and we used it to do our own research on the question

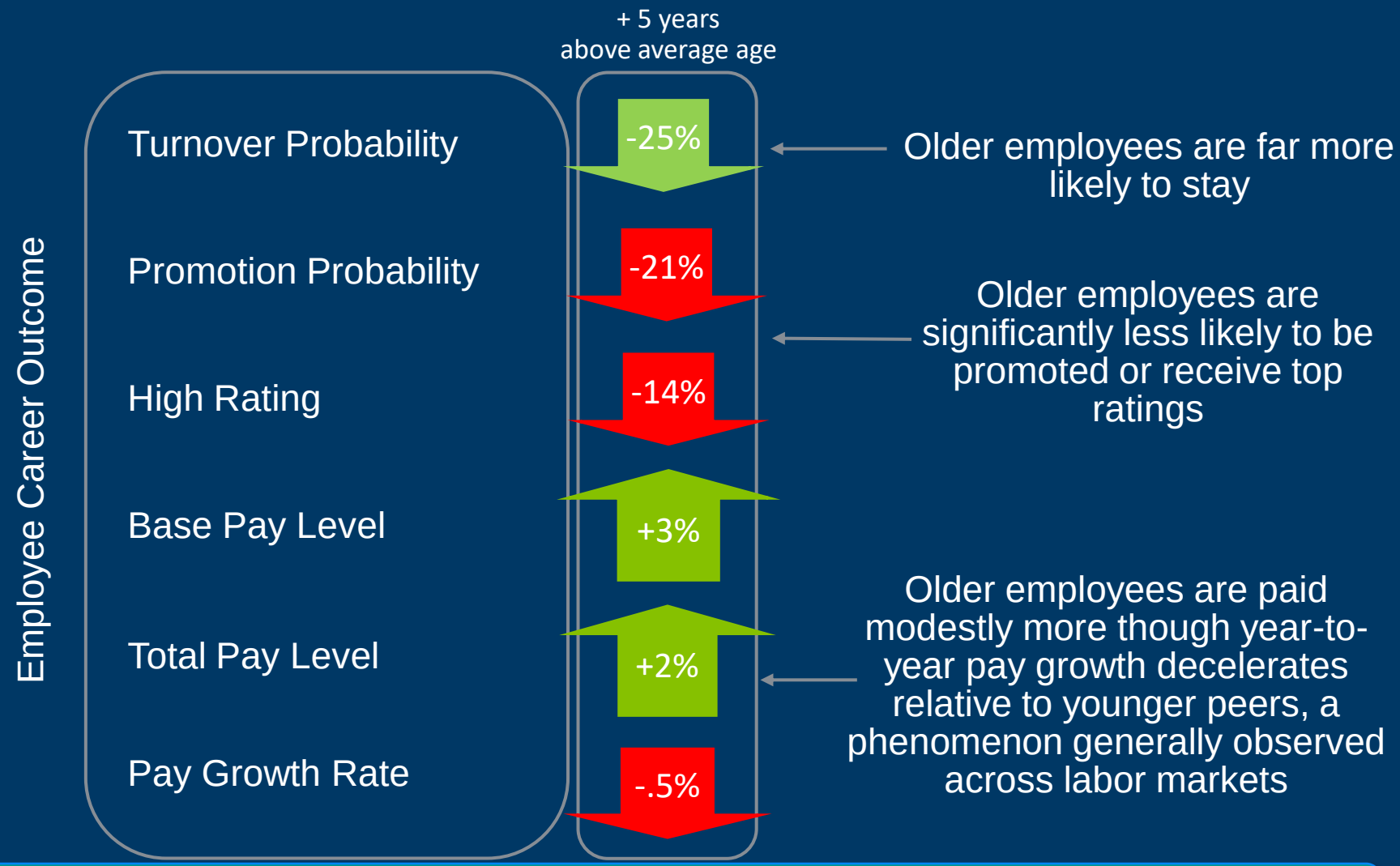
"Age, Experience, and Business Performance" in *Work, Aging and Retirement*

https://academic.oup.com/workar/article/8/2/208/6574297?guestAccessKey=dc62f190-b8a7-4fe0-994c-b3476d22a72c

Measuring the productivity of older workers
INDIVIDUAL PERFORMANCE

DISGUISED CASE EXAMPLE

At this large consumer products company, older workers face a significant fall-off in career advancement and ratings, *all else being equal*:



This pattern of findings is very representative of what we find in client organizations

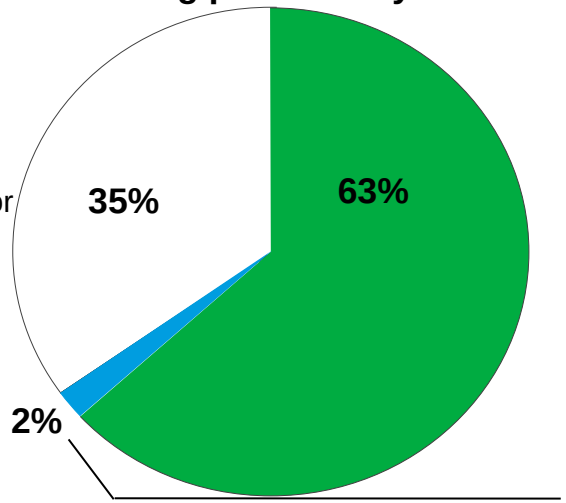
Measuring the productivity of older workers
GROUP PERFORMANCE

Human capital factors often play a key role in driving workforce productivity–as in these organizations

Factors affecting productivity at HealthCo

Due largely to:

- Transitory effects
- Lack of data
- Measurement error



Identified, persistent factors

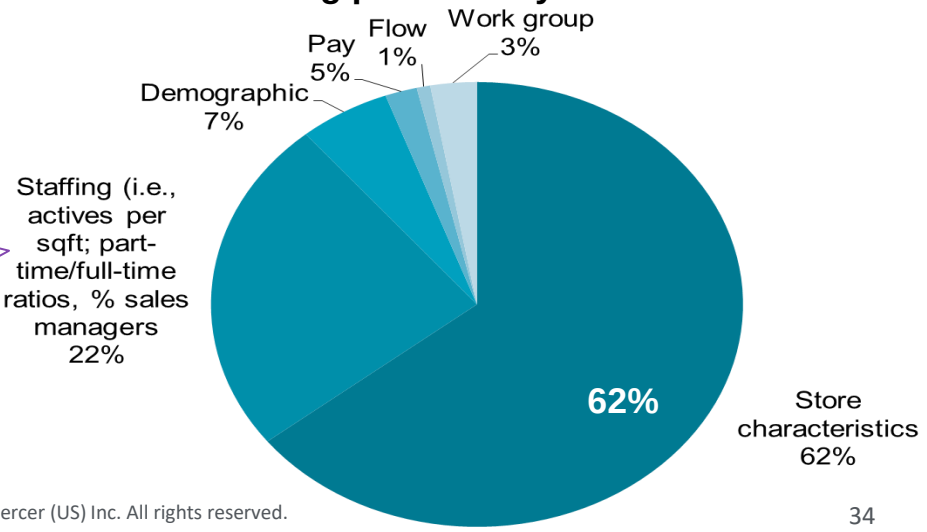
Dominated by:

- Compensation
- FT/PT ratio
- Overtime
- Turnover

Also includes capital / technology factors

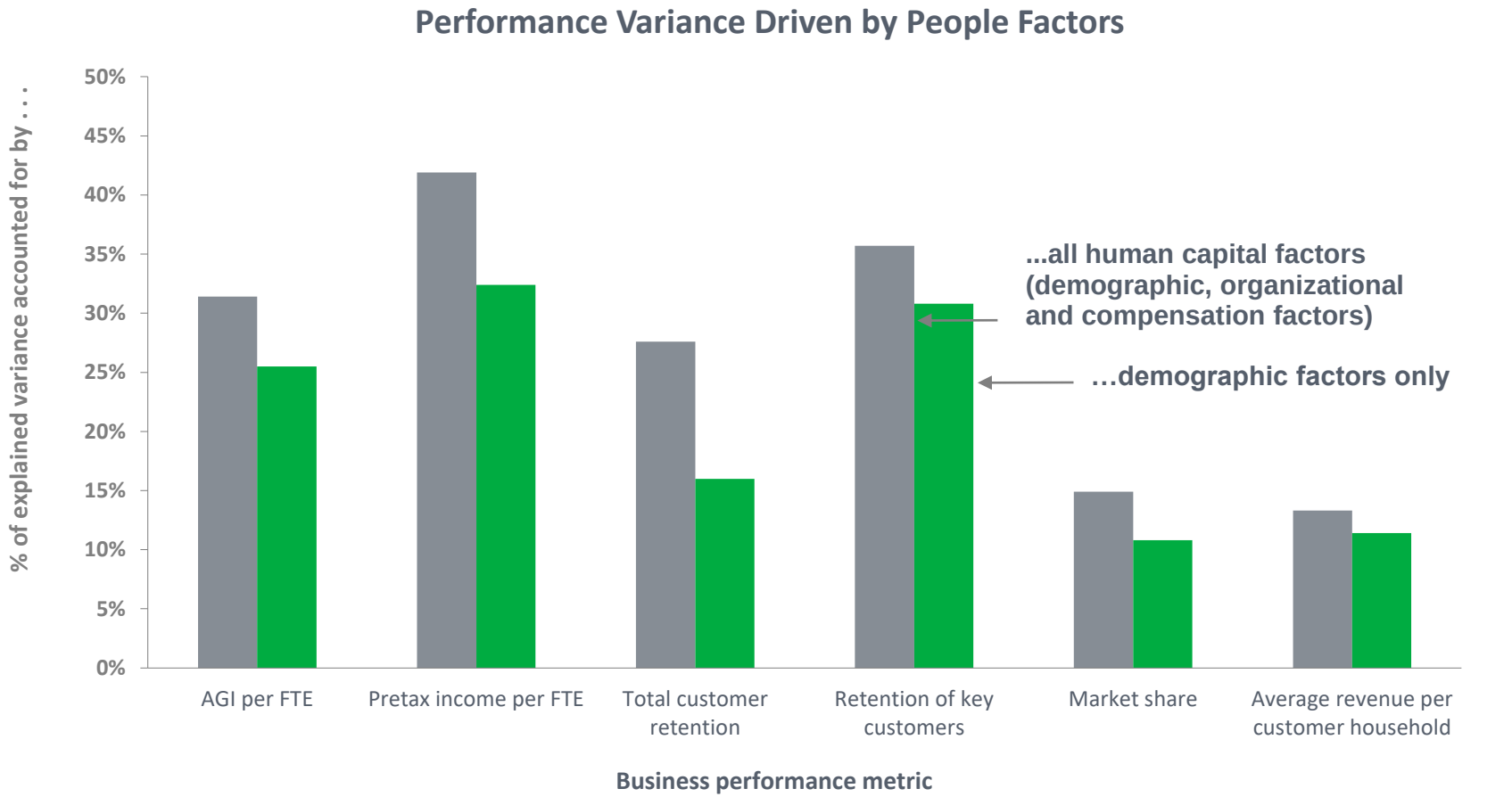
About 38% of the explained variance in margin at RetailCo is explained by human capital

Factors affecting productivity at RetailCo



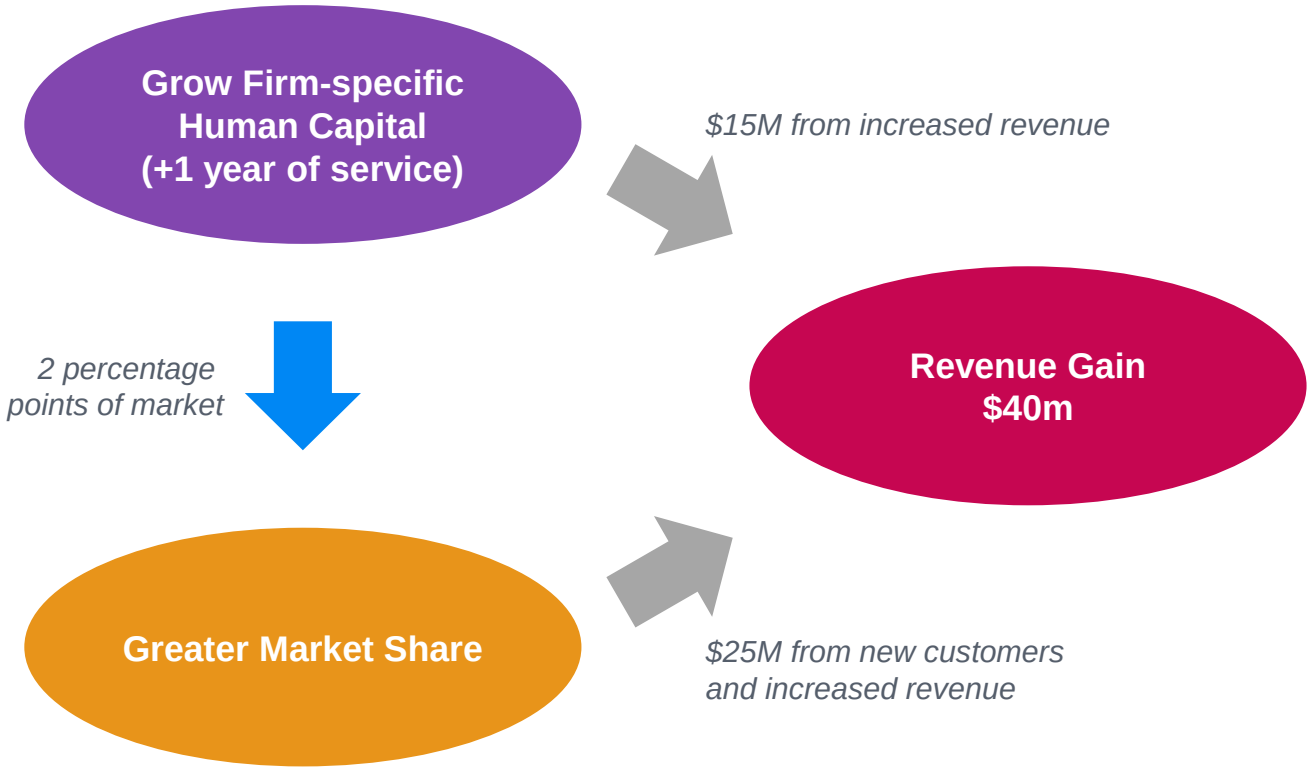
MERCER

. . .Or in the retail operations of this financial services company



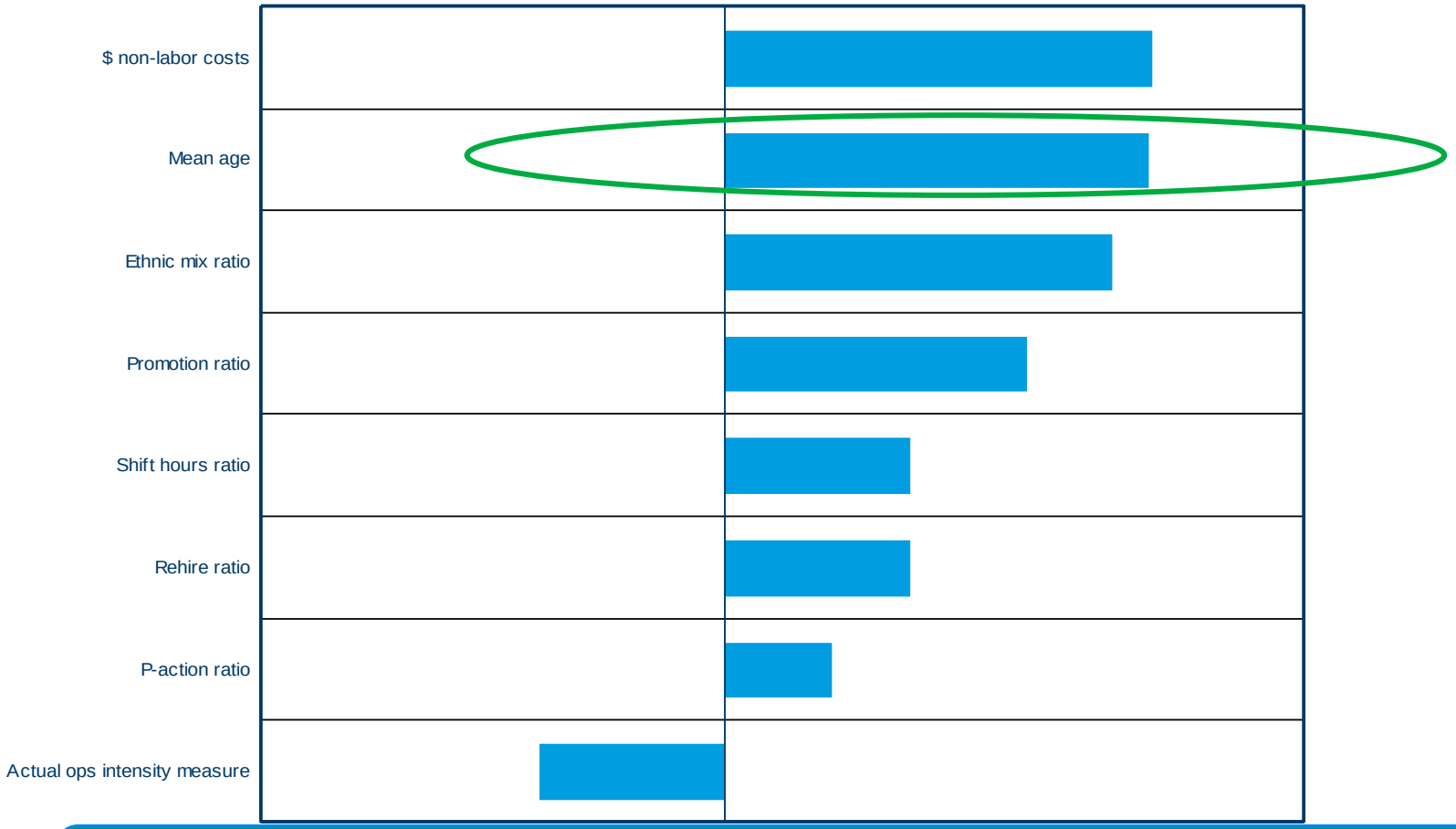
How much of the variation of unit performance is explained by human capital factors in your organization?

For this bank, modeling showed that length of service was the biggest driver of branch and regional performance



…general human capital has no such impact

In this natural resources company, older workers drive productivity in this unit



Our recent meta-analysis of multiple business impact modeling studies for client firms found age to be neutral with respect to business performance and tenure to be positive

Our meta-analysis

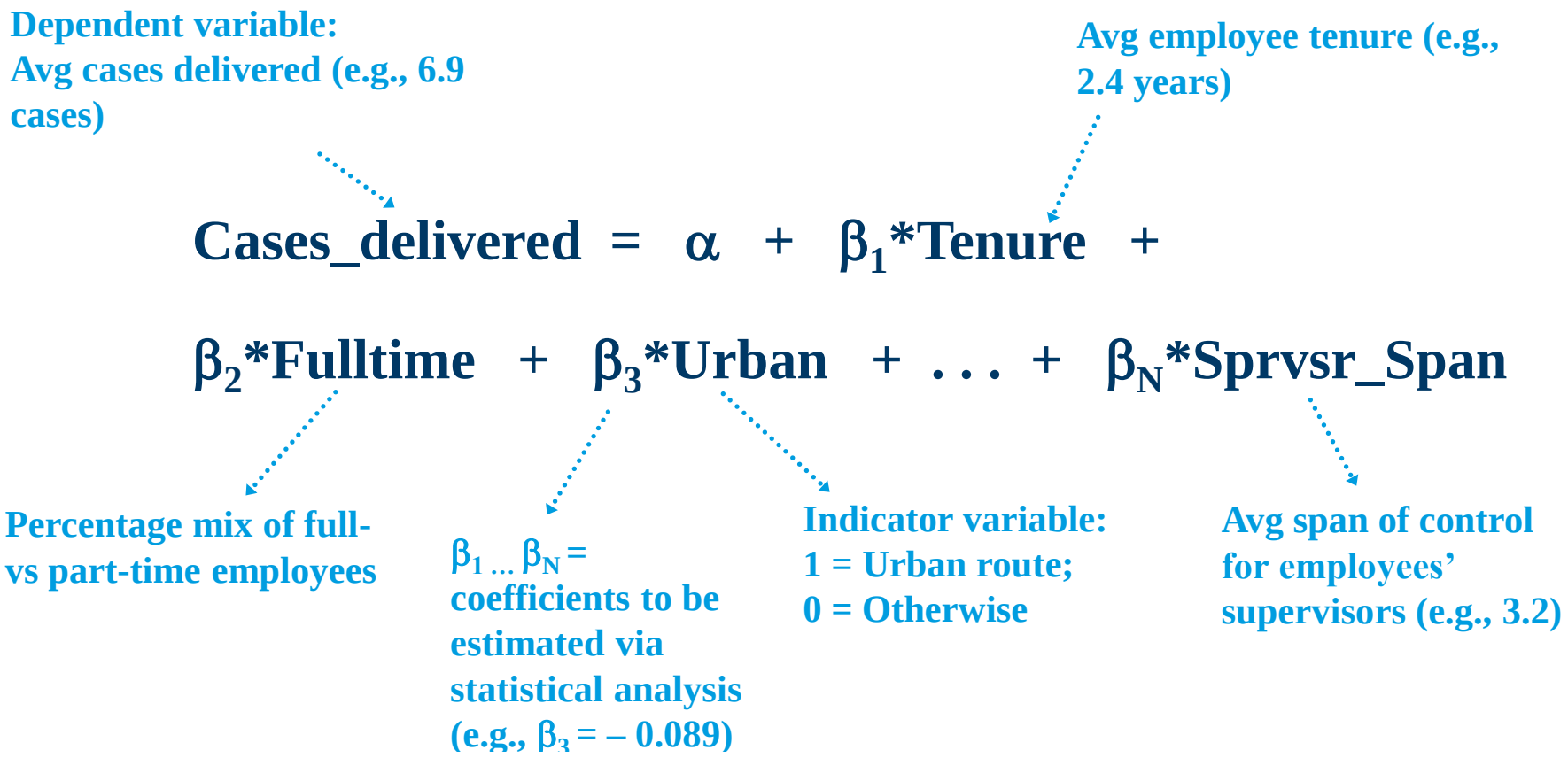
A meta-analysis

- **Business Impact Modeling** – our approach to measuring the impact of workforce management practices and employee attributes on performance
- **Objective measures** of performance – financial, operational, customer
- **Experience** is an employee attribute
  - **Age** = years of total work experience
  - **Tenure** = years of employer-specific experience
- **23 client cases**
- **1.25 million person-years** of employee performance in the workplace

Publications:

- Guzzo, Richard A., Haig R. Nalbantian, and Nicholas L. Anderson. (2023). "Don't Underestimate the Value of Employee Tenure". *Harvard Business Review*.
- Guzzo, Richard A., Haig R. Nalbantian, and Nicholas L. Anderson. "Age, Experience, and Business Performance: A Meta-Analysis of Work Unit-Level Effects." Work, Aging and Retirement 8.2 (2022): 208-223.

Business Impact Modeling: Production function



What we found

No impact of age on performance; positive impact of tenure on performance

Worker age is unrelated to business performance

True for all 3 measures :

financial, operational, and customer

Tenure drives performance

As employees' average tenure increases, financial and operational business results improve

As leaders' tenure increases, operational effectiveness improves

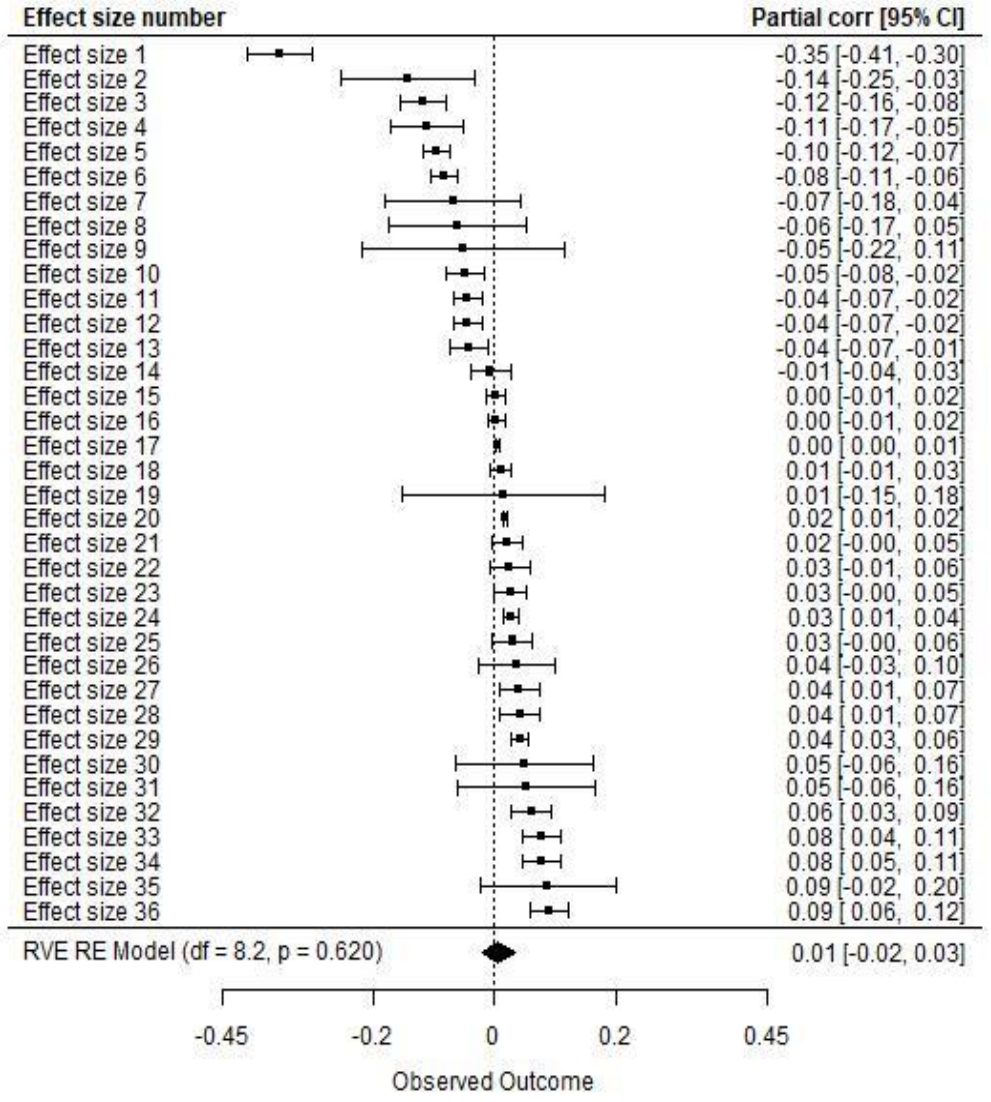
Don't worry about multi-generational workplaces

Age-diverse work groups perform equally well to age-similar work groups

Forest plot

Average unit AGE and FINANCIAL PERFORMANCE

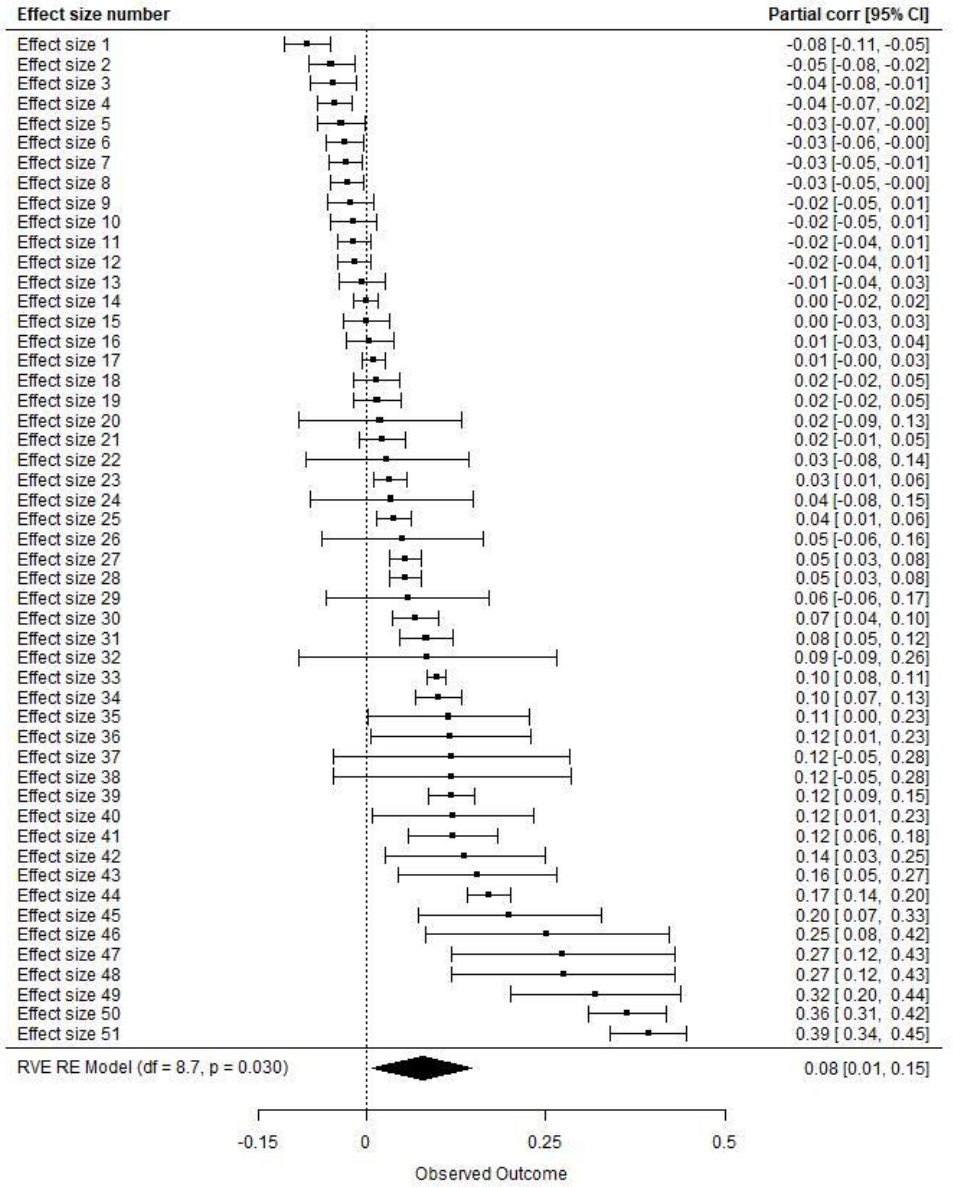
- 95% Confidence intervals (CI) for each effect size (ES)
- Mean ES is near zero
- CI for mean ES includes zero
- Conclusion:
  - General human capital has no effect on financial performance



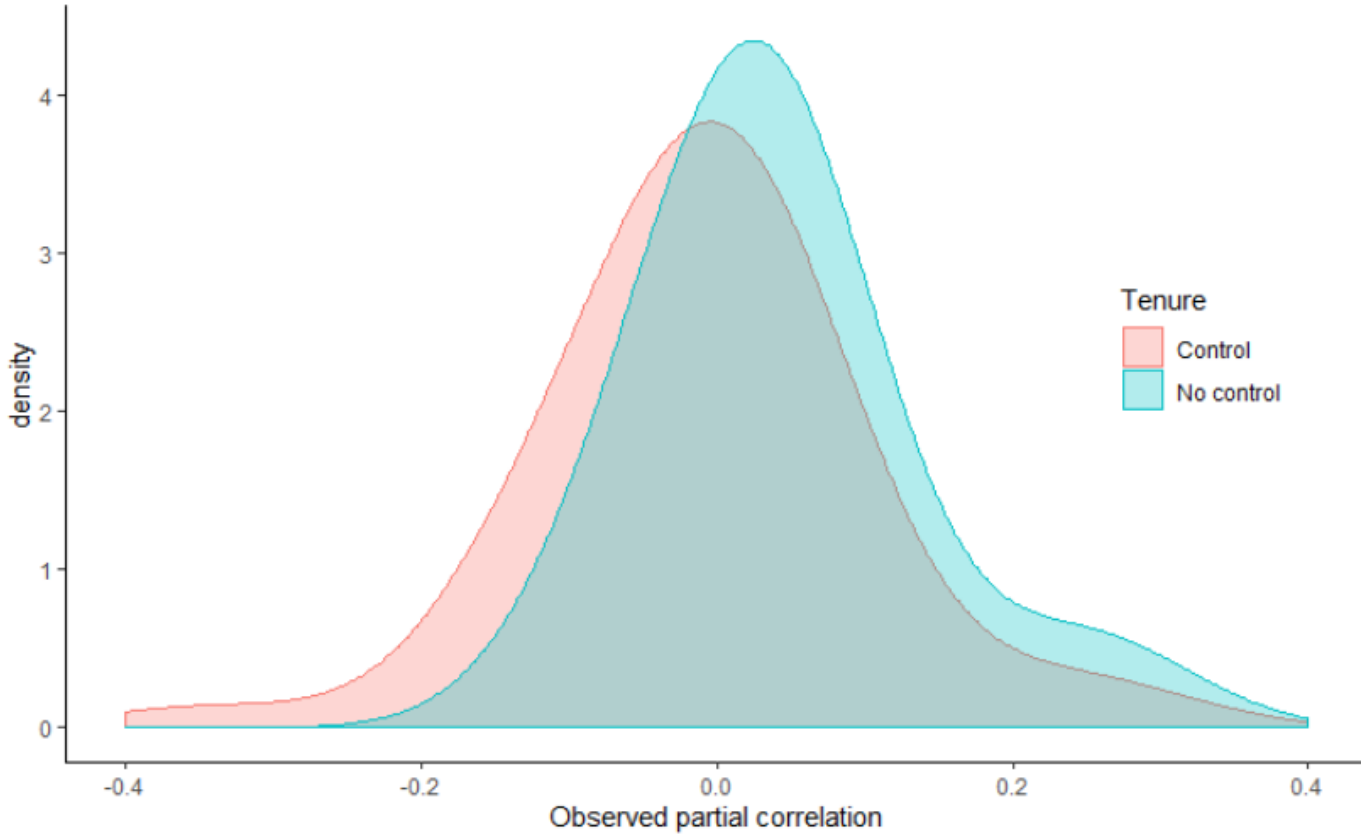
Forest plot

Average unit TENURE and FINANCIAL PERFORMANCE

- 95% CIs for each ES
- Mean ES is positive
- CI for mean ES excludes zero
- Conclusion:
  - Firm-specific human capital positively impacts financial performance
  - Variance in ESs suggest that moderating factors may be operating



Regression result: The age-performance relationship looks positive when tenure is not controlled … but shifts to zero when tenure is accounted for



What does this mean for employers and employees?

- **Defeat ageism** – let's get the facts out there … older workers are not less productive
  - Nor are they a drag in multi-generational workforces
- **Tenured workers create value**
  - Because age and tenure typically go together …
- **Employers who seek to retain older workers** through phased retirement program and flexible work arrangements can **capitalize on the value** of older workers' tenure
- **Traditional forms of employment have business value**
  - Non-employee workforces – gig, contract, contingent workers – do not build tenure
  - Traditional forms of employment that build tenure create value for businesses
  - Our research: The higher cost of older, tenured employees is exceeded by the value they create

Thank you for attending!
Please feel free to reach out to me if you have any questions

Email: nla2121@tc.columbia.edu

Upcoming Events

VISIT **GO.OSU.EDU/UPCOMING** TO LEARN MORE AND REGISTER.

- **OCT 18, 3 - 5 p.m.** | Building Resilient Global Supply Chains Virtual Event
- **NOV 8, 12 - 1 p.m.** | Fisher Impact Day Webinar
- **NOV 15, 12 - 1 p.m.** | Supplier Diversity Webinar
- **DEC 8, 10:30 a.m. - 2:30 p.m.** | Artificial Intelligence Hybrid Event

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