

Visual Cohort Analysis

4th Annual SLO Symposium, Anaheim, CA, 2/3/17

This session will demonstrate relevant data visualization techniques with UC Davis's "Ribbon Tool" in support of learning outcome trend investigation. The presenter will share his tried and tested workflow and "how to" advice with sample data from the major departments in our continuing education division. An online "ribbon support" tool (*) authored by the presenter will be made available to participants.

(Recent expansion of my responsibilities and subsequent remaking of workflow have taken precedent to finalizing stand-alone online "ribbon support" tool. Stay in touch if would like to have access to it later on.)*

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Handout provided during presentation.
Fast version — <http://ribbon.ucdavis.edu>

Introduction

- ◆ **Tool Overview** — *An interactive Sankey diagram; why use it.*
- ◆ **Workflow** — *What goes into using it.*
 - ◆ Knowing a tool's requirements.
 - ◆ Asking questions of the data.
- ◆ **Further Tool Overview** — *What else can it do.*
- ◆ **Concluding Themes** — *Collaboration can get data “unstuck”; what you don’t know can be harmful, knowing your datasets inside and outside is essential.*

Introduction: Welcome

- ◆ **Who I am** — *Here as technical software lead for data-centric projects; small part to play in supporting use of analytics resources for program review.*
- ◆ **Who is in our audience today?** — *Who plays a part in data cleaning and enabling the use of statistical software tools at your institution? Are they among faculty here today or among researchers? Any UC Davis programmers here? Any "Ribbon" users? **How** "high-" or "low-" level are the interests of our majority?*
- ◆ **Workshop outcome** — *By the end, gain new ideas on how to obtain useful answers from challenging cohort studies.*

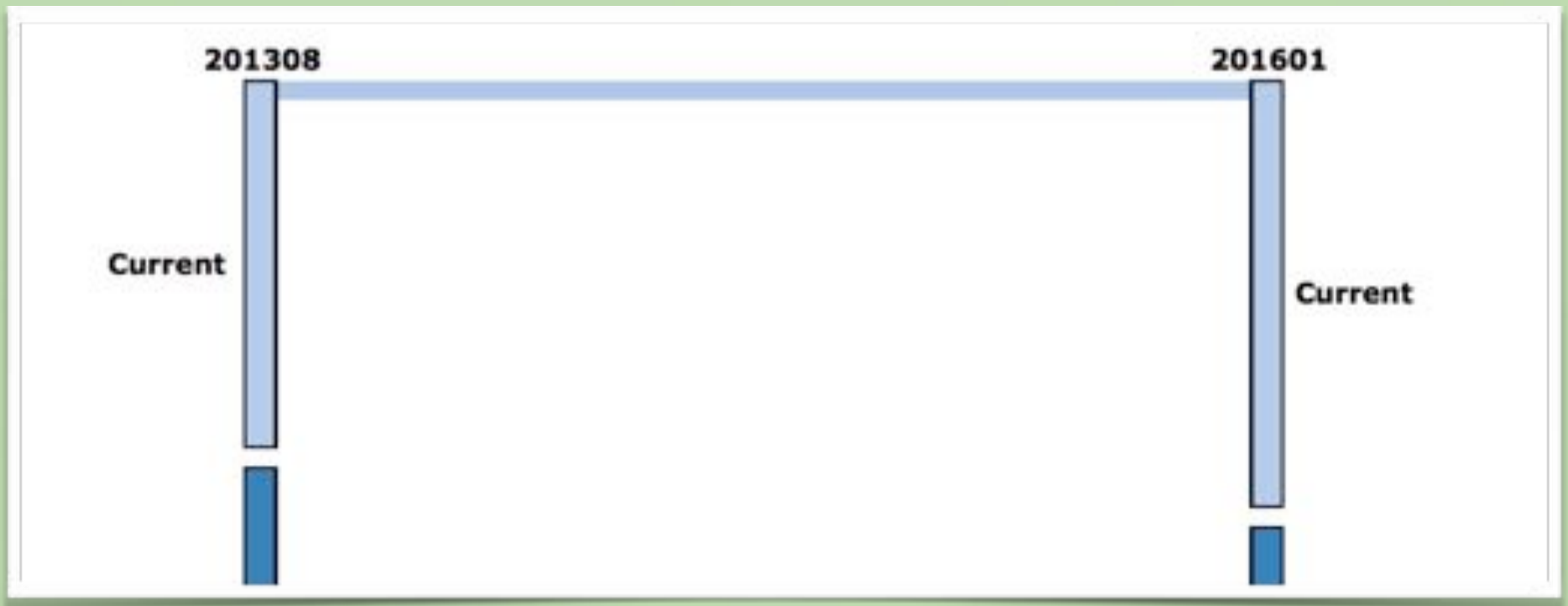
Introduction: Context

- ◆ A “**big picture**” opportunity.
- ◆ On average much has been going well at our college for over 100 years. With new faculty in our noncredit division it appears to be time for deep **curriculum evaluation**.
- ◆ **Large amounts of data** are being approached from various perspectives, some established, some still evolving. Different tiers of staff are creating tools and reports, and are sharing them. — *Tableau, “Data Summits”*
- ◆ When this tool was encountered, it sparked new faculty conversations and workflows. Effort continues to clarify how resources such as this might **help improve questions, data, and analysis** for leadership.

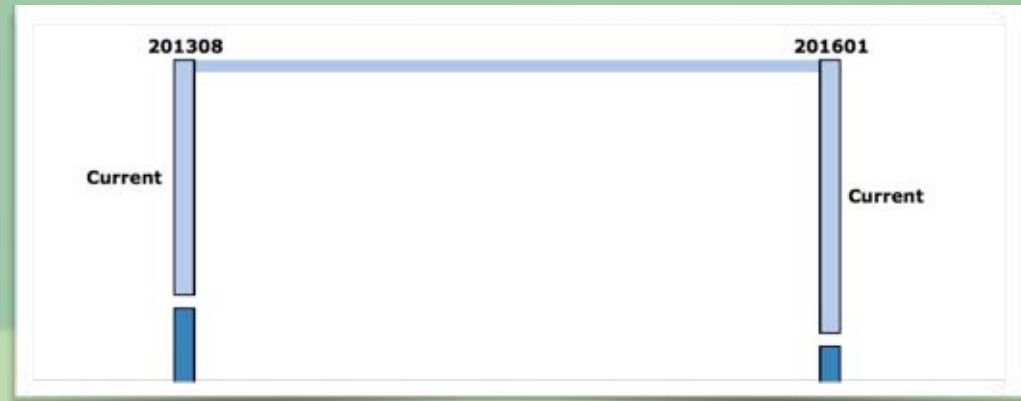
Introduction: Pursuit

- ◆ Attention here on investigation of data pertaining to promotion of mid-level ESL students — *Two courses, Beginning 3 and Intermediate 1.*
- ◆ Taking a closer look at evident fall-off between targeted courses — *Other investigations into this apparent gap have already been completed by faculty, are being analyzed.*

Ribbon Tool: Seeing Flows

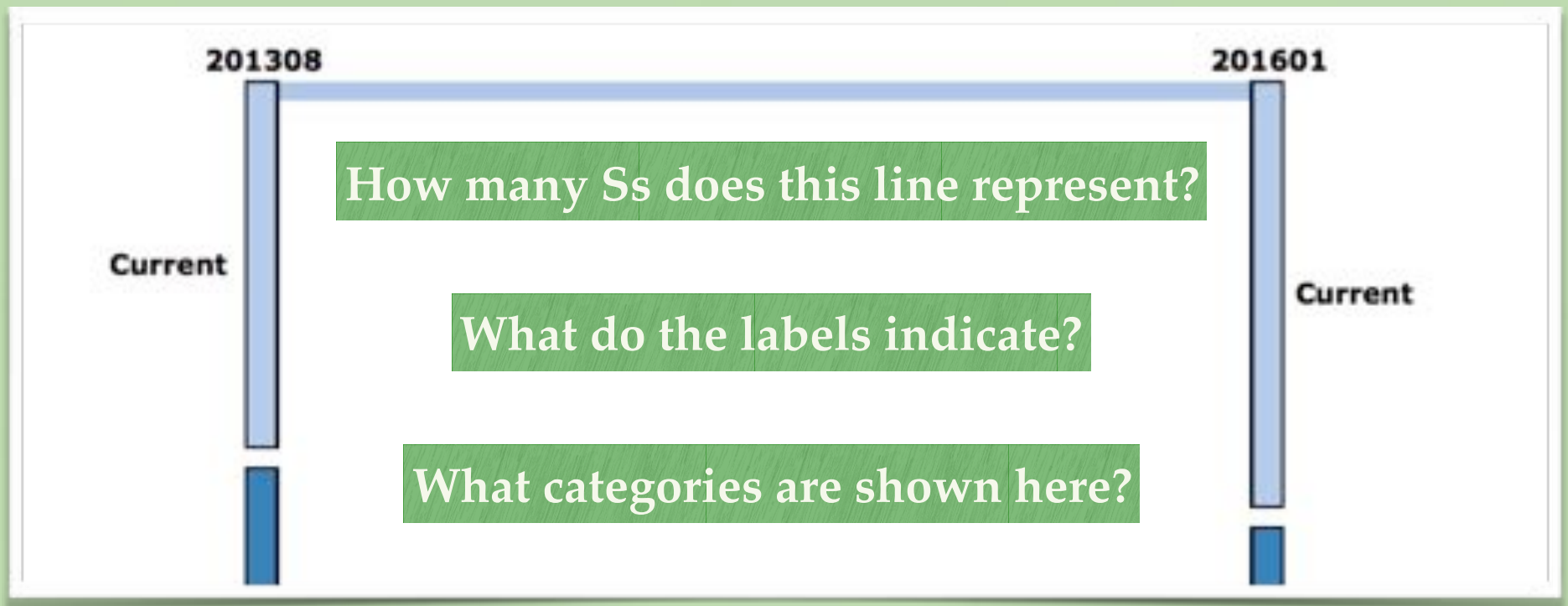


Seeing Flows



- ◆ **Sankey Diagram** — *Originally used to examine flows of energy through mechanical systems; Henry R. Sankey, 1898.*
- ◆ **How it organizes data** — *Here, learners move forward in time, left to right; line width shows relative proportion across categories-whichever (e.g. CLASSES students enroll in, GRADES they receive, or different total contact HOURS).*
- ◆ **What it can illuminate** — *Offers framework to explore continuity and change at larger scale; study of aggregates.*

Seeing Flows



Seeing Flows: Better Online

- ◆ The UC Davis “Ribbon Tool”
 - ◆ ribbon.ucdavis.edu
 - ◆ **Interactive** visualization — *Efficient discovery.*
- ◆ *Take a moment to recall your experiences tracking cohorts; describe to a neighbor the sources of your knowledge of how well all students are progressing through your entire program.*

At this demonstration stage, please ask any questions that come to mind!

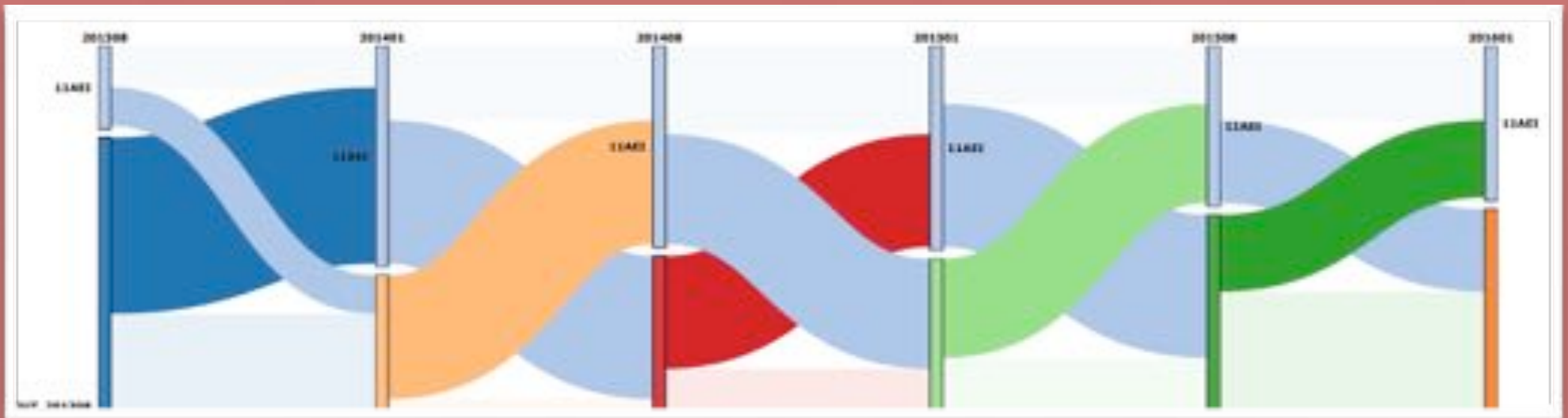
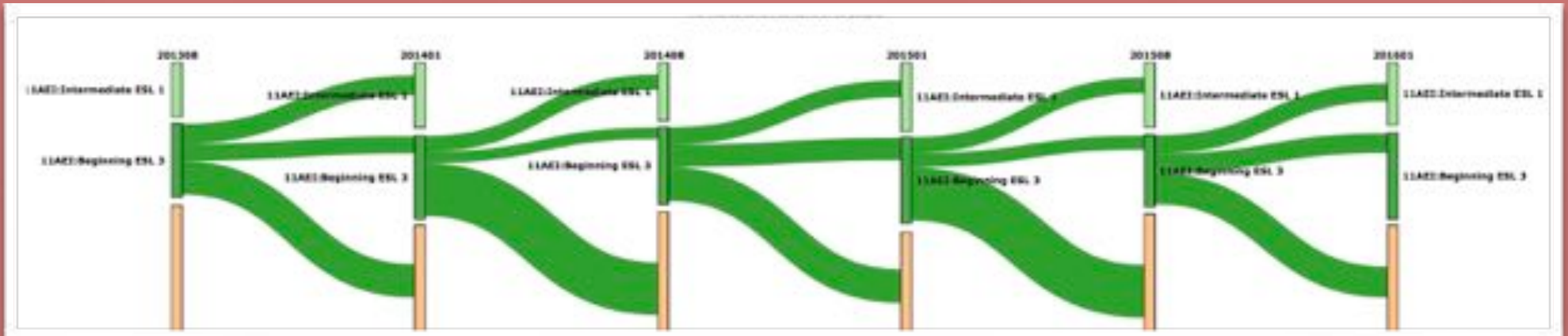
Highlights

- ◆ **Time Range Demonstration** — *From Six to Two Periods*
 - ◆ Cues to relative proportions more evident.
 - ◆ With more space, can work with sub-properties
- ◆ **Sup-properties**
 - ◆ Still can experience problems of rendering;
 - ◆ change of purpose when limiting time range; need to remain thoughtful about expectations and assumptions towards the data.
- ◆ **Meeting Data Requirements**
 - ◆ One record for every student for each relevant time point. — *This is where writing one's own "support tool" comes in; in my case, a Perl script that properly loops back and "clones" missing records; planning a version in R as well for easier distribution.*

Reprise

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- ◆ **Further Tool Overview** — *What else can it do.*
- ◆ **Concluding Themes** — *Collaboration can get data “unstuck”; what you don't know can be harmful, knowing your datasets inside and outside is essential.*

Reference Snapshots



Draft: B3 and Above ESL Flows 13F 14S

Show Description

Description: Higher levels, two semesters; persistence, size, grade subcategories available.

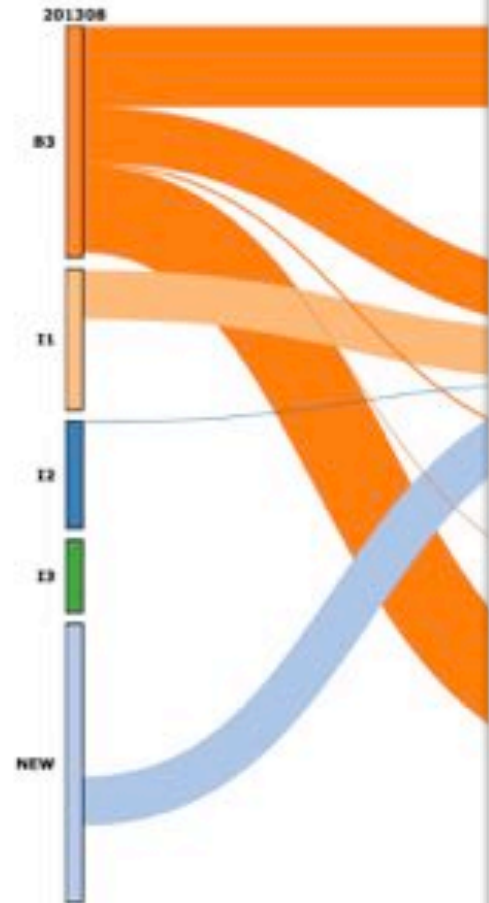
The raw data contains 4675 people.

The unfiltered starting cohort from 201308 contains 4675 people.

Filtering based on the options in the menu to the left.

The filtered cohort contains 4675 people.

1273 people had an unspecified record during



Draft: B3 and Above ESL Flows 15F 16S

Show Description

Description: Higher levels, two semesters; persistence, size, grade subcategories available.

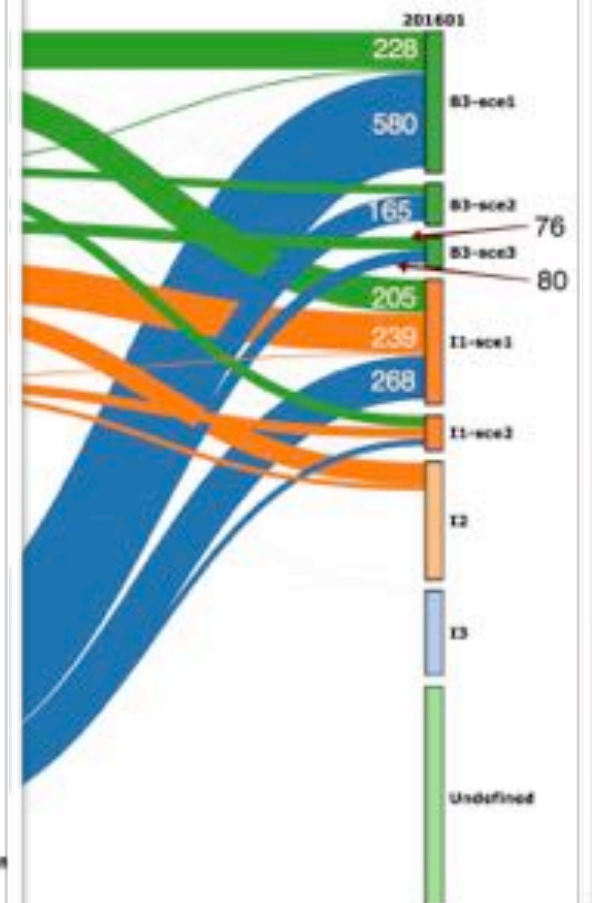
The raw data contains 4629 people.

The unfiltered starting cohort from 201508 contains 4629 people.

Filtering based on the options in the menu to the left.

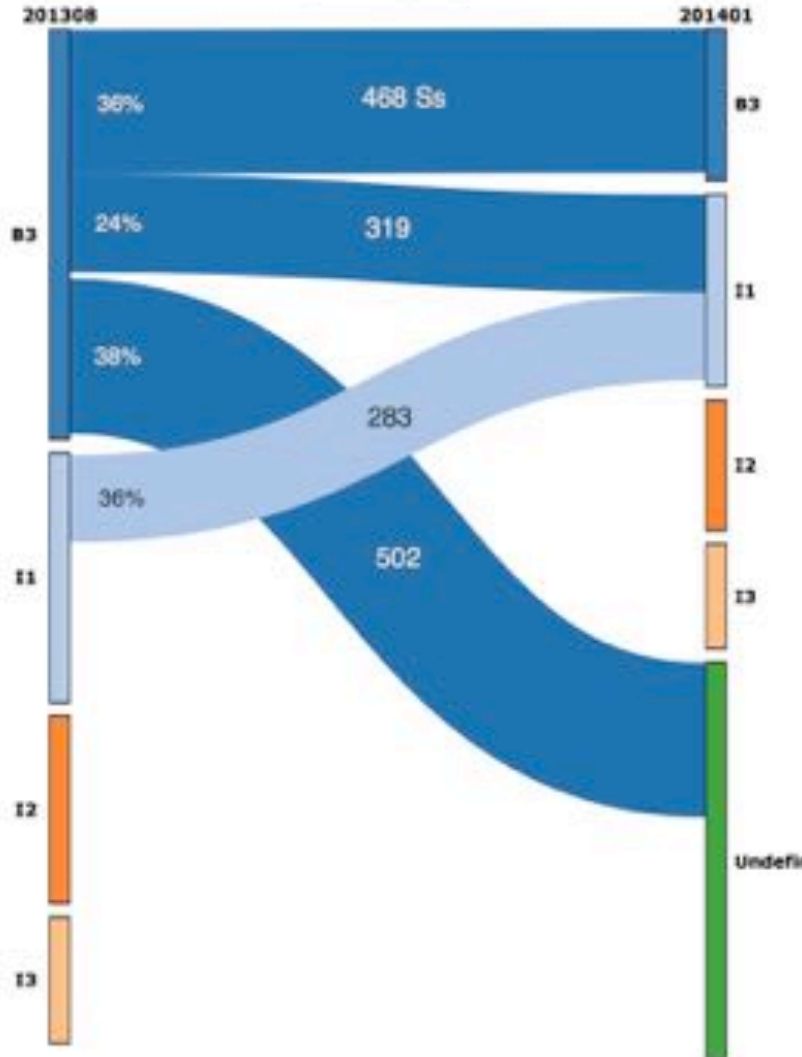
The filtered cohort contains 4629 people.

1273 people had an unspecified record during 201601



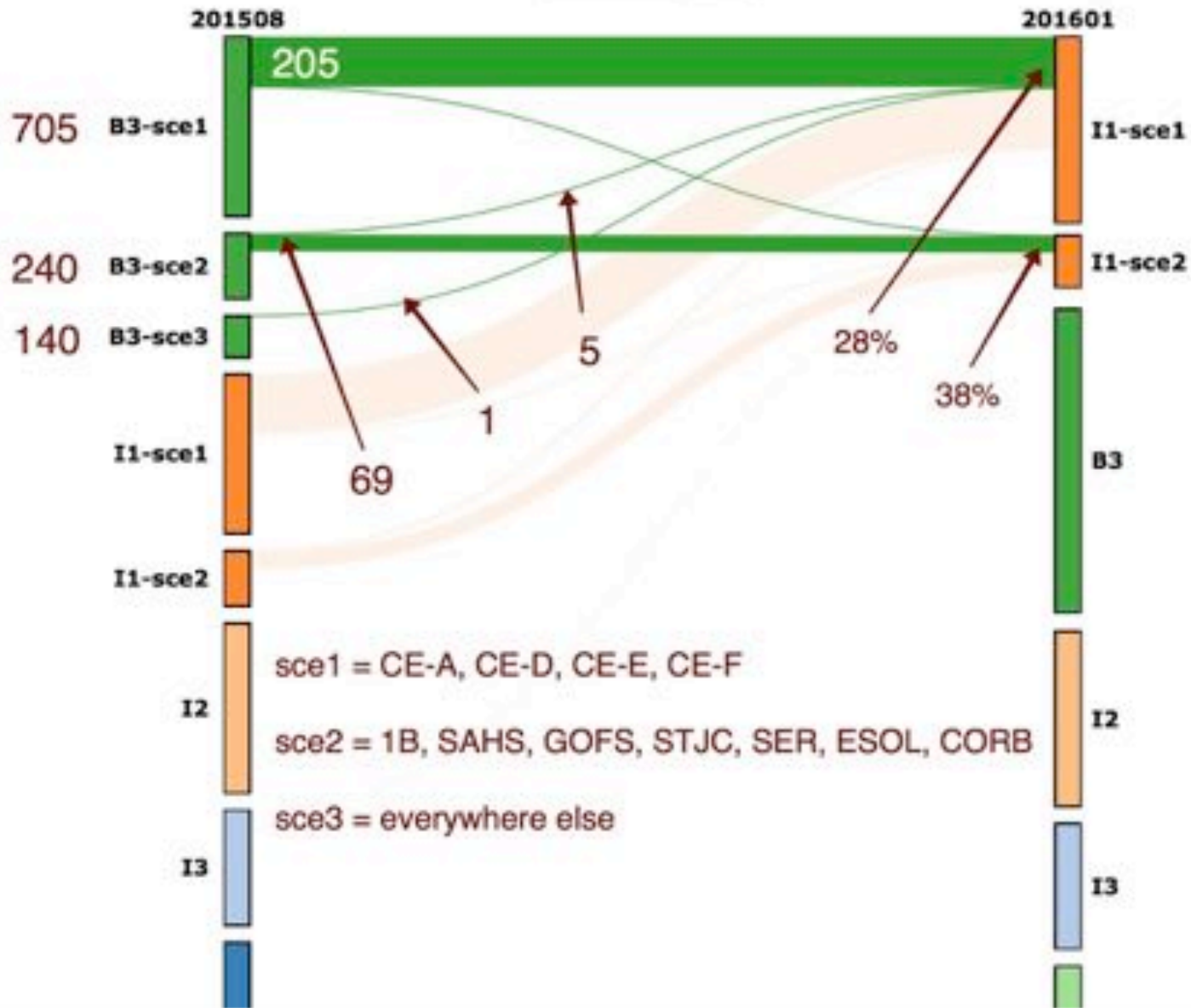
Demo: ESL Persistence 13F-14S

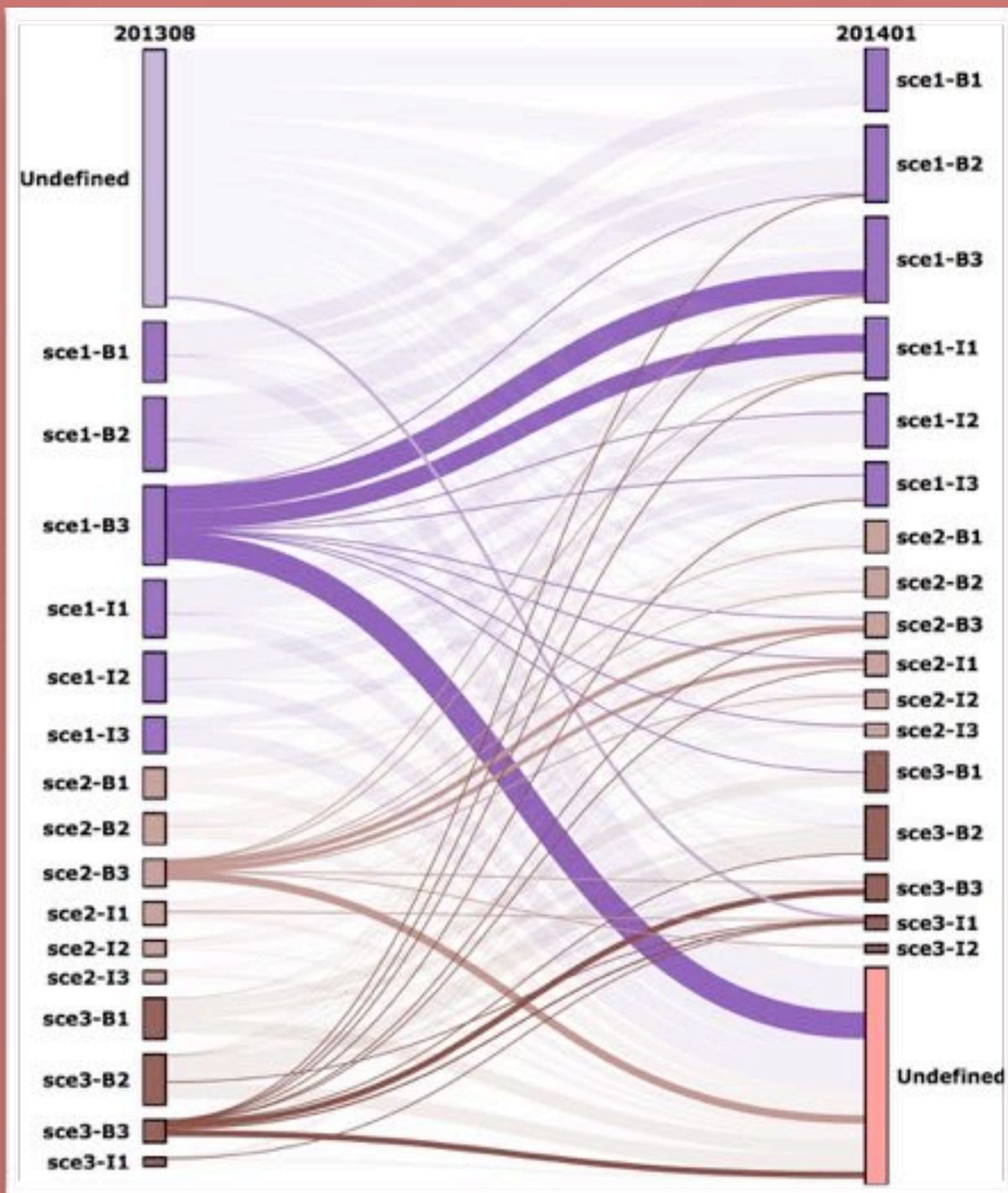
Show Description



Draft: B3 and Above ESL Flows 15F 16S

[Show Description](#)







Proof of concept draft: AcrossDepartments

[Hide Description](#)

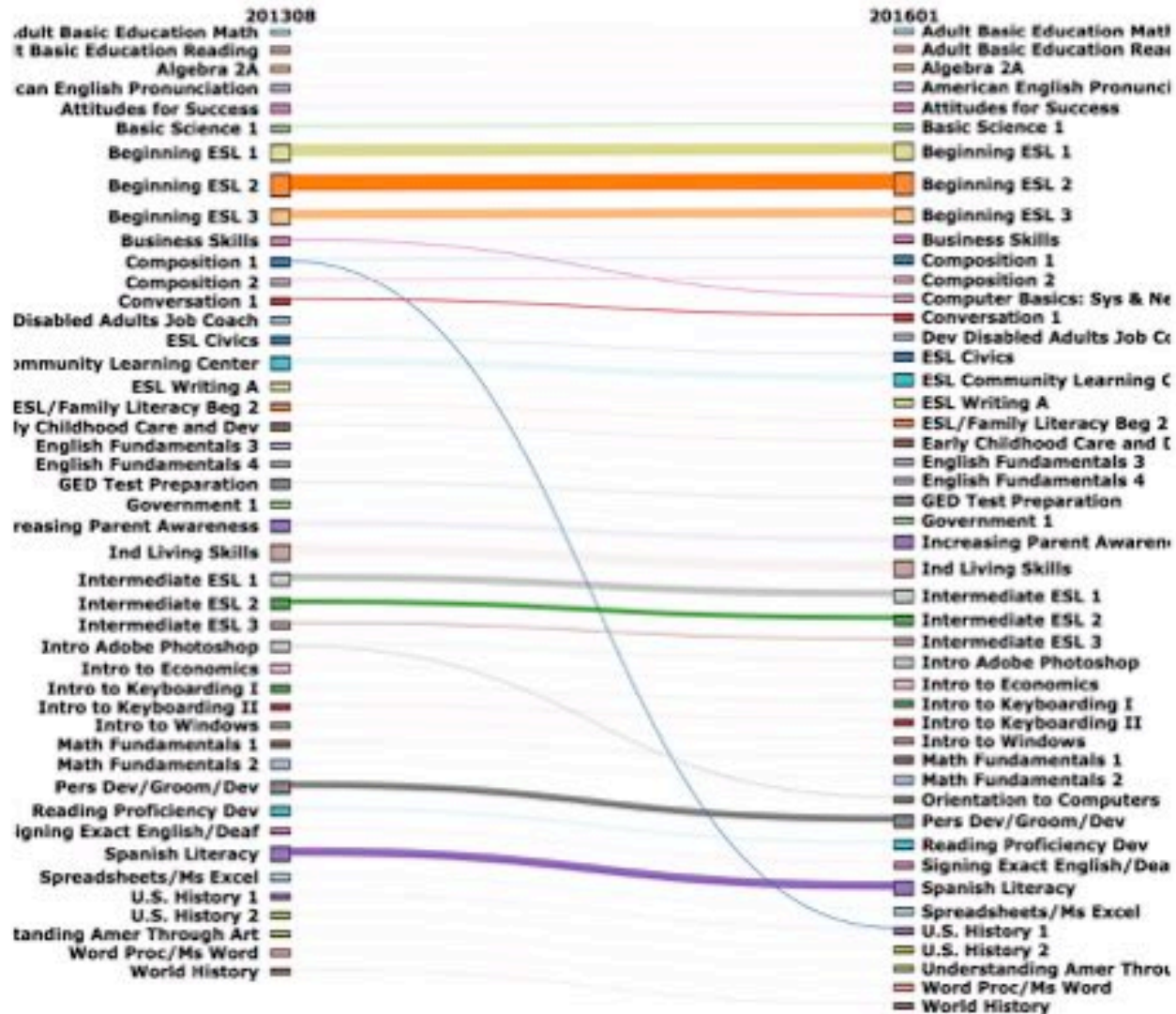
Description: Considering 11 departments, three academic years

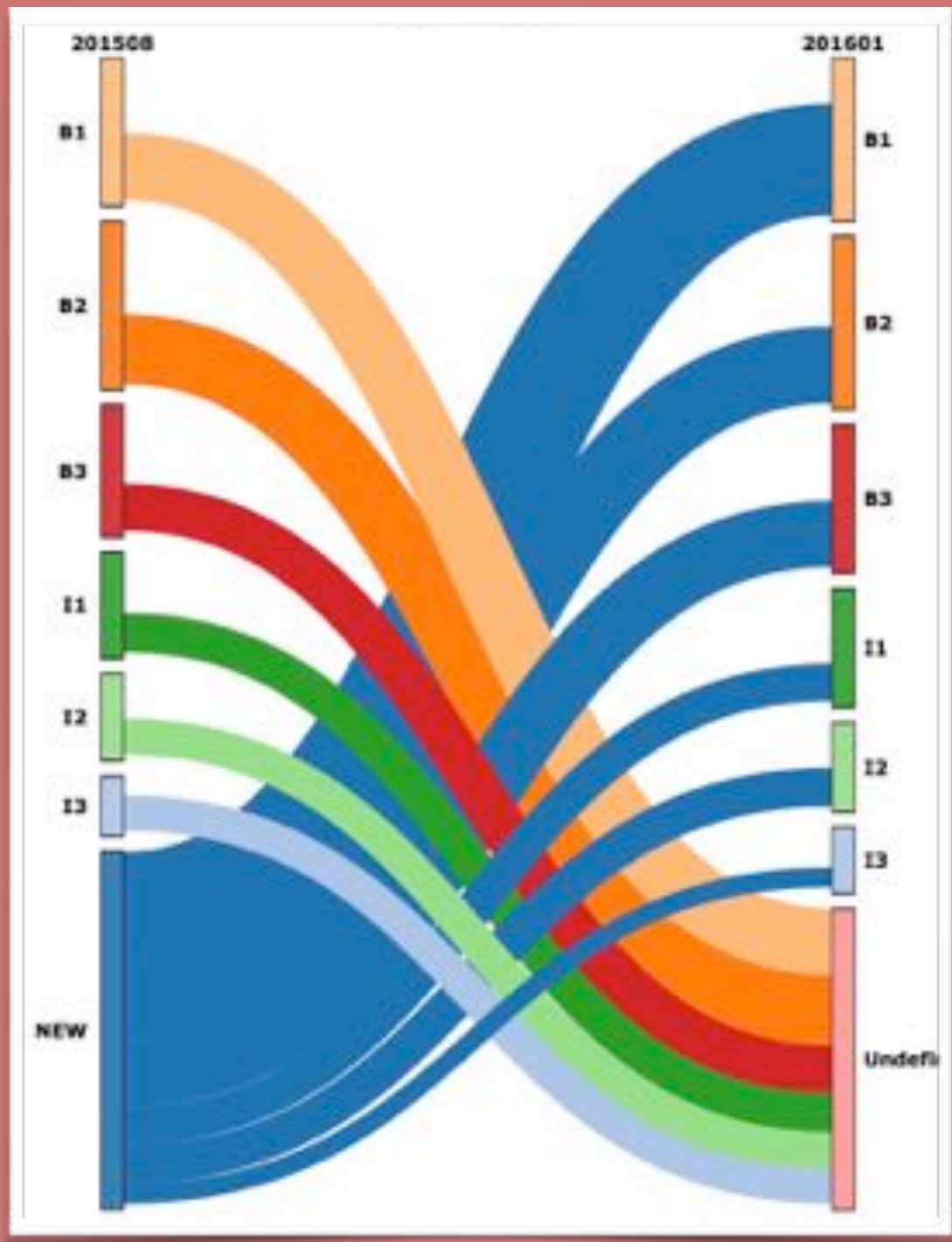
The raw data contains 273 people.

The unfiltered starting cohort from 201308 contains 273 people.

Filtering based on the options in the menu to the left

The filtered cohort contains 273 people.





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Thank you!

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