Data experiences within engineering

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Academy diversity data work

- Professional Engineering Institutions

- Employers

- Analysis of public datasets

- Commissioned work

- Internal data work

Work with PEIs

- Engineering Diversity Concordat

- 31 signatories (29 PEIs)

- Reflecting on progress is one of 3 objectives

- First data aggregation from PEIs just completed

Work with employers

- Mix of qualitative and quantitative collection

- Use of diversity data within employers is growing (engineering, strands)

- First baseline survey and benchmarking just completed

Analysis of public datasets

- We have worked with several of the main data sets
  - National pupil database
  - Individual Learner Record
  - HESA/HEIDI data for staff and students
  - Destinations data DLHE
  - UCAS
  - Labour Force Survey
  - Graduate Talent Pool

- Work undertaken as part of diversity programme, education programme or for PEI community (E4E)
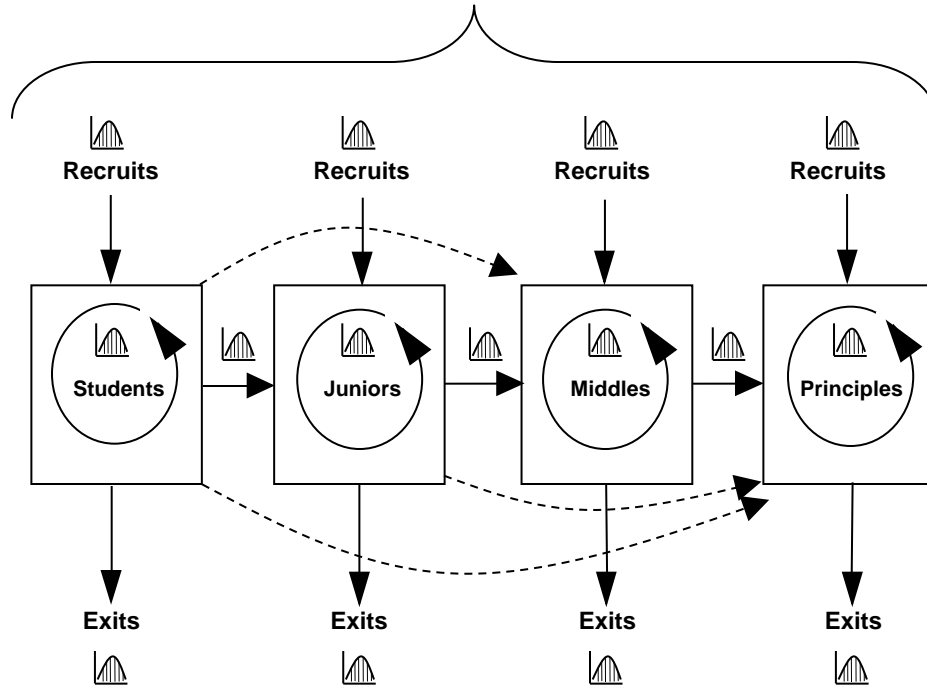
Commissioned work

- Mix of qualitative and quantitative work

- Quantitative example – POLARIS modelling tool from Polaris Associates
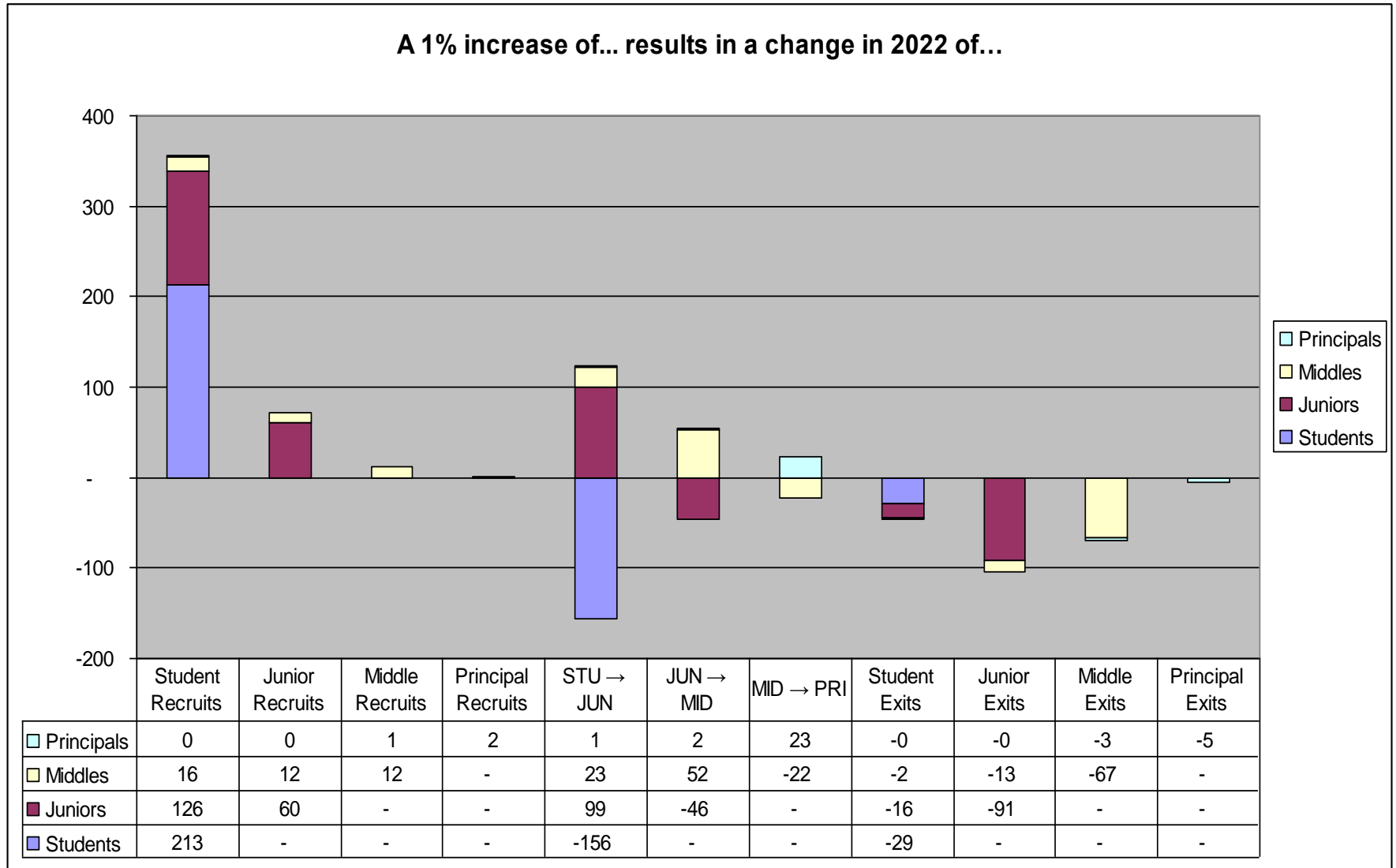
Design brief

- **A *beta* model to predict levels of diversity in the engineering population and the engineering pipeline**

    - **As per schematics**

- **To construct such a model utilising whatever data sources are available, and using synthesised data where data may become available in the future.**

- **To demonstrate the viability and usefulness of a simulation model in helping analyse, support and increase diversity in the UK engineering community.**

- **Use similar techniques as employed in the Polaris simulation models being used by professional membership organisations to better manage their membership.**

    - **Show the results on yearly and summary interactive dashboards**

EXAMPLE 3

Diversity Predictions and Actions

As well as overall membership growth, diversity modelling can also be achieved, in terms of

| Gender Diversity | Age Diversity | Race Diversity |

Recruits **Recruits** **Recruits** **Recruits**

Students   Juniors   Middles   Principles

Exits **Exits** **Exits** **Exits**

POLARIS

Female Model Example: What effect a 1% increase in a variable has on levels in 2022

A 1% increase of... results in a change in 2022 of…

	Student Recruits	Junior Recruits	Middle Recruits	Principal Recruits	STU → JUN	JUN → MID	MID → PRI	Student Exits	Junior Exits	Middle Exits	Principal Exits
☐ Principals	0	0	1	2	1	2	23	-0	-0	-3	-5
☐ Middles	16	12	12	-	23	52	-22	-2	-13	-67	-
■ Juniors	126	60	-	-	99	-46	-	-16	-91	-	-
■ Students	213	-	-	-	-156	-	-	-29	-	-	-

Legend: ☐ Principals, ☐ Middles, ■ Juniors, ■ Students

POLARIS

EXAMPLE 3

Female Diversity Experiment: The Effects of A 50% Increase In Recruits, Just 'Students'

Numbers By Class (left chart: Principals, Middles, Juniors, Students; y-axis to 90,000; years 2013–2022)

Numbers By Class (right chart: Principals, Middles, Juniors, Students; y-axis to 120,000; years 2013–2022)
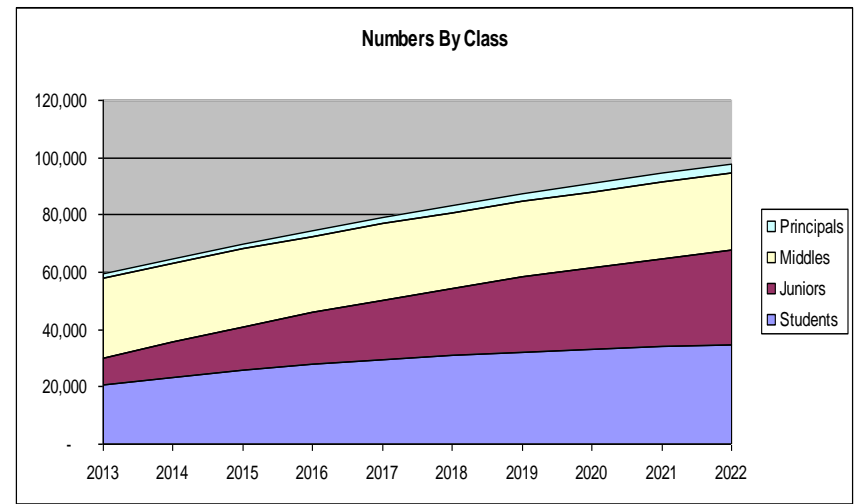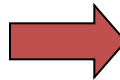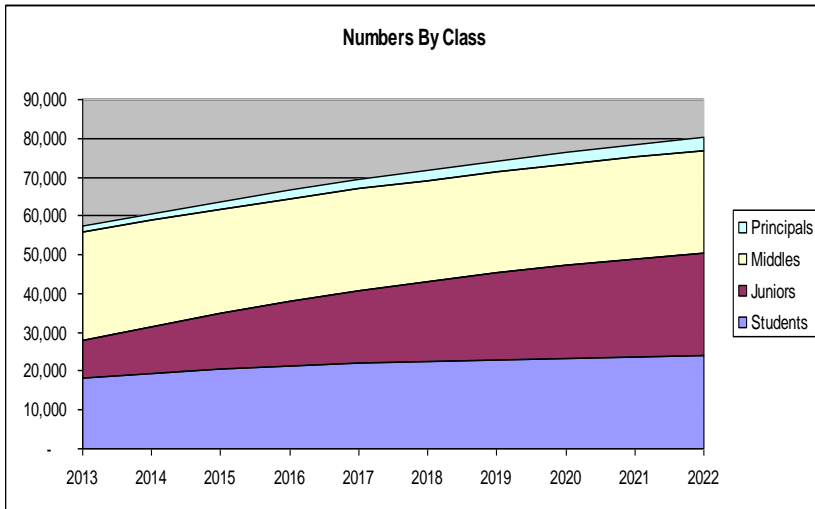
Base Case

PERCENTAGES

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	92%	91%	91%	91%	91%	91%	90%	90%	90%	90%
Female	8%	9%	9%	9%	9%	9%	10%	10%	10%	10%
Female Students	17%	17%	18%	18%	18%	19%	19%	19%	19%	19%
Female Juniors	13%	12%	11%	11%	11%	11%	11%	11%	11%	11%
Female Middles	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%
Female Principals	3%	3%	4%	4%	4%	4%	4%	5%	5%	5%

Scenario Result

PERCENTAGES

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	91%	91%	90%	90%	90%	89%	89%	89%	88%	88%
Female	9%	9%	10%	10%	10%	11%	11%	11%	12%	12%
Female Students	18%	20%	21%	22%	23%	24%	24%	25%	25%	26%
Female Juniors	13%	12%	12%	12%	12%	13%	13%	13%	13%	14%
Female Middles	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%
Female Principals	3%	3%	4%	4%	4%	4%	4%	5%	5%	5%

POLARIS

Internal work

- Online data collection project being implemented

- Integrates with the Academy's website, CRM system and new Grants Management System

- Will provide consistent landing page from any entry point and ability to interrogate data in different ways