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Research Spotlight

2357 - Student Pathway Trends within the University System of Georgia

Credits and Degree Pathways, Matriculation Trends and Issues

What degree did transfer out students earn and where? This session will showcase a new pathways app used by a state university system and created in partnership with our organization. The Pathways app presents Clearinghouse data in Qlik Sense data visualization software. Presenters will explain the innovative techniques used to clean the data to provide a system view of transfer patterns for 26 System institutions.

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Student Pathway Trends within the University System of Georgia: Maximizing National Student Clearinghouse Data

National Institutes for the Study of Transfer Students
February 23, 2022



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Outline

1. Introduction
2. Polling questions
3. Understanding the Need
4. Data Source, Analysis, and Cleaning
5. Qlik Visualization Demonstration

The University System of Georgia

Governing Board of Regents for 26 public, four-year institutions in 4 sectors

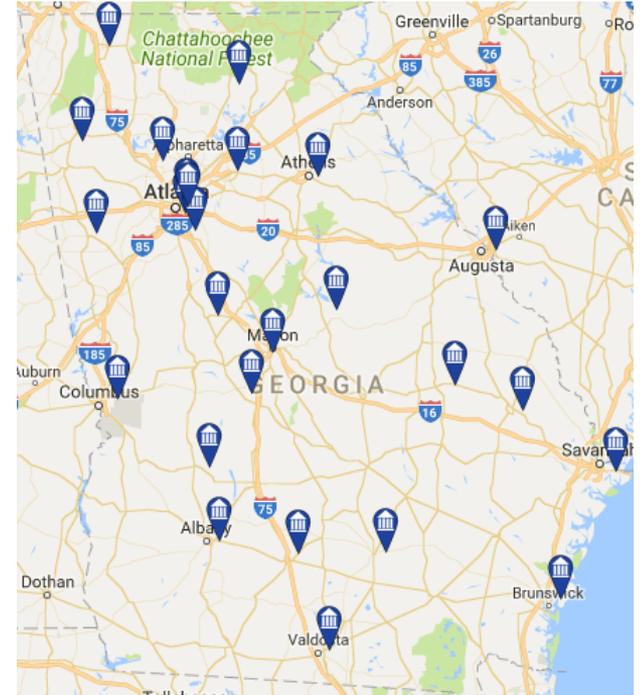
Fall 2021 enrollment 340,638:

Research Universities: 145,933

Comprehensive Universities: 94,365

State Universities: 64,037

State Colleges: 36,303



USG Historical Transfer Reporting

Annual snapshots of transfer volume within and beyond USG

- Info on average hours and GPA upon and one year after transfer
- Detail files for institutions to understand transfer outs' performance and major
- Ad hoc special data pulls for campuses

University System of Georgia Undergraduate Student Transfer Report

Table 2 Transfer from Other Institutions

2020 - 2021

Sending Institution: Technical Colleges within the Technical College System of Georgia

Receiving Institution	Total	Reported by Receiving Institution					
		At Last Term Before Transfer		At First Term Upon Transfer		Last Term Enrolled in Fiscal Year 2021	
		Average GPA	Average Hours	Average GPA	Average Hours	Average GPA	Average Hours
Augusta University	70	3.12	43	2.84	11	2.77	17
Georgia Institute of Technology	2	NR	51	2.46	8	2.92	31
Georgia State University	525	2.97	41	2.88	8	2.77	14
University of Georgia	49	3.52	50	3.19	11	3.22	18
Research Universities	646	3.05	42	2.90	9	2.81	15
Georgia Southern University	345	3.03	47	2.90	10	2.90	16
Kennesaw State University	825	3.14	45	3.05	9	2.95	15
University of West Georgia	246	3.07	38	3.07	10	3.00	17
Valdosta State University	197	2.98	44	3.08	10	2.94	17
Comprehensive Universities	1,583	3.01	44	3.03	9	2.85	16
Albany State University	237	3.18	34	3.15	8	3.03	14
Clayton State University	206	2.83	42	2.82	9	2.71	16
Columbus State University	198	2.88	59	3.08	10	2.95	16
Fort Valley State University	43	2.60	28	2.83	9	2.45	16
Georgia College & State University	11	3.10	32	2.78	10	2.69	10
Georgia Southwestern State University	95	3.00	45	2.99	9	2.60	17
Middle Georgia State University	307	2.94	37	3.12	9	3.00	15
Savannah State University	38	2.78	44	2.99	10	2.71	15
University of North Georgia	288	3.11	32	2.89	9	2.85	15
State Universities	1,392	2.98	40	2.97	9	2.88	15
Abraham Baldwin Agricultural College	110	2.89	36	3.03	9	2.80	14
Atlanta Metropolitan State College	57	2.21	24	2.74	8	2.73	11
College of Coastal Georgia	64	2.91	44	3.25	8	3.21	12
Dalton State College	76	3.08	50	3.33	9	3.20	16
East Georgia State College	75	2.59	34	3.01	9	2.90	16
Georgia Gwinnett College	208	3.05	33	3.09	9	3.05	13
Georgia Highlands College	223	3.06	28	3.05	7	2.93	11
Gordon State College	80	2.72	35	2.96	10	2.94	17
South Georgia State College	29	3.04	19	2.92	8	2.85	15
State Colleges	928	2.92	34	3.06	9	2.98	14
System Total	4,549	3.01	41	3.00	9	2.92	15

Partnership



System Level Longitudinal Data
Data Visualizations for 26 campus
and more than 300 users



Data Scientists and Analysts
Data Visualization Infrastructure
External/Internal Perspective

Secure Data Portal

CVIOG and USG's partnership has led to the development of visual and statistical tools for USG member institutions on enrollment, graduation, and retention trends.

- Adult Learners**: Adult Learner App
- CCG Degrees Awarded**: CCG Degrees Awarded
- USG Enrollment**: CCG Enrollment
- Graduation of University of Georgia**: CCG Graduation
- Retention of University System of Georgia**: CCG Retention
- UNIVERSITY SYSTEM OF GEORGIA**: Fall Enrollment by Academic Program ...
- UNIVERSITY SYSTEM OF GEORGIA**: Fiscal Year Degrees Conferred by ...
- Georgia High Schools**: Georgia High Schools
- IPEDS Degrees Awarded Dashboard ...**: IPEDS Degrees Awarded Dashboard ...
- SER with Consolidated Names**: SER with Consolidated Names
- USG First Time Freshmen**: USG First Time Freshmen
- USG Market Share 2.0**: USG Market Share 2.0

Polls

- Help us get to know you, please?

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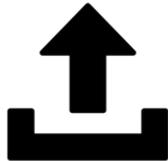
What we know about transfer students



Transfer students constitute a sizable portion of institutional enrollments. (NSC Report August 31, 2021)

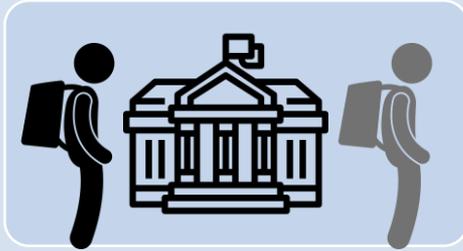


Students transfer from community colleges at higher rates than four-year schools. (NSC September 2017)

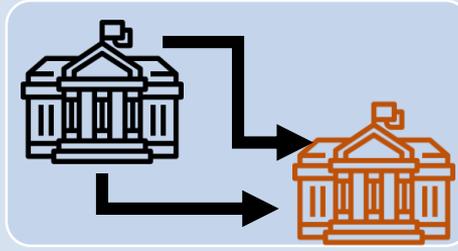


“Upward transfer pathways have been less affected by the pandemic than all other pathways” (NSC Report August 31, 2021)

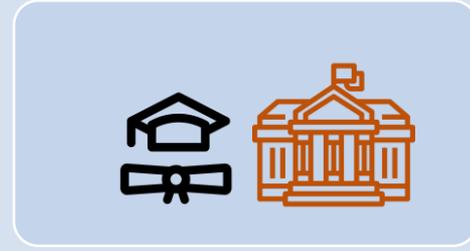
Institutions want deeper insights into transfer student patterns



Characteristics of students transferring into and from their institution



Prominent pathways between their institution and other institutions.



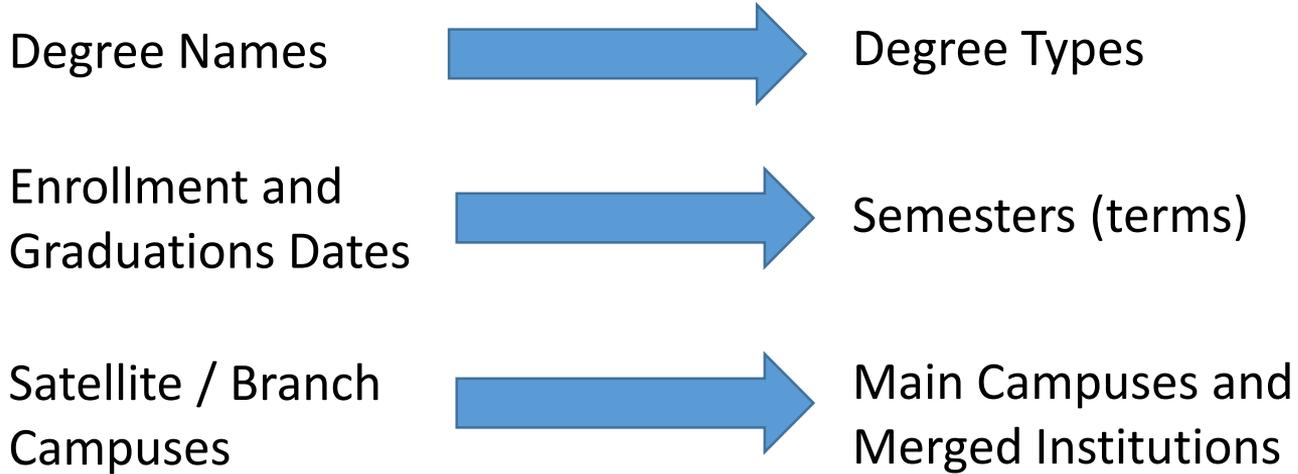
Whether students transferring from their institution are earning a credential or degree.

Data Preparation

The construction of our data sample is as follows:

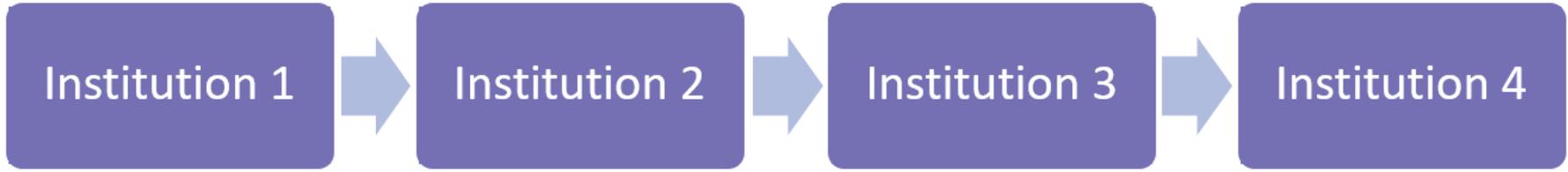
- USG undergraduates 2011 – 2020
- Data truncated to student's first bachelor's degree
- Student mobility within and beyond the USG after a students' initial matriculation into a USG institution.
- Geocoded institution address to see geographic relationships
- Add each institution's Carnegie Classification.

Transformations to NSC Data to Visualize Flows



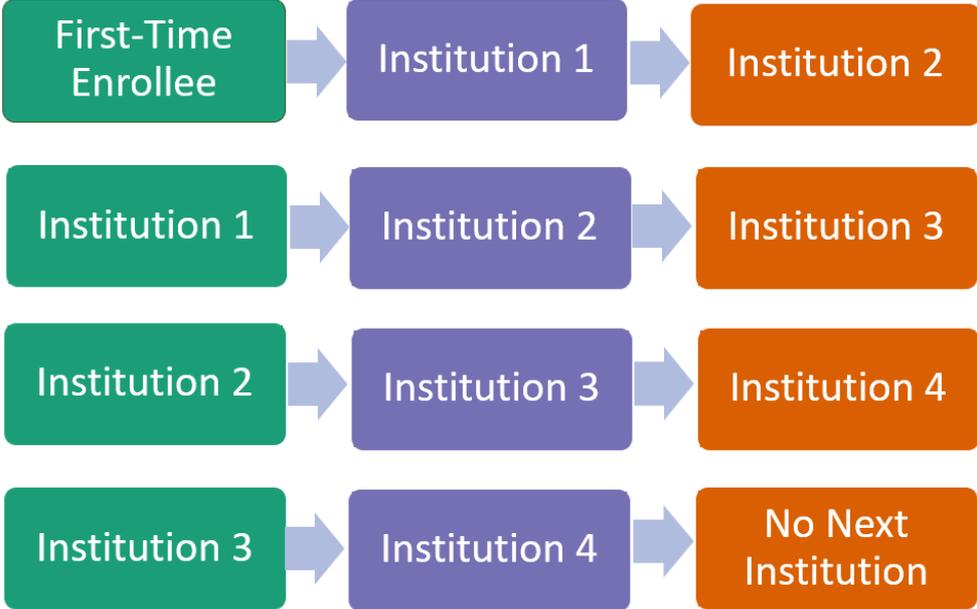
Rome was not built in a day; So our team is incorporating smarter, more efficient data science strategies to process NSC data.

Simple Institutional Flow Example



- This graphic represents students' movement (flow) through the postsecondary education system.
- Each arrow represents a transition. A transition could be 1) a degree/certificate completion, 2) an officially coded withdraw within the NSC data, or 3) an enrollment at another institution (transfer).
- A specific institution of interest's (IOI) primary concern is where their undergraduates come from (transfers in) and where they go when they depart the institution (transfers out).
- To analyze students' transitions, our team takes their flows and breaks them into "groups of three".

Groups of Three



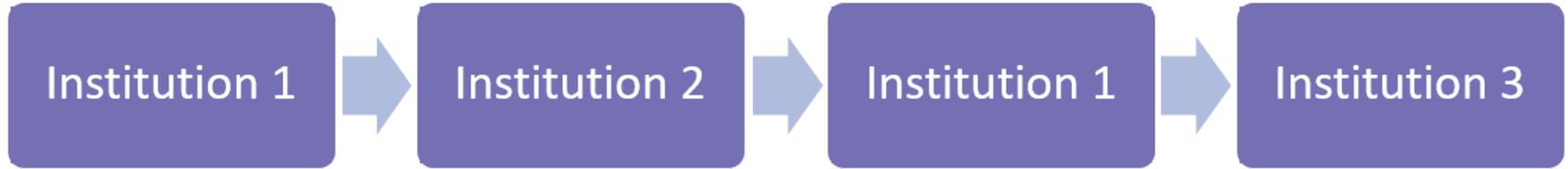
Groups of Three



Once an institution of interest is identified, our team can aggregate students' flow and begin analyze students' pathways into that institution. In particular, our application can address:

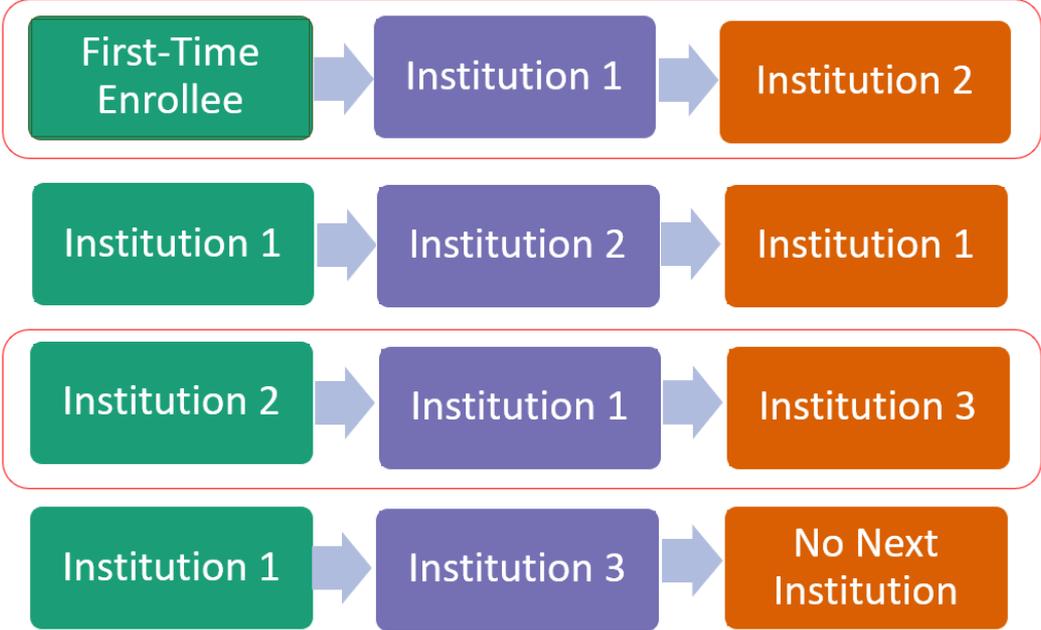
1. What are the significant institutional flows into and from the institution of interest?
2. How students entered (e.g., transfers with or without a degree/certificate completion) and fared while at the institution of interest and beyond?

Complex Institutional Flows

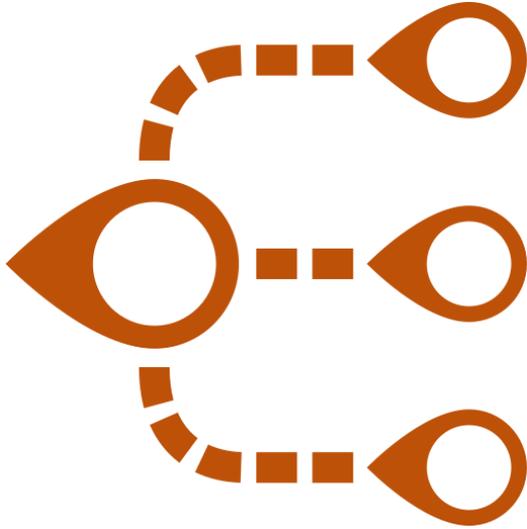


- In this hypothetical example, the student transfers to a different institution, but transfers back to their matriculating institution. In the literature, this type of transfer movement is called swirling.
- However, undergraduates often take summer courses at a local institution and are classified with specific designation (transient). This should not be considered a student transition.
- Because of our data processing strategy, this flow will result in duplicated or extraneous pathways corresponding to the matriculation (first) institution.

Groups of Three



Complex Institutional Flows



- One student can have multiple enrollment records
 - Co-enrollment at a different institution in the same semester
 - Multiple degrees and/or certificates at the institution and within the same semester.
- This causes duplicated pathways and requires a strong understanding of the data and analysis preformed to utilize the data to make inferences about the student population as a whole.

Addressing Pathway Complexity

- To address complex pathways and simplify subsequent data analysis, our team using feedback from stakeholders made the following sample restrictions:
 - Remove pathways containing co-enrollment at different institutions and multiple degrees and/or certificates within the same semester.
 - Some student pathways showed extreme mobility, but appeared in very small numbers (outliers). Including these pathways would distort the visualization, so our team removed these pathways from the analytical sample.
 - These two sample restrictions resulted in ~12% flows being removed.

Data and Donuts

Although the final, processed data used in our visualizations is not a complete account of all students, it does not mean that it is not useful in analyzing transfer behaviors.

Focus on the donut, not the hole.



From Café Racer in Crawford, GA. Highly recommended.

What DOES this data tell us?

1. The individual pathways USG undergraduates take through the postsecondary education system.
2. Significant intra-system (e.g., USG to USG institution) and intra-system (e.g., USG institution to a non-USG institution) by totaling counts individual student pathways.
3. Proportional magnitudes for student movement and outcomes along direct pathways.
4. Proportional magnitudes for degree and/or certificate completion along unique pathways.

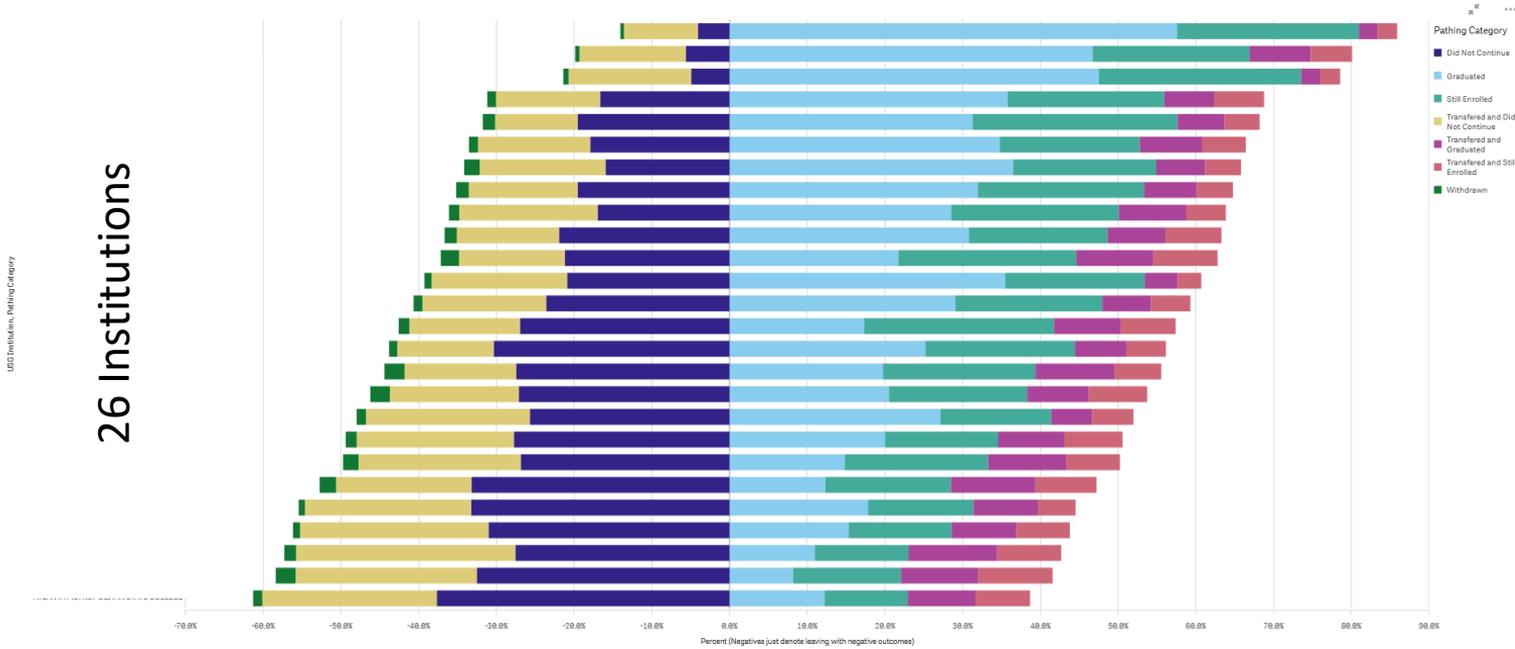
Color Choice



- The colors in the above graphic are consistent with the coloring in the visualization for previous, current, and next institutions.

System Outcomes

Diverging Bar



An Eye Towards the Future

- **Longitudinal Views** – Our team wants to expand our analysis to account for differences in student cohorts.
- **Automate Data** – Our team is currently working on data science and machine learning techniques that can extract, transform, and load NSC data in an automated fashion and driven by subject matter expertise.
- **Additional Data** – Our team wants to incorporate student data like demographics and progression data (e.g., GPA and credit hour accumulation) to develop more robust analysis on student subgroups.

Questions?

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