



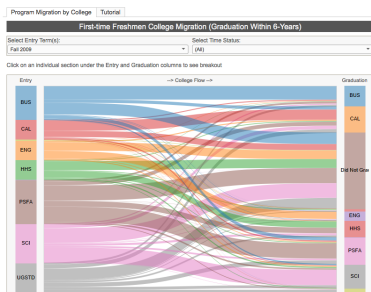
# A Data Science Workshop in IR

## SDSU Analytic Studies and Institutional Research

- Machine learning innovations
- Computing infrastructure (mostly on the data side)
- Higher Education problems solved
- Student training

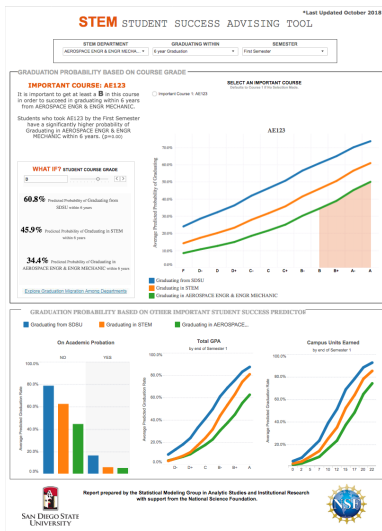
# STEM Migration Flow

- Interactive visualization; Sankey diagram
- Concept development in R; rendering in Tableau
- STEM program assessment
- Advising for impacted programs



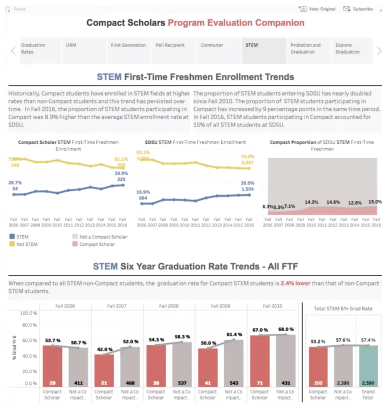
# STEM Student Success Advising Tool

- Random forest for course grade indicators & marginal effects
- Automated updates each semester
- Course sequencing for and advising of STEM majors
- Papers in *Adv AI, J Edu Data Mining*



# Student Success Program Assessment

- Propensity score matching/weighting & ensemble learning
- Causal effect random forest of interaction trees
- Storyboard in Tableau
- Individualized treatment effects: early warning system
- Papers in *JSE*, *Intl J of AI in Education*, *TKL*

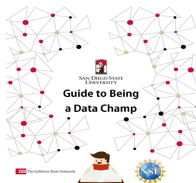


# Data Champions Program



- 2017-2020; 11 teams/year
- Student success projects; CSU Graduation Initiative 2025

# Data Champions Program



- Shared data set
- Training: security, surveys, software, stat communication
- “Data Coaches”; cross campus collaborations



# Campus Culture of Data-Informed Decision-Making

## Win-Win-Win

- NSF BIGDATA grant 1633130
- Working Groups:
  - Learning analytics
  - Data governance
  - Reporting and analytics
  - Data for program assessments
- ASIR Statistical Modeling Group