Concurrent Presentation Session
LEARNING ANALYTICS FROM DIVERSE DATA

Persona-based Analytics Framework for Learner Experience Mapping

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Persona-based Analytics Framework for Learner Experience Mapping

Location: iFest

Presented by:
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Director, Data Analytics

Allow the Course Author to:

- Review the selected class' status using current data and predicted data; i.e., default page
- Review the selected class' status using filters via a selected Learner Group
  - Learner Groups can be:
    - Single variable selected by the Course Author
    - Multi-variable Learner Group(s) based on a digital 'persona' created using historical data
- Review variables to explore the effect on a performance measure

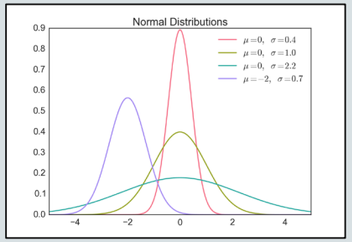
User-Centered Design

Determine instructor needs

Incorporate practices and principles from Customer Journey Mapping and Personas

Visualize data in intuitive and actionable format

Data Analysis



Identify statistically significant variables to performance

Manage complexity of data

Build a predictive model

Persona Creation

Use of regression and clustering to group learners

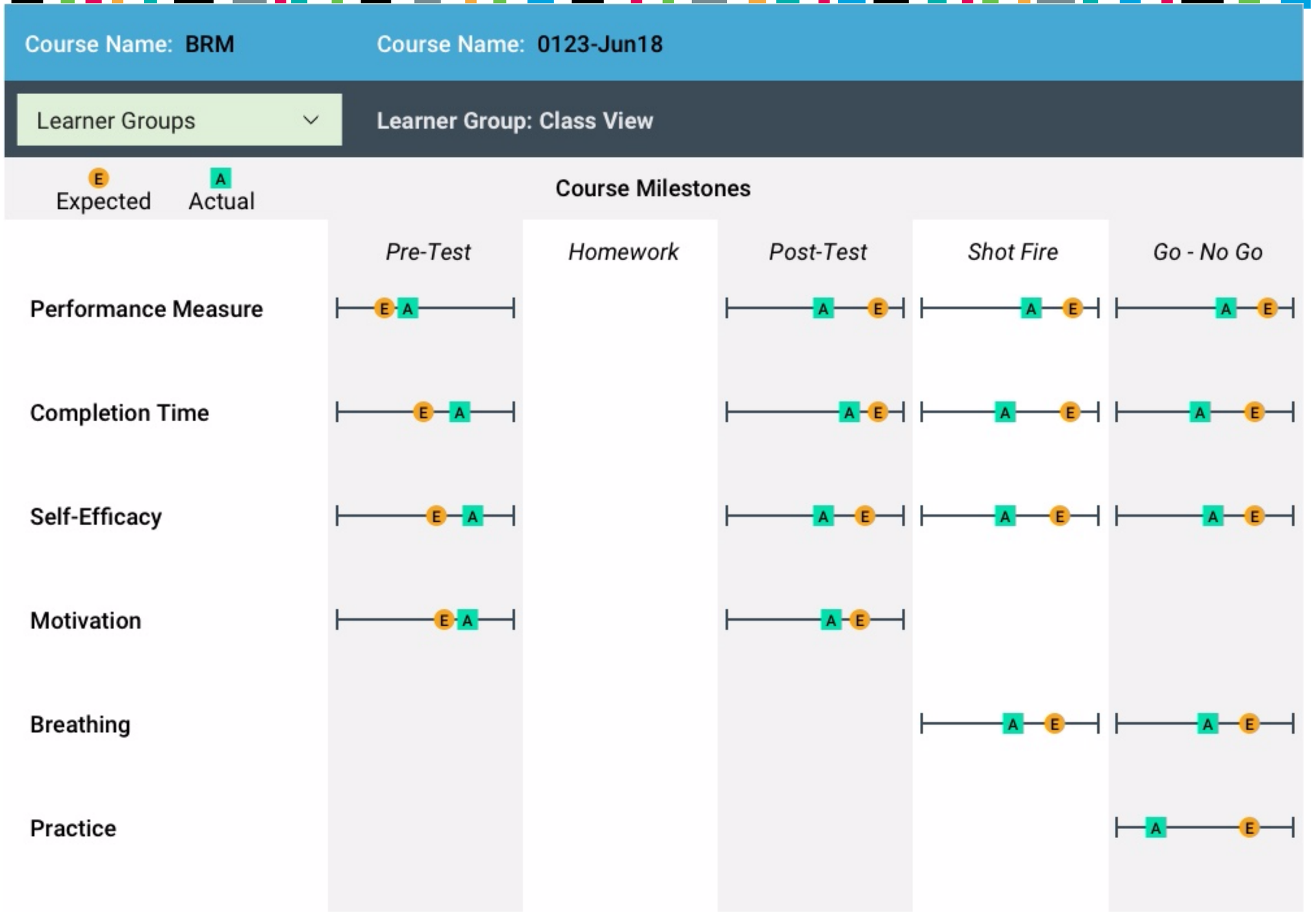
Validation

Compare to initial data model

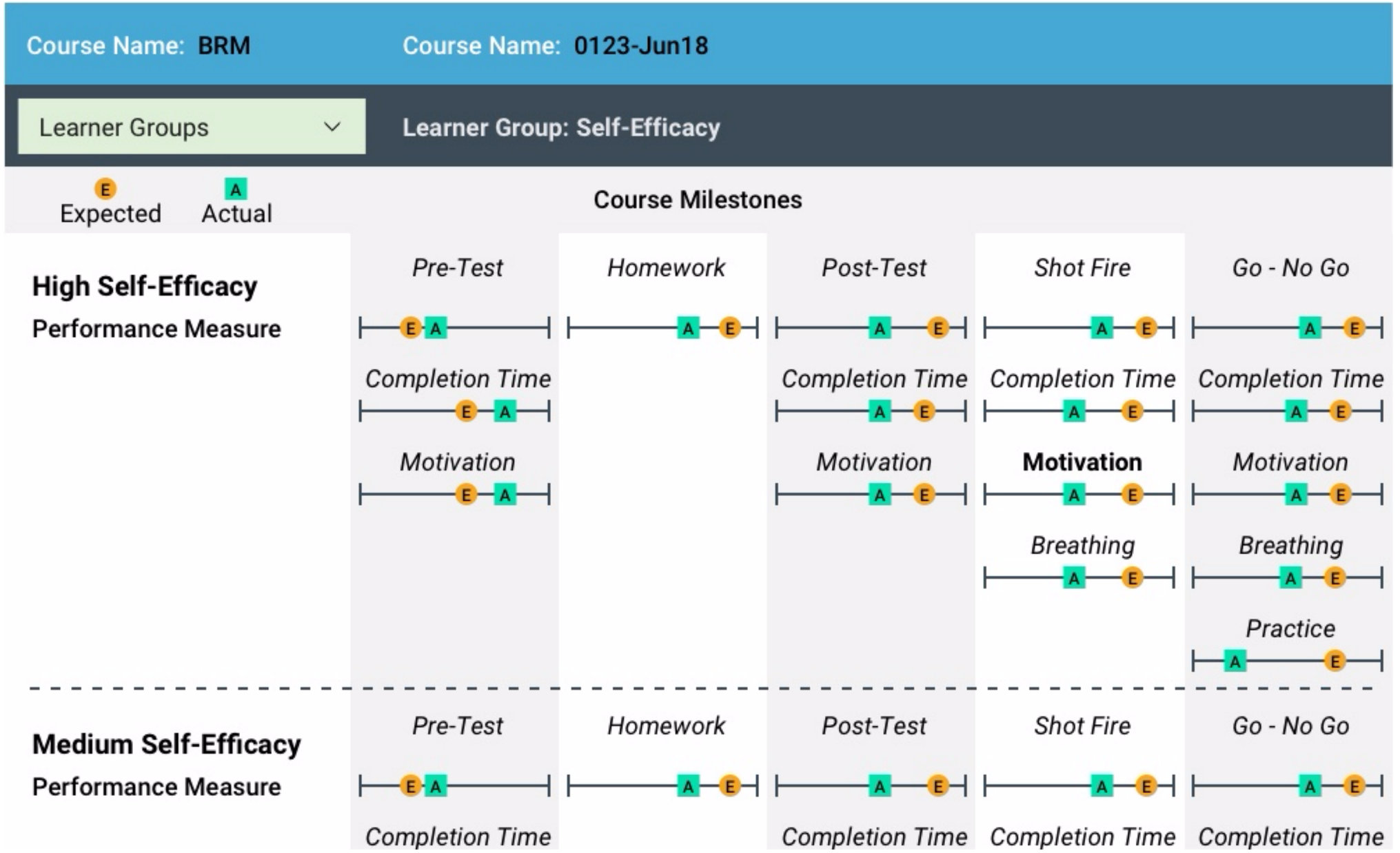
Are we able to see what we anticipated

Do our models predict performance and is our dashboard intuitive

What it Does


Course Name: BRM
Course Name: 0123-Jun18
Learner Groups
Learner Group: Class View
E Expected
A Actual
Course Milestones
Pre-Test
Homework
Post-Test
Shot Fire
Go - No Go
Performance Measure
Completion Time
Self-Efficacy
Motivation
Breathing
Practice


Course Name: BRM
Course Name: 0123-Jun18
Learner Groups
Learner Group: Class View
Select One Variable
Bold means it mathematically impacts performance
Demographics
• Age
• Gender
• Prior Experience
• Left/Right-Handed
Affective
• Anxiety
• Motivation
• Self-Efficacy
Cognitive
• Prior Knowledge
• Aptitude
Psychomotor
• Breathing
Learner Group
• Demographics A
• Demographics B
• Affective
• Demo/Cognitive
• Psychomotor-Breathing
• Learner Path
st-Test
Shot Fire
Go - No Go
A
E
Breathing
Practice


Course Name: BRM
Course Name: 0123-Jun18
Learner Groups
Learner Group: Self-Efficacy
E Expected
A Actual
Course Milestones
High Self-Efficacy
Performance Measure
Pre-Test
Homework
Post-Test
Shot Fire
Go - No Go
Completion Time
Motivation
Breathing
Practice
Medium Self-Efficacy
Performance Measure

How it Works

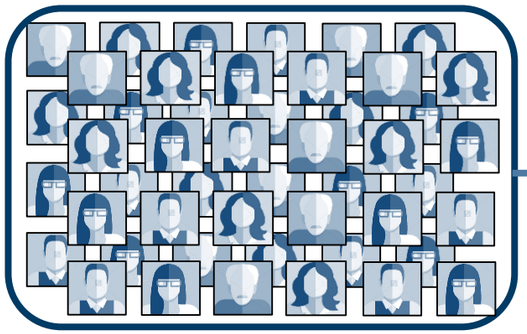
Data

Square represents one person
Monotone is historical data

1. Calculate descriptive statistics
2. Perform correlation/association analyses to identify statistically significant variables to performance
3. Dimensionality reduction to manage complexity of data (e.g., PCA)
4. Build a predictive model associating most significant factors and course performance (e.g., regression)

Identify Digital Personas based on Historical Data

Round represents multiple people, a digital persona



Simplest Form of Digital Persona: Single, statistically significant variable

Digital Persona A
Self-Efficacy

Digital Persona B
Domain Knowledge

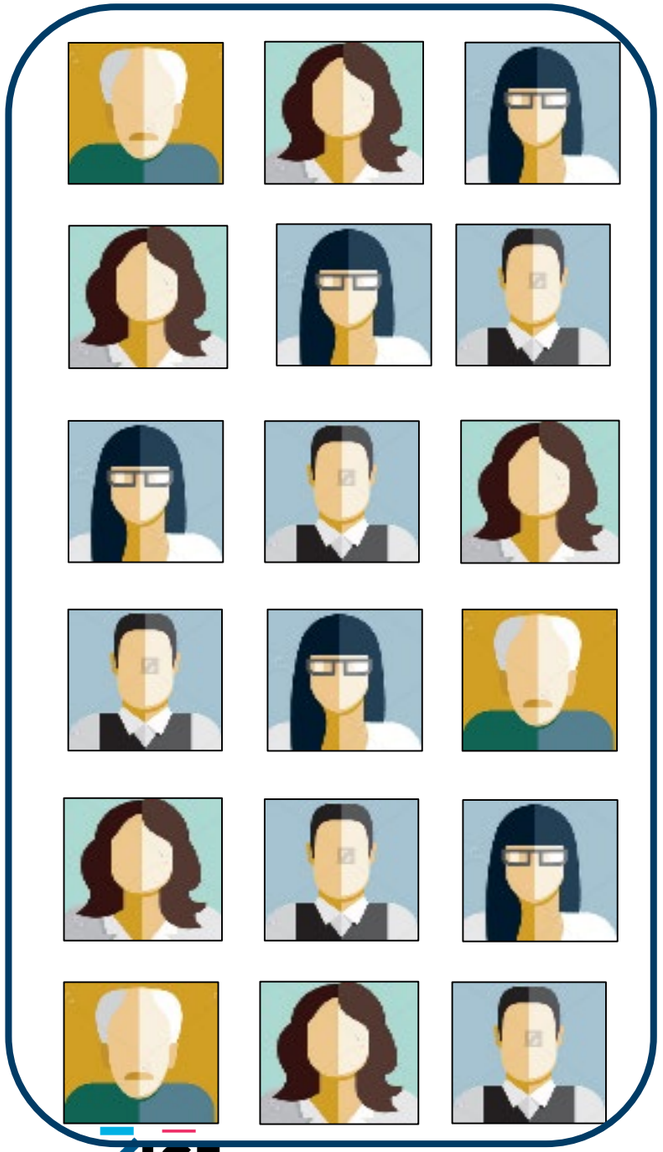
Digital Persona C
Handedness

Digital Persona: Multiple, high contributing variables to variance

Digital Persona D
Self-Efficacy &
Handedness

Digital Persona E
Self-Efficacy &
Domain Knowledge

Explore Current Class' Journey Through the Course based on Digital Personas IAW Historical Data



Based on correlation/association with a performance measure

Digital Persona A
Self-Efficacy

Digital Persona B
Domain Knowledge

Digital Persona C
Handedness

All current students would be in each Digital Persona.

These are then further divided into segments.

Based on regression analysis and clustering

Digital Persona D
Self-Efficacy &
Handedness

Digital Persona E
Self-Efficacy &
Domain Knowledge

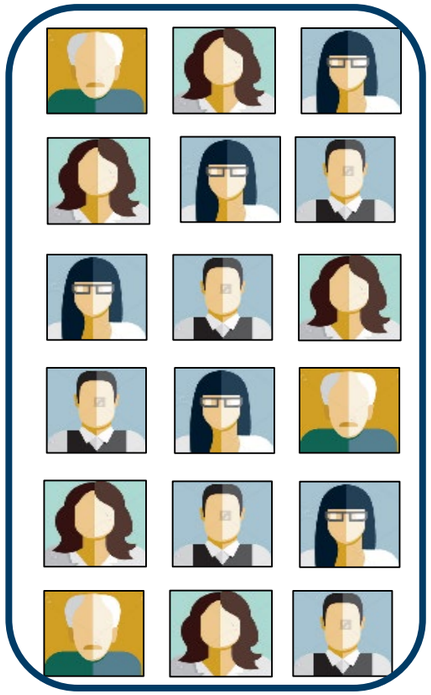
Round represents multiple people

Square represents one person
Colored is current class

Divide Current Class into Segments for each Digital Persona

Simple single variable

Digital Persona A
Self-Efficacy

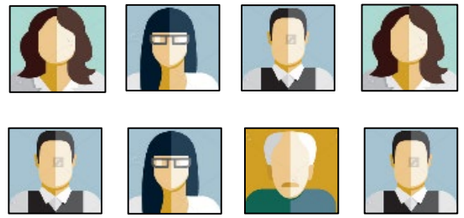


Parse class according to variable levels to (a) review performance prediction per DPS level and (b) compare across levels to identify differences that might explain the levels

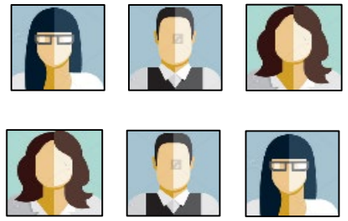
The Digital Persona Self-Efficacy is divided into three segments.

High

Medium



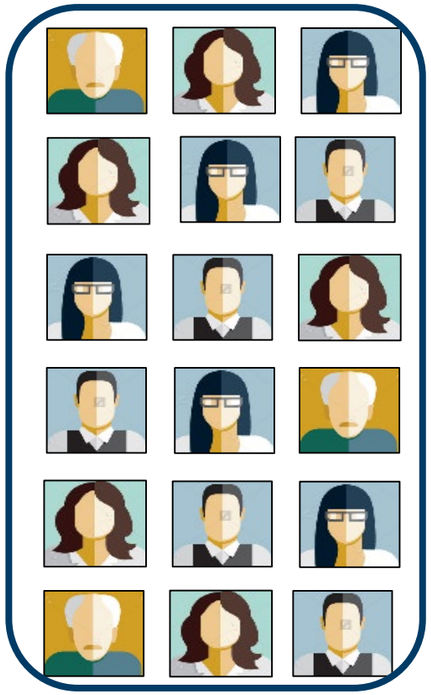
Low



Current Class – Sorting into Digital Persona Segment IAW Historical Data

Multiple variables

Digital Persona D
Self-Efficacy &
Handedness



Parse class according to variable levels to (a) review performance prediction per DPS level and (b) compare across levels to identify differences that might explain the levels

The Digital Persona D Self-Efficacy and Handedness is comprised of six segments.

High Self-Efficacy
Right Handed

High Self-Efficacy
Left Handed

Medium Self-Efficacy
Right Handed

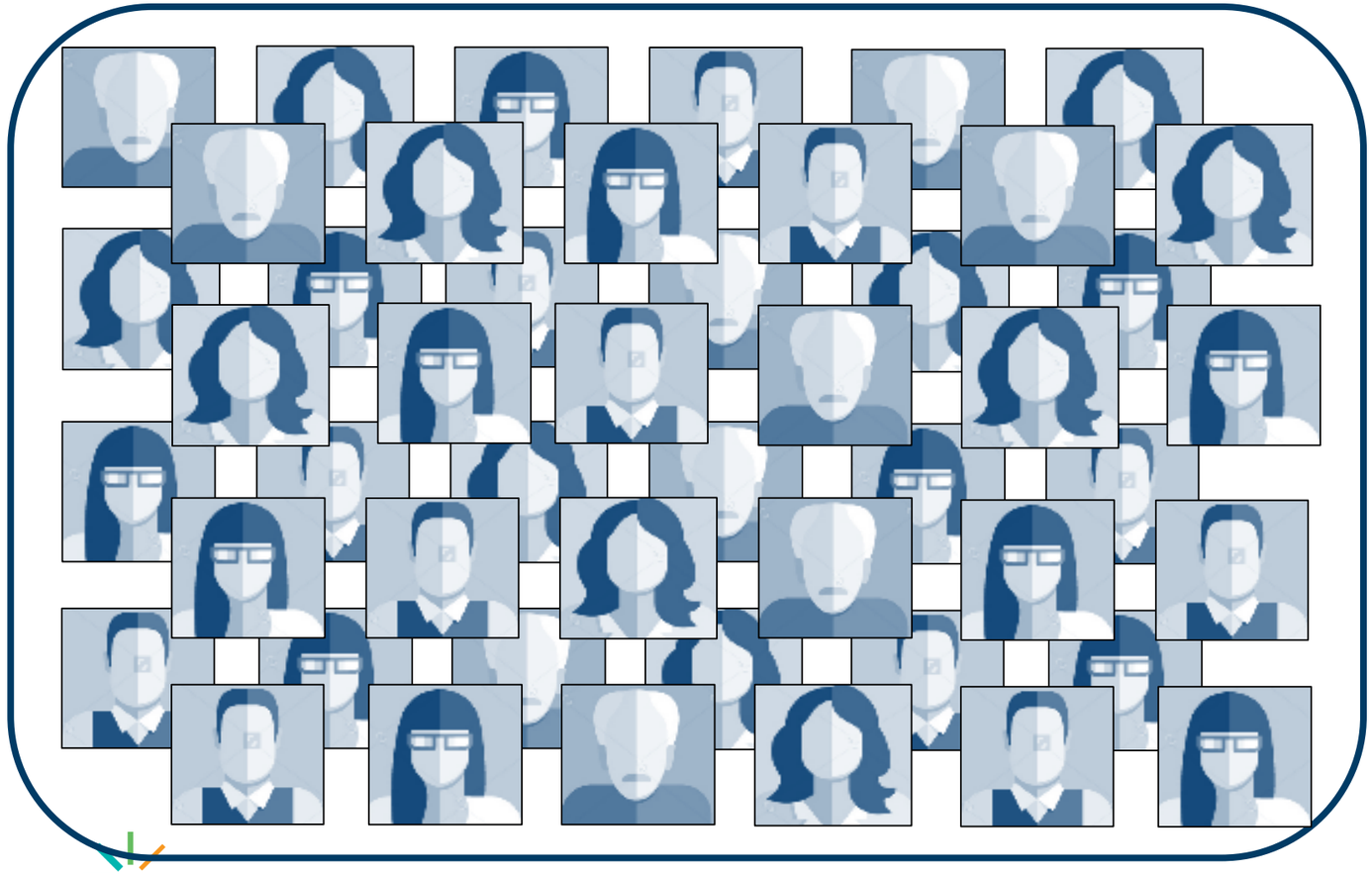
Medium Self-Efficacy
Left Handed

Low Self-Efficacy
Right Handed

Low Self-Efficacy
Left Handed

Segment the historical data into the same Digital Persona Segments

Calculate the descriptive statistics per variable per Digital Persona Segment to serve as the expected value per the current class



High Self-Efficacy
Right Handed

High Self-Efficacy
Left Handed

Medium Self-Efficacy
Right Handed

Medium Self-Efficacy
Left Handed

Low Self-Efficacy
Right Handed

Low Self-Efficacy
Left Handed

Compare Current Class Variable Values to Historical Data Values based on Segments

High Self-Efficacy
Right Handed

High Self-Efficacy
Left Handed

Medium Self-Efficacy
Right Handed

Medium Self-Efficacy
Left Handed

Low Self-Efficacy
Right Handed

Low Self-Efficacy
Left Handed

ACTUAL CLASS average values ⟷ HISTORICAL DATA average values

Compare