

Using NPWR to Model Nevada's Educational Pipelines*

UNLV | THE LINCY INSTITUTE &
BROOKINGS MOUNTAIN WEST



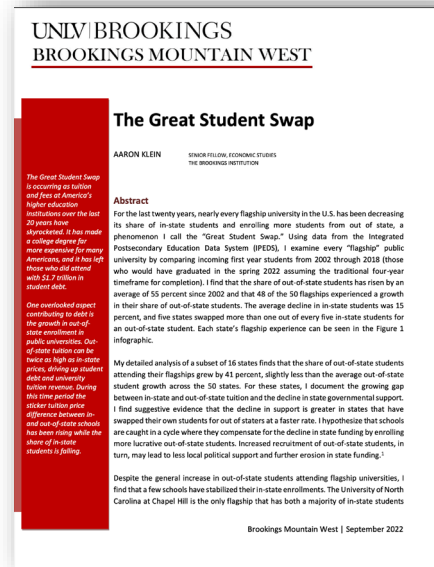
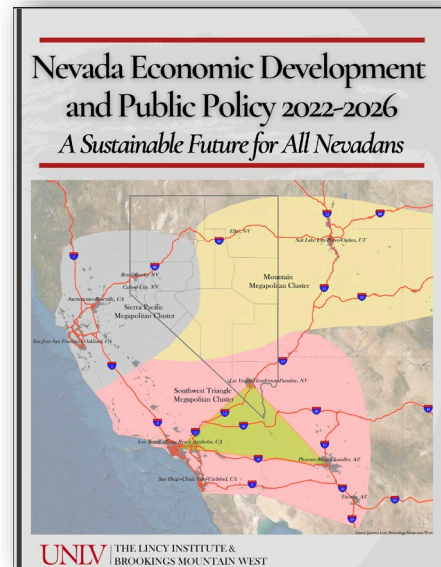
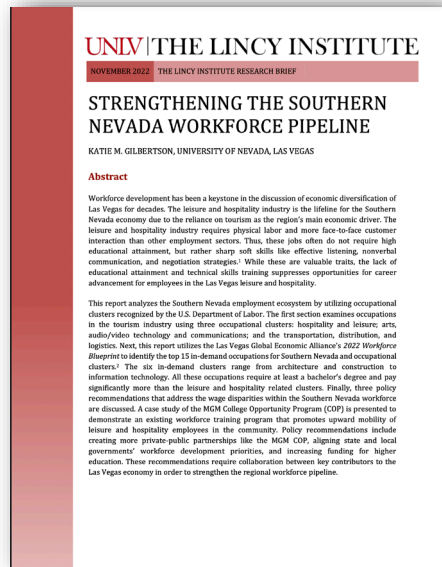
* Prepared for NPWR Research Forum, February 29, 2024

Overview

- I. Who We Are and What We Do
- II. Working with NPWR
- III. Our Projects
- IV. The K-12 to Higher Education Pipeline
- V. Next Steps

Who We Are and What We Do

- ▶ The Lincy Institute conducts and supports research that focuses on improving Nevada's economic development, education, governance, health, nonprofits, and social services.
- ▶ Brookings Mountain West is a partnership with the Washington, D.C.-based Brookings Institution that provides a platform to bring ideas and expertise together to enhance public policy discussions to build a robust, inclusive, and sustainable future.



Working with NPWR

- ▶ The Nevada P-20 to Workforce Research Data System (NPWR) accesses data from several Nevada governmental entities
- ▶ NPWR data attributes:
 - Individual-level data
 - Data collected by multiple governmental entities throughout an individual's life cycle
 - NDE, K-12
 - NSHE, higher education
 - DETR, employment

Working with NPWR

- ▶ These data can be used by researchers for a variety of purposes:
 - Evaluating the effectiveness of policy interventions
 - Conducting cohort analyses
 - Modeling educational and workforce pipelines
 - Assessing the impacts of macrolevel shocks via “natural experiments”
 - Analyzing the effects of demographic and contextual differences on individual outcomes

Working with NPWR

- ▶ There are challenges working with these data:
 - System access
 - Navigating the NPWR portal and requesting data
 - Coordinating with OSP, IRB, and legal (non-disclosure agreements and background checks)
 - Agency sign-offs

Working with NPWR

- ▶ There are challenges working with these data:
 - System access
 - Pulling the data
 - Missing files, missing data within files, and internal data inconsistencies
 - Misaligned columns
 - Duplicate id numbers
 - Re-doing data requests

Working with NPWR

- ▶ There are challenges working with these data:
 - System access
 - Pulling the data
 - Data structure
 - File names
 - Different units of analysis
 - Understanding the data types
 - Variable coding and labels

Working with NPWR

- ▶ There are challenges working with these data:
 - System access
 - Pulling the data
 - Data structure
 - Data analysis
 - Analyzing these data may require:
 - Recoding variables
 - Appending datasets across years
 - Merging datasets across entities
 - Collapsing datasets to create consistent units of analysis

Our Projects

- ▶ **The Lincy Institute:**
 - Nevada K-12 Performance and Implications for Economic Diversification
- ▶ **Brookings Mountain West:**
 - The Gender Gap in Nevada: K-12, Higher Education Workforce Study
- ▶ **Our team:**
 - David Damore - Executive Director, The Lincy Institute and Brookings Mountain West
 - Bill Brown - UNLV Director, Brookings Mountain West
 - Caitlin Saladino - Director of Strategic Development and Operations, The Lincy Institute and Brookings Mountain West
 - Fatma Nasoz - Director of Data Science, The Lincy Institute and Associate Professor Department of Computer Science

Our Projects

- ▶ The glass half-empty perspective:
 - Poor K-12 and higher education outcomes and reputations are a barrier to economic diversification
 - Educational attainment is stratified by gender and race and ethnicity
 - Weak college-going culture
 - Mismatch between workforce skills and in-demand occupations
 - Nevada has the highest unemployment rate in the country
 - Las Vegas has the least diversified economy among major Mountain West metros and lags across several economic metrics

Economic Performance Metrics in Major Mountain West Metros

Indicator	Denver MSA	Phoenix MSA	Las Vegas MSA	Salt Lake City MSA
Hachman Index*	93.1	94.5	68.6	93.5
Growth**	6th	13th	23rd	5th
Prosperity**	9th	25th	50th	10th
Inclusion**	18th	11th	55th	1st
Racial inclusion**	42nd	7th	35th	13th
Geographic inclusion**	7th	8th	21st	41st

*Hachman Index scores range from zero to 100.

**Ranking out of 56 metropolitan statistical areas with populations of at least one million residents based upon changes between 2011 and 2021.

Note: MSA is the initialism for a metropolitan statistical area.

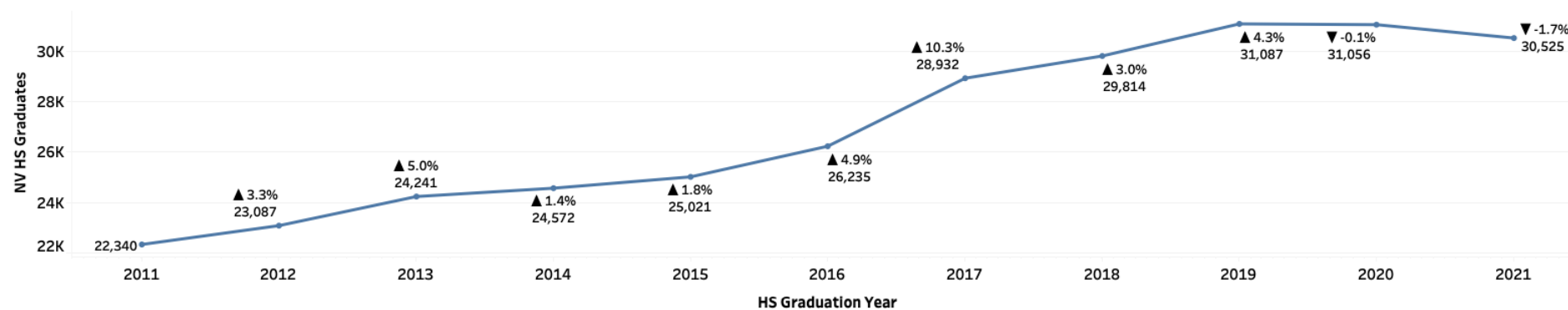
Sources: Center for Business and Economic Research analysis of unemployment data from the U.S. Census. Brookings Institution Metro Monitor 2023.

Our Projects

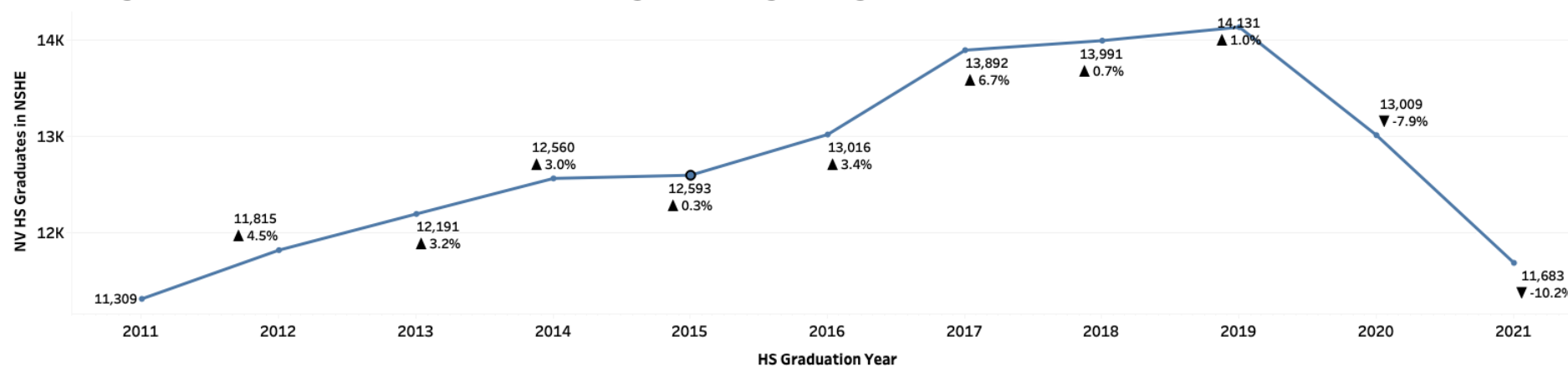
- ▶ The glass half-full perspective
 - Nevada is producing high school and college graduates
 - Assessing these pipelines can inform us about what is working
 - Data used:
 - NDE Graduates (2011-2022)
 - Unit of analysis: Nevada high school graduates ($n = 352,962$)
 - NSHE Enrollment, Cohort, Students, and Completions (2010-2022)
 - Unit of analysis: enrolled students ($n = 584,055$)
 - Unit of analysis: degree and certificate earners ($n = 261,768$)
 - Merged data
 - Unit of analysis: Nevada high school graduates who enrolled as undergraduates ($n = 140,390$)
 - Unit of analysis: Degrees or certificates completed by Nevada high school graduates ($n = 69,860$)
 - Data analyzed and cross-checked using Stata 18 and Tableau

Nevada High School Grads to NSHE Undergraduate-Degree-Seeking Students, 2011-2021

Nevada High School Graduates

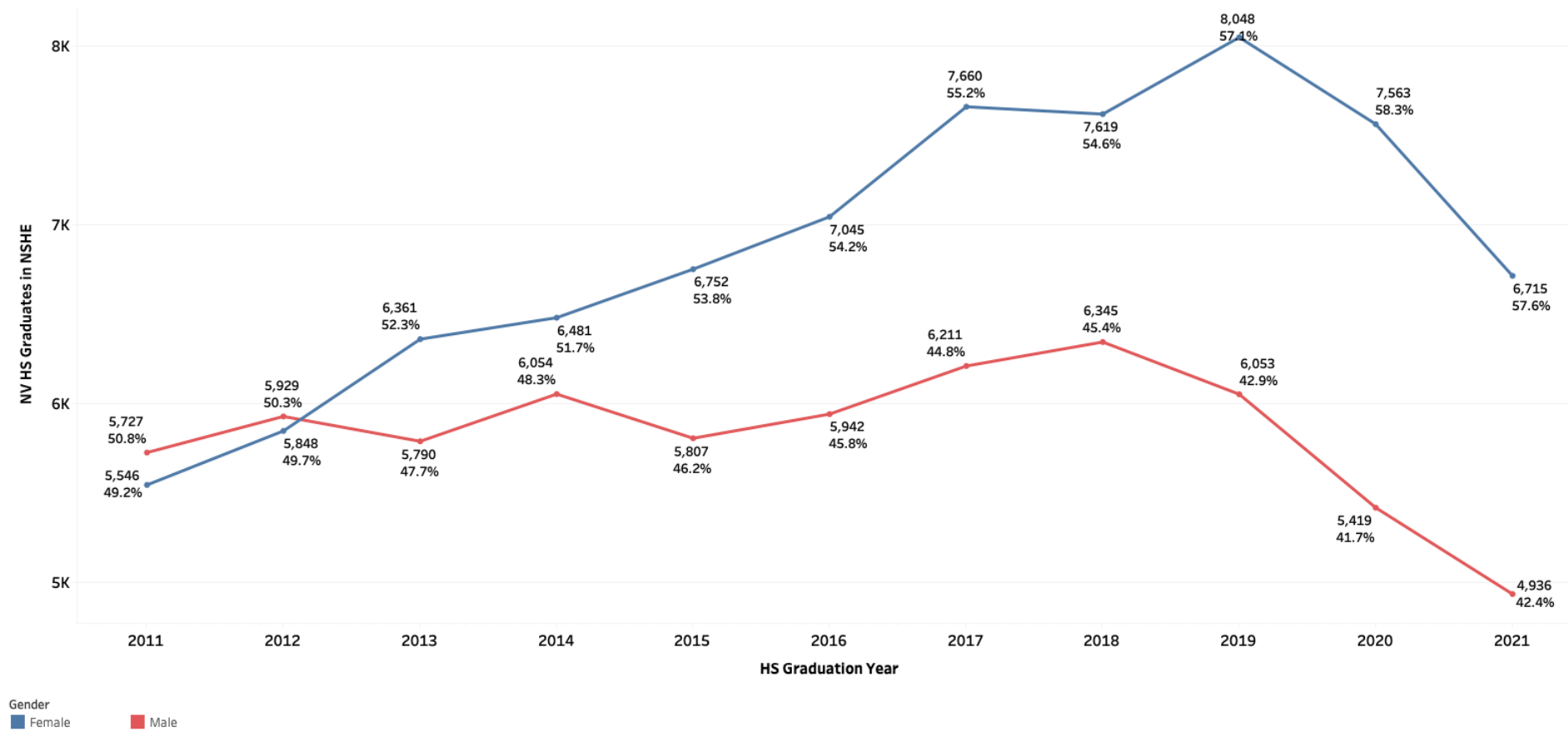


Nevada High School Graduates Who Attend NSHE as Degree-Seeking Undergraduates



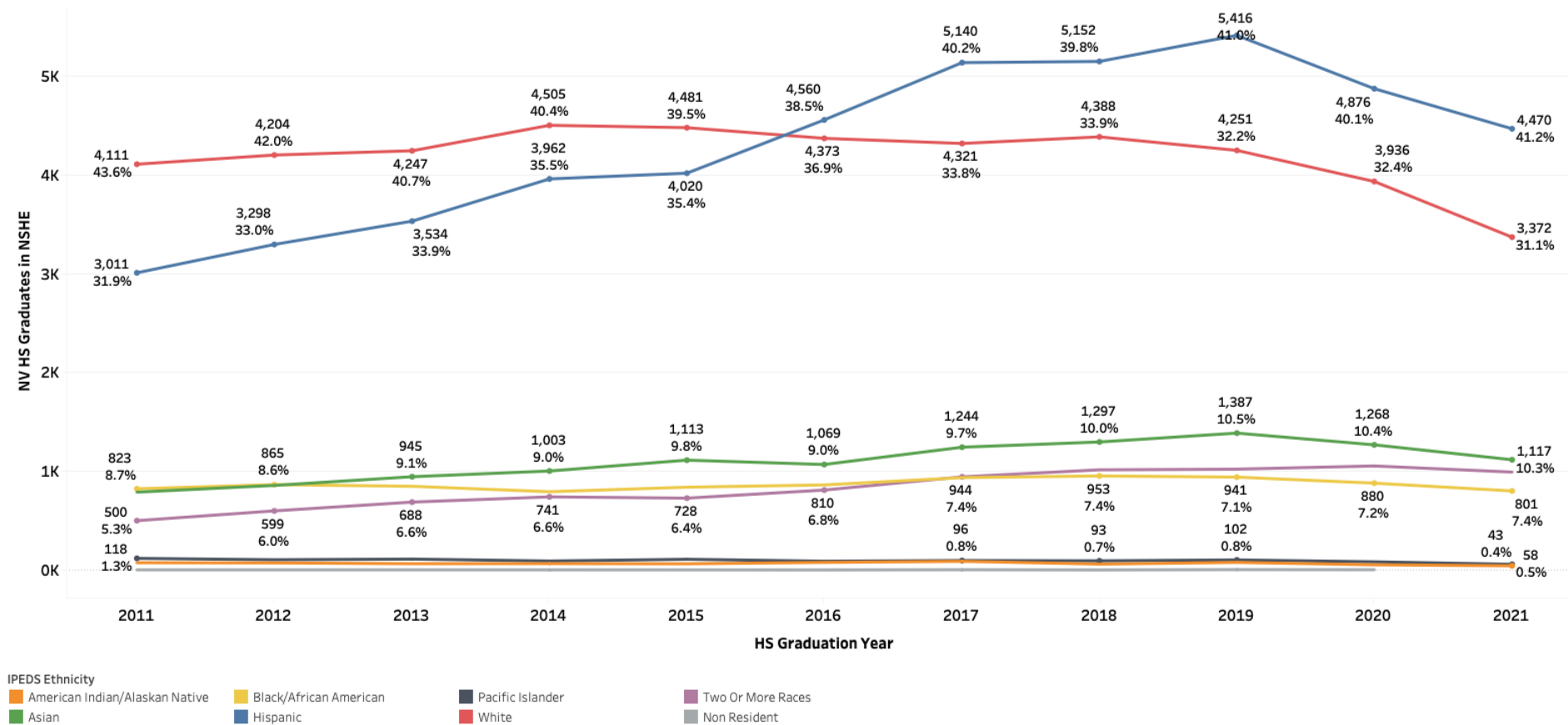
Nevada High School Grads to NSHE Undergraduate-Degree-Seeking Students, by Gender, 2011-2021

Nevada High School Graduates Who Attend NSHE as Degree-Seeking Undergraduates, by Gender



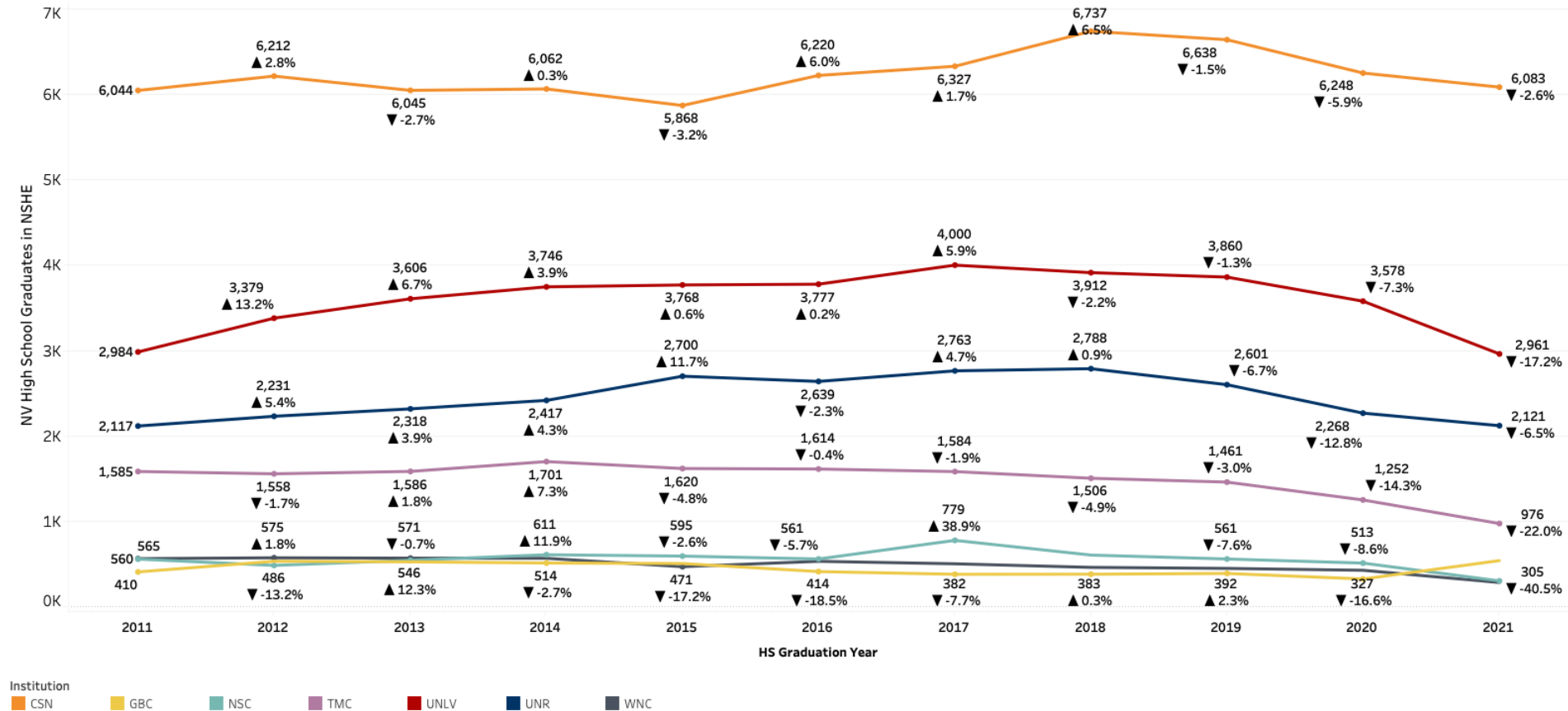
Nevada High School Grads to NSHE Undergraduate-Degree- Seeking Students, by Ethnicity, 2011-2021

Nevada High School Graduates Who Attend NSHE as Degree-Seeking Undergraduates, by Ethnicity



Nevada High School Grads to NSHE Undergraduate-Degree- Seeking Students, by Institution, 2011-2021

Nevada High School Graduates Who Attend NSHE as Degree-Seeking Undergraduates, by Institution



Completed Certificates and Degrees, 2010-2022

Degree Type	Institution							Total
	CSN	GBC	NSU	TMCC	UNLV	UNR	WNC	
Associate's degree	37,377	3,740	0	15,845	0	0	6,807	63,769
Bachelor's degree	543	937	7,563	78	60,352	61,096	86	130,655
Certificate < 1 year	13,126	2,260	0	9,247	0	0	3,745	28,378
Certificate > 1 year	2,527	1,966	0	2,358	0	0	342	7,193
Doctoral degree	0	0	0	0	2,088	1,625	0	3,713
Graduate certificate	0	0	0	0	572	256	0	828
Master's degree	0	0	58	0	13,710	9,223	0	22,991
Post BA certificate	0	114	12	0	58	55	0	239
Post MA certificate	0	0	0	0	139	68	0	207
Professional degree	0	0	0	0	2,791	755	0	3,546
Undergrad certificate	0	0	0	0	115	134	0	249
Total	53,573	9,017	7,633	27,528	79,825	73,212	10,980	261,768

Certificates and Degrees Completed by In-State Students, 2010-2022

Degree Type	Institution							Total
	CSN	GBC	NSU	TMCC	UNLV	UNR	WNC	
Associate's degree	35,185	3,505	0	14,850	0	0	6,519	60,059
Bachelor's degree	463	843	7,232	73	48,515	46,406	84	103,616
Certificate < 1 year	12,129	2,105	0	8,323	0	0	3,517	26,074
Certificate > 1 year	2,259	1,846	0	2,213	0	0	325	6,643
Doctoral degree	0	0	0	0	1,252	790	0	2,042
Graduate certificate	0	0	0	0	454	190	0	644
Master's degree	0	0	56	0	10,320	6,424	0	16,800
Post BA certificate	0	107	10	0	40	48	0	205
Post MA certificate	0	0	0	0	105	54	0	159
Professional degree	0	0	0	0	2,392	513	0	2,905
Undergrad certificate	0	0	0	0	71	108	0	179
Total	50,036	8,406	7,298	25,459	63,149	54,533	10,445	219,326

Note: Residency code missing for 3,630 certificates and degrees.

Nevada High School Graduates and Certificate and Degree Earners, 2011-2022

- ▶ Modeling Nevada's high school to college pipeline:
 - Merging the NDE graduate data with the NSHE certificate and degree data from 2010 through 2022 yielded 69,860 matches
 - Because of the time lags in the data, most of these matches are later in the series

Certificate and Degrees Completed by Nevada High School Graduates, 2010-2022

Degree Type	Degree Year												Total
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Associate's degree	27	71	240	596	872	1,437	1,871	2,226	2,610	2,900	3,319	2,193	18,362
Bachelor's degree	0	1	16	146	1,516	3,026	3,976	5,009	5,539	6,213	6,901	4,804	37,147
Certificate < 1 year	0	28	418	719	979	908	1,047	1,207	1,393	1,302	1,103	1,004	10,108
Certificate > 1 year	3	66	135	170	167	163	208	214	251	284	285	196	2,142
Doctoral degree	0	0	0	0	1	0	0	3	7	15	20	26	72
Graduate certificate	0	0	0	0	0	2	4	6	8	16	10	13	59
Master's degree	0	0	1	0	1	25	88	154	252	317	359	341	1,538
Post BA certificate	0	0	0	0	0	0	0	3	1	2	1	1	8
Post MA certificate	0	0	0	0	0	0	0	1	0	4	6	2	13
Professional degree	0	0	0	0	0	0	4	17	43	64	105	118	351
Undergrad certificate	0	0	0	0	0	2	2	10	6	13	12	15	60
Total	30	166	810	1,631	3,536	5,563	7,200	8,850	10,110	11,130	12,121	8,713	69,860

Top Ten Nevada High School Alma Maters for UNR Bachelor's Degree Completions, 2011-2022

High School (County)	Total	Gender		Race/Ethnicity								
		Female	Male	African American	American Indian/Alaskan Native	Asian	Hispanic	Nonresident	Pacific Islander	Two races or more	Unknown	White
Reno (Washoe)	1301	702	599	5	6	105	133	0	4	50	12	986
McQueen (Washoe)	1219	694	525	39	7	207	142	1	3	99	10	711
Spanish Springs (Washoe)	1037	613	424	12	15	72	218	0	1	51	16	652
Galena (Washoe)	963	520	443	6	1	58	148	0	0	39	20	691
Reed (Washoe)	917	540	377	16	5	141	232	0	6	65	4	448
Wooster (Washoe)	886	564	322	23	6	149	319	0	5	54	14	316
Douglas (Douglas)	773	456	317	1	6	20	112	0	0	36	11	587
Carson (Carson City)	751	415	336	7	1	31	196	0	4	34	19	459
Damonte Ranch (Washoe)	667	412	255	10	6	86	124	0	0	52	8	381
Coronado (Clark)	602	328	274	16	4	44	93	1	1	51	5	387

Top Ten Nevada High School Alma Maters for UNLV Bachelor's Degree Completions, 2011-2022

High School (County)	Total	Gender		Race/Ethnicity								
		Female	Male	African American	American Indian/Alaskan Native	Asian	Hispanic	Nonresident	Pacific Islander	Two races or more	Unknown	White
Coronado (Clark)	1057	623	434	19	0	168	192	7	7	104	11	549
NWCTA (Clark)	770	475	295	40	1	153	259	0	4	77	3	233
SWCTA (Clark)	711	454	257	30	0	369	124	0	5	87	2	94
Palo Verde (Clark)	702	421	281	26	0	104	149	1	5	68	10	339
Green Valley (Clark)	677	388	289	26	0	85	177	1	8	60	15	305
Las Vegas Academy (Clark)	564	412	152	40	0	65	174	0	2	58	4	221
Clark (Clark)	537	309	228	30	0	227	135	3	6	50	10	76
ECTA (Clark)	511	325	186	9	0	79	332	0	2	30	9	50
Advanced Tech Academy (Clark)	503	204	299	24	0	168	157	0	6	44	5	99
Spring Valley (Clark)	478	276	202	24	1	141	91	4	7	35	8	167

Top Ten Nevada High School Alma Maters for NSU Bachelor's Degree Completions, 2011-2022

High School (County)	Total	Gender		Race/Ethnicity								
		Female	Male	African American	American Indian/Alaskan Native	Asian	Hispanic	Nonresident	Pacific Islander	Two races or more	Unknown	White
Foothill (Clark)	134	97	37	1	0	5	39	0	1	6	11	71
ECTA (Clark)	104	87	17	2	0	4	80	0	1	2	3	12
Basic (Clark)	103	81	22	4	0	4	37	0	0	1	10	47
SECTA (Clark)	81	71	10	4	0	12	49	0	1	3	7	5
Rancho (Clark)	68	54	14	2	0	1	52	0	0	0	8	5
Green Valley (Clark)	66	58	8	3	0	9	19	0	0	8	6	21
Coronado (Clark)	64	47	17	2	0	8	12	0	0	3	3	36
Chaparral (Clark)	56	45	11	2	0	2	25	0	0	1	13	13
Liberty (Clark)	55	41	14	4	0	8	15	0	1	11	7	9
Nevada State (Clark)	53	38	15	0	0	8	13	0	2	2	2	26

Top Ten Nevada High School Alma Maters for CSN Degree and Certificate Completions, 2011-2022

High School (County)	Total	Gender		Race/Ethnicity								
		Female	Male	African American	American Indian/Alaskan Native	Asian	Hispanic	Nonresident	Pacific Islander	Two races or more	Unknown	White
ECTA (Clark)	798	495	303	21	1	95	506	0	8	45	51	71
SECTA (Clark)	592	337	255	28	1	59	326	1	2	26	36	113
NWCTA (Clark)	503	283	220	29	1	62	156	0	6	38	22	189
Palo Verde (Clark)	478	211	267	24	0	51	128	0	1	46	16	212
Foothill (Clark)	475	209	266	13	0	19	101	0	5	33	23	281
Centennial (Clark)	462	209	253	40	4	27	112	0	4	42	21	212
Rancho (Clark)	458	279	179	16	0	36	305	0	0	13	31	57
Green Valley (Clark)	445	199	246	16	0	23	146	0	2	30	20	208
CSN West (Clark)	444	333	111	24	0	56	122	0	1	53	23	165
Shadow Ridge (Clark)	440	238	202	30	0	35	103	0	6	58	25	183

Top Ten Nevada High School Alma Maters for **GBC** Degree and Certificate Completions, 2011-2022

High School (County)	Total	Gender		Race/Ethnicity								
		Female	Male	African American	American Indian/ Alaskan Native	Asian	Hispanic	Nonresident	Pacific Islander	Two races or more	Unknown	White
Elko (Elko)	671	240	431	4	26	6	276	0	8	14	59	278
Spring Creek (Elko)	449	142	307	0	11	5	46	0	5	8	11	363
Lowry (Humboldt)	404	165	239	0	0	2	136	0	0	0	20	246
Battle Mountain (Lander)	249	87	162	1	4	0	79	0	0	3	16	146
Pahrump Valley (Nye)	235	146	89	5	0	8	56	0	4	16	18	128
White Pine (White Pine)	145	78	67	0	6	1	16	0	2	2	11	107
West Wendover (Elko)	116	38	78	0	0	0	88	0	0	0	12	16
Carlin (Elko)	76	20	56	0	0	0	4	0	0	0	2	70
ECTA (Clark)	65	22	43	0	0	0	46	0	0	6	8	5
Pershing (Pershing)	58	16	42	0	1	0	28	0	0	1	2	26

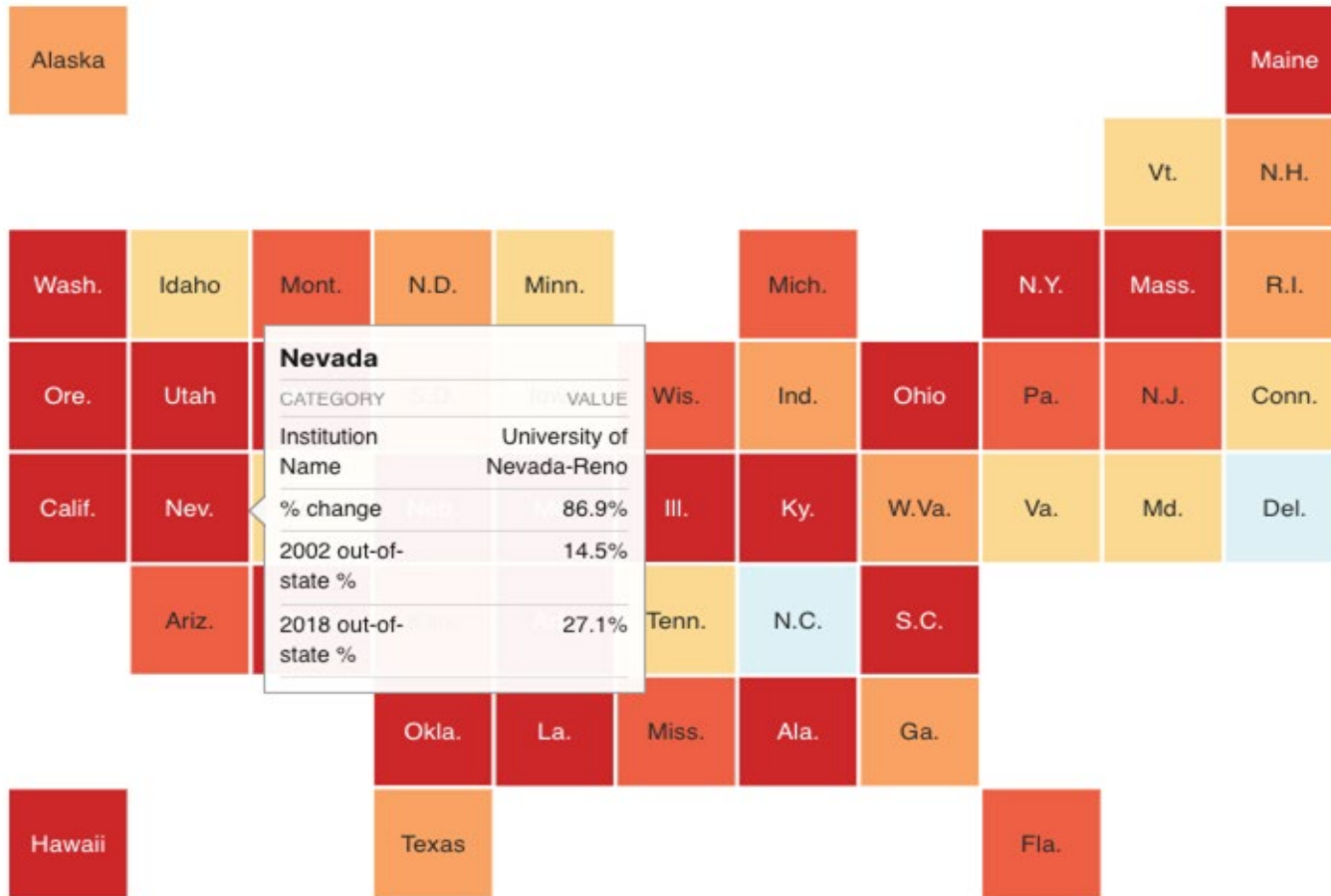
Top Ten Nevada High School Alma Maters for WNC Degree and Certificate Completions, 2011-2022

High School (County)	Total	Gender		Race/Ethnicity								
		Female	Male	African American	American Indian/Alaskan Native	Asian	Hispanic	Nonresident	Pacific Islander	Two races or more	Unknown	White
Carson (Carson City)	1065	582	483	6	5	20	437	0	1	29	56	511
Douglas (Douglas)	599	321	278	2	13	10	120	0	0	27	34	393
Dayton (Lyon)	394	240	154	0	2	7	141	0	0	17	8	219
Churchill County (Churchill)	246	145	101	1	12	6	39	0	0	15	2	171
Fernley (Lyon)	188	129	59	3	3	6	34	0	1	15	4	122
Oasis Academy (Churchill)	138	75	63	1	6	4	17	0	0	7	4	99
Silver Stage (Lyon)	113	60	53	0	0	0	25	0	0	3	2	83
Virginia City (Storey)	79	39	40	0	0	1	4	0	0	5	2	67
NV Virtual Academy (Clark)	62	45	17	6	0	5	18	0	0	10	2	21
Yerington (Lyon)	54	34	20	0	3	0	25	0	0	1	5	20

Top Ten Nevada High School Alma Maters for **TMCC** Degree and Certificate Completions, 2011-2022

High School (County)	Total	Gender		Race/Ethnicity								
		Female	Male	African American	American Indian/ Alaskan Native	Asian	Hispanic	Nonresident	Pacific Islander	Two races or more	Unknown	White
Spanish Springs (Washoe)	913	505	408	14	9	32	290	0	1	42	12	513
TMCC Magnet (Washoe)	830	594	236	7	6	54	200	0	4	65	9	485
Reed (Washoe)	714	431	283	9	10	85	250	0	1	29	15	315
North Valley (Washoe)	613	347	266	11	5	23	278	0	0	31	0	265
McQueen (Washoe)	589	293	296	6	1	50	167	0	4	34	14	313
Damonte Ranch (Washoe)	534	290	244	16	4	61	142	0	0	41	1	269
Reno (Washoe)	505	245	260	5	4	32	126	0	1	22	5	310
Wooster (Washoe)	478	272	206	8	3	34	295	0	0	18	14	106
Galena (Washoe)	440	203	237	1	3	27	124	0	4	17	5	259
Sparks (Washoe)	315	191	124	1	0	24	217	0	0	13	8	52

Enrollment via “The Great Student Swap”



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The Great Student Swap

AARON KLEIN
SENIOR FELLOW, ECONOMIC STUDIES
THE BROOKINGS INSTITUTION

The Great Student Swap is occurring as tuition and fees at America's higher education institutions over the last 20 years have skyrocketed. It has made a college degree far more expensive for many Americans, and it has left those who did attend with \$1.7 trillion in student debt.

One overlooked aspect contributing to debt is the growth in out-of-state enrollment in public universities. Out-of-state tuition can be twice as high as in-state prices, driving up student debt and university tuition revenue. During this time period the sticker tuition price difference between in- and out-of-state schools has been rising while the share of in-state students is falling.

Abstract
For the last twenty years, nearly every flagship university in the U.S. has been decreasing its share of in-state students and enrolling more students from out of state, a phenomenon I call the “Great Student Swap.” Using data from the Integrated Postsecondary Education Data System (IPEDS), I examine every “flagship” public university by comparing incoming first year students from 2002 through 2018 (those who would have graduated in the spring 2022 assuming the traditional four-year timeframe for completion). I find that the share of out-of-state students has risen by an average of 55 percent since 2002 and that 48 of the 50 flagships experienced a growth in their share of out-of-state students. The average decline in in-state students was 15 percent, and five states swapped more than one out of every five in-state students for an out-of-state student. Each state's flagship experience can be seen in the Figure 1 infographic.

My detailed analysis of a subset of 16 states finds that the share of out-of-state students attending their flagships grew by 41 percent, slightly less than the average out-of-state student growth across the 50 states. For these states, I document the growing gap between in-state and out-of-state tuition and the decline in state governmental support. I find suggestive evidence that the decline in support is greater in states that have swapped their own students for out of staters at a faster rate. I hypothesize that schools are caught in a cycle where they compensate for the decline in state funding by enrolling more lucrative out-of-state students. Increased recruitment of out-of-state students, in turn, may lead to less local political support and further erosion in state funding.¹

Despite the general increase in out-of-state students attending flagship universities, I find that a few schools have stabilized their in-state enrollments. The University of North Carolina at Chapel Hill is the only flagship that has both a majority of in-state students

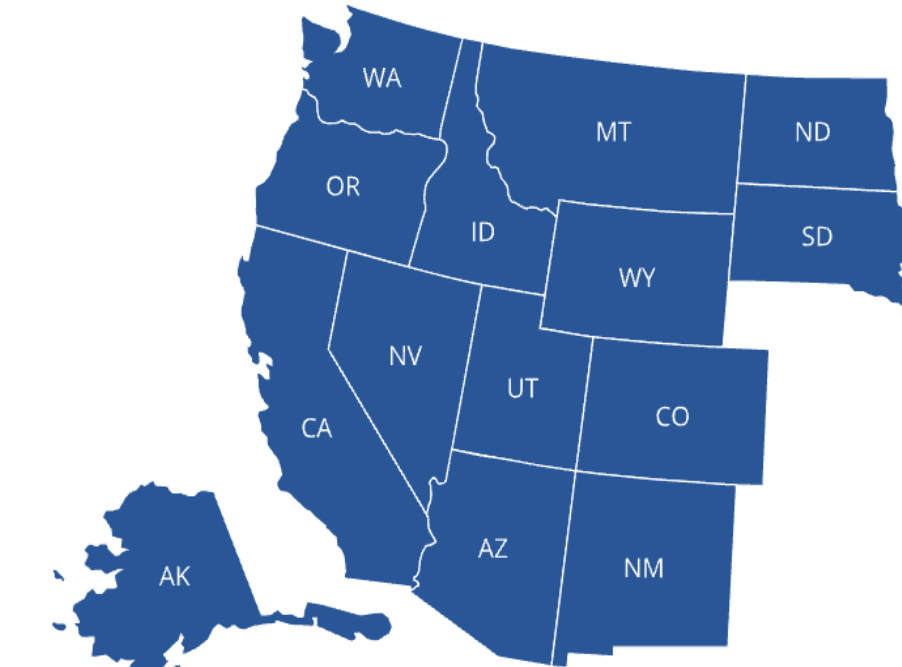
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Certificates and Degrees Completed by Out-of-State Students, 2010-2022

Degree Type	Institution							Total
	CSN	GBC	NSU	TMCC	UNLV	UNR	WNC	
Associate's degree	2,002	220	0	941	0	0	251	3,414
Bachelor's degree	80	93	327	5	9,932	14,508	2	24,947
Certificate < 1 year	995	155	0	924	0	0	228	2,302
Certificate > 1 year	234	116	0	140	0	0	15	505
Doctoral degree	0	0	0	0	743	832	0	1,575
Graduate certificate	0	0	0	0	102	66	0	168
Master's degree	0	0	2	0	2,709	2,783	0	5,494
Post BA certificate	0	7	2	0	1	7	0	17
Post MA certificate	0	0	0	0	19	14	0	33
Professional degree	0	0	0	0	264	45	0	309
Undergrad certificate	0	0	0	0	22	26	0	48
Total	3,311	591	331	2,010	13,792	18,281	496	38,812

Note: Residency code missing for 3,630 certificates and degrees.

Regional Interstate Tuition Savings Programs



U.S. PACIFIC TERRITORIES & FREELY ASSOCIATED STATES

- COMMONWEALTH OF THE NORTHERN MARIANAS ISLANDS
- GUAM
- REPUBLIC OF THE MARSHALL ISLANDS
- FEDERATED STATES OF MICRONESIA
- REPUBLIC OF PALAU



Western Undergraduate Exchange (WUE)

- ▶ **All NSHE Institutions**
- ▶ **Eligibility (UNLV and UNR)**
 - Earn a 3.25 unweighted overall high school GPA, or 24 ACT score, or 1160 SAT.
 - Enroll in at least 12 credits in the fall and spring semesters
 - Live in a residence hall during first year.
 - Pay 150% of Nevada resident fees.

Nevada Advantage Program*

- ▶ **UNR only**
- ▶ **Eligibility**
 - Reside in a WUE state
 - Earn a 3.0 unweighted overall high school GPA, or 22 ACT score, or 1100 SAT.
 - Pay 200% of Nevada resident fees.

*Now called Pack Advantage Program

Associate's and Bachelor's Degrees Completed by WUE and Nevada Advantage Participants, 2010-2022

Degree Type	Institution							Total
	CSN	GBC	NSU	TMCC	UNLV	UNR	WNC	
Associate's degree	236	44	0	296	0	0	113	689
Bachelor's degree	13	15	86	1	2,876	10,265	0	13,256
Total	239	69	86	297	2,876	10,265	113	13,945

Race and Ethnicity of Associate's and Bachelor's Degrees Completers, 2010-2022

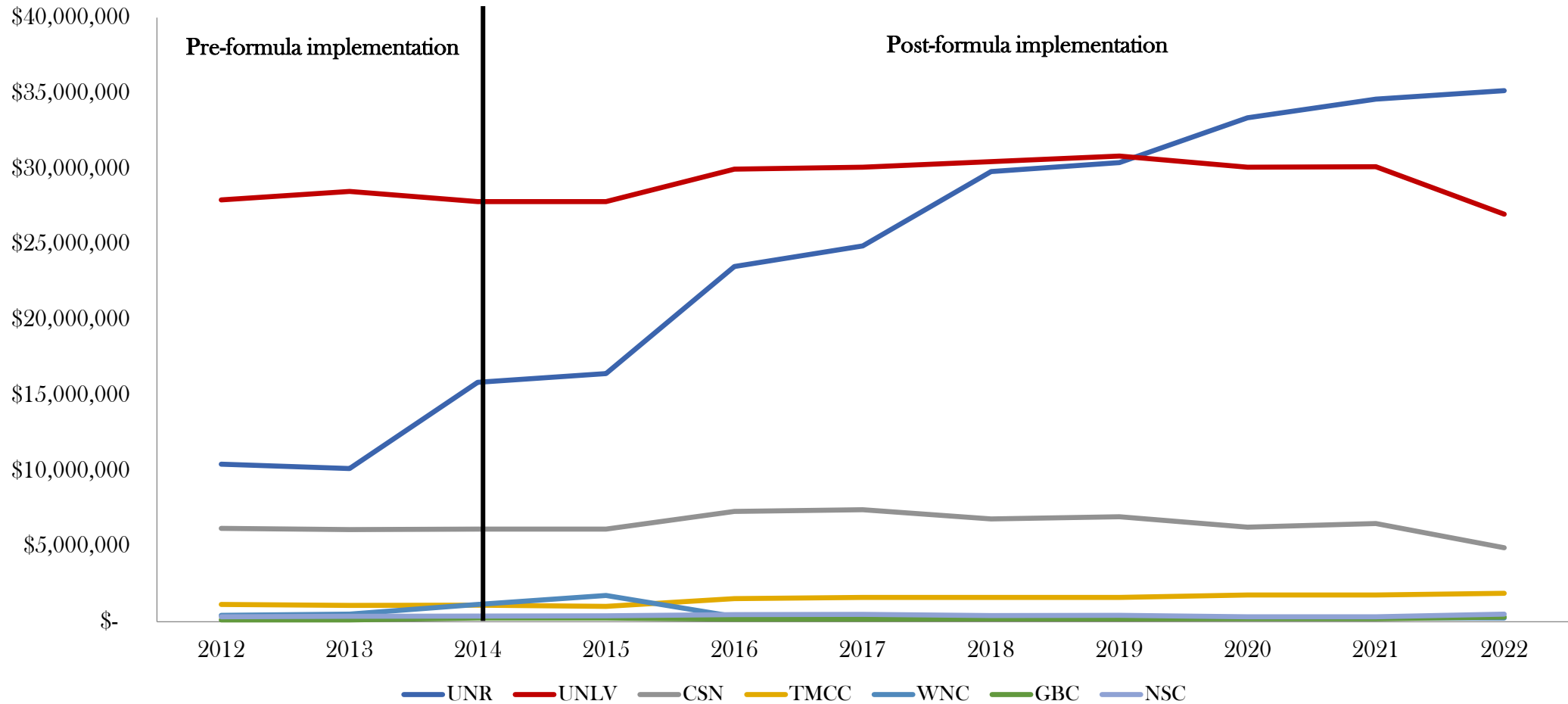
In-state Students

Race/Ethnicity	Freq.	Percent	Cum.
African American	8,437	5.15	5.15
American Indian/Alaskan Native	1,243	0.76	5.91
Asian	16,358	9.99	15.91
Hispanic	37,433	22.87	38.78
Nonresident	384	0.23	39.01
Pacific Islander	1,439	0.88	39.89
Two races or more	8,931	5.46	45.35
Unknown	6,994	4.27	49.62
White	82,456	50.38	100.00
Total	163,675	100.00	

WUE/Nevada Advantage Students

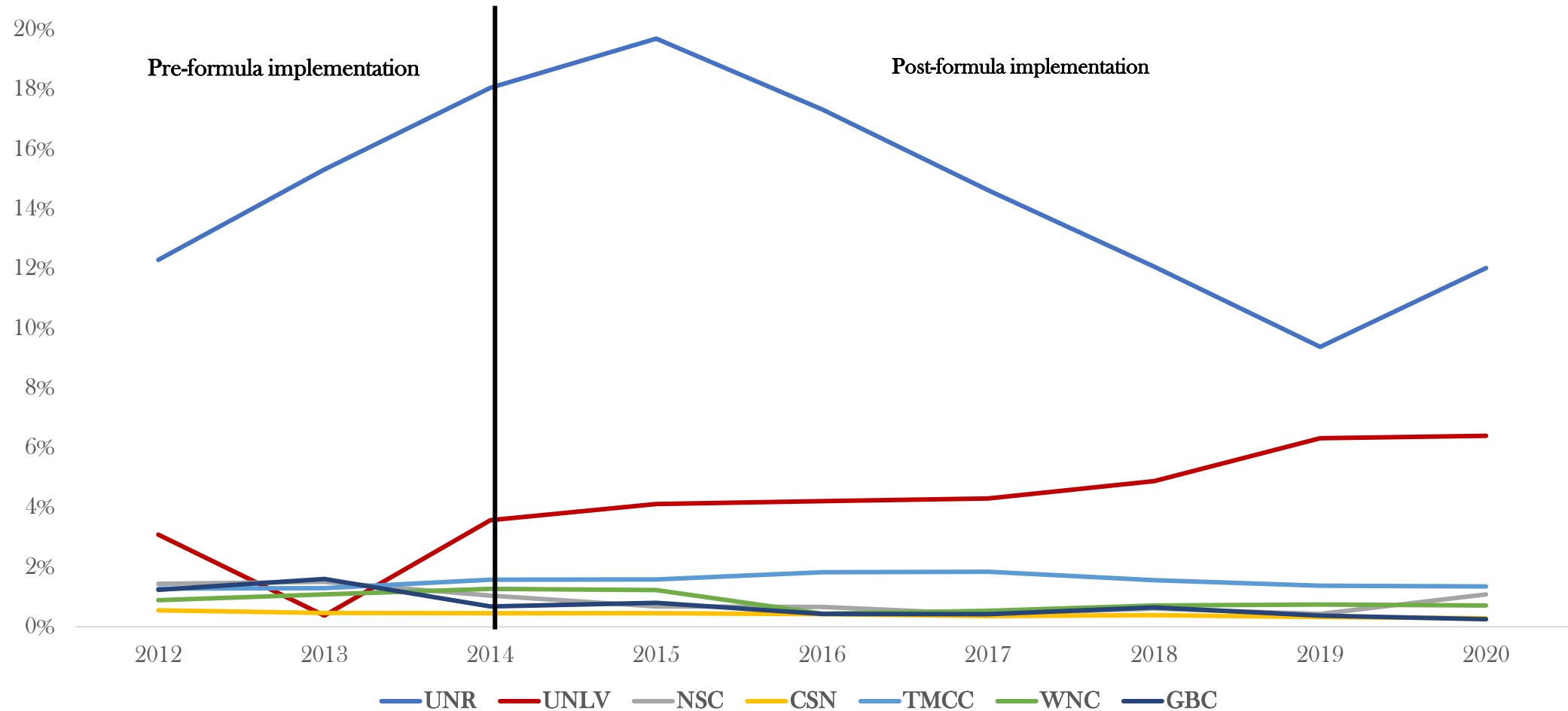
Race/Ethnicity	Freq.	Percent	Cum.
African American	413	2.96	2.96
American Indian/Alaskan Native	58	0.42	3.38
Asian	1,201	8.61	11.99
Hispanic	1,886	13.52	25.51
Nonresident	101	0.72	26.24
Pacific Islander	130	0.93	27.17
Two races or more	951	6.82	33.99
Unknown	355	2.55	36.54
White	8,850	63.46	100.00
Total	13,945	100.00	

Non-resident Tuition, 2012-2022



Source: NSHE Operating Budget for fiscal years 2012-2022.

WUE Students as Share of Total Undergraduate Enrollments, 2012-2022



Note: Total undergraduate enrollment includes non-degree seeking students except for 2012 for UNLV and UNR
Source: Data from Western Undergraduate Exchange Enrollment Reports for 2012-2020 and NSHE Fall Enrollment Reports

Next Steps

- ▶ Continue working with OWINN to improve NPWR
- ▶ finalize deliverables (research brief, fact sheets, and data visualizations,)
- ▶ Potential extensions:
 - Examine NSHE degree attainment life-cycles from certificates to graduate and professional degrees
 - Integrate the NDE and NSHE data with the DETR wage data to evaluate:
 - Workforce patterns
 - Retention of out-of-state degree and certificate earners
 - Demographic differences in earnings among those with the same educational attainment

Thank you!

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