



Apprenticeship Programs in the Context of Vocational Rehabilitation

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Agenda

1. Overview of apprenticeship programs
2. Research questions and methods
3. Data and visualizations
4. Conclusions
5. Recommendations



Overview of Apprenticeships

- What is an apprenticeship?
- Qualifications
- Ohio apprenticeships



Relevant Details

- Apprenticeships in prisons
- Affirmative action – 7% Disability Utilization Goal
- Expansion to “nontraditional” apprenticeable occupations



Research Questions

- What are the demographics of apprentices in Ohio?
- What apprenticeship occupations and programs are available in each OOD region/county?
- Are there any VR participants who have an Individualized Plan for Employment (job goal) aligned with an apprenticeship program(s)?
- What are the trends in geography and industry of apprentices' occupations?



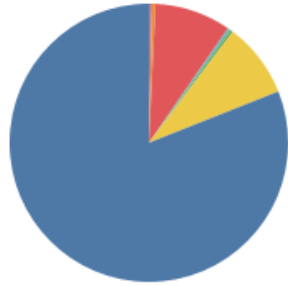
Data and Methods

- Public data from apprenticeship.gov, Department of Labor
- OOD VR data
- Methods: Tableau, Python, and Excel
- Active apprentices

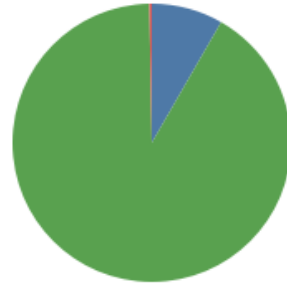


Demographics of Apprentices in Ohio

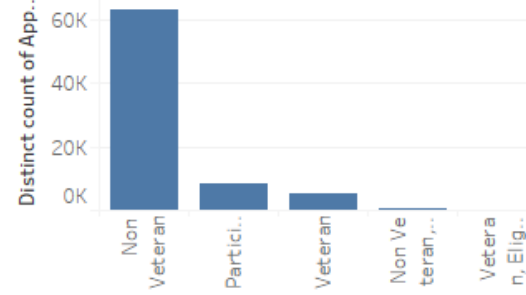
Racial Makeup



Gender



Veteran Status



- Race**
- American Indian or Ala..
 - Asian
 - Black or African Ameri..
 - Multiracial

- Gender**
- Female
 - Male
 - Participant Did Not Sel..

- Individuals with Disabilities**
- No
 - Participant Did Not Sel..
 - Yes

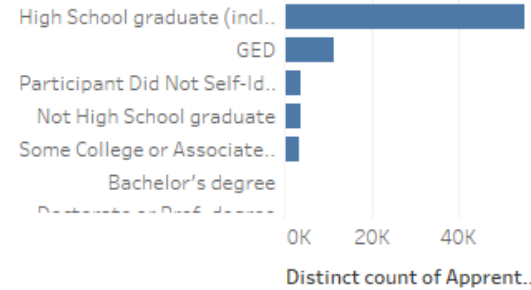
Age Cohort

Ages 24 and Under	28,901
Ages 25-54	46,591
Ages 55+	1,751

Disability Status



Education

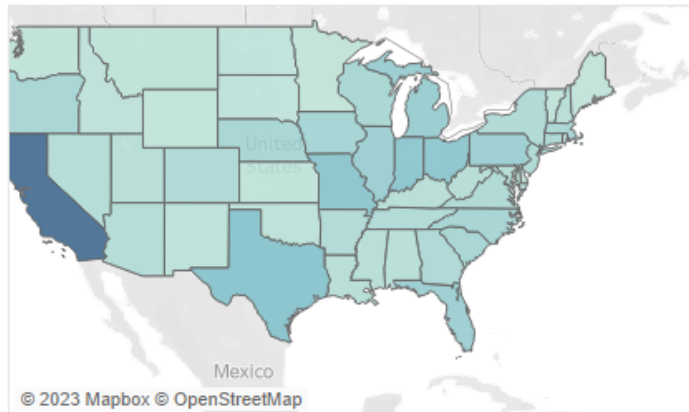


Distinct count of Apprentic..

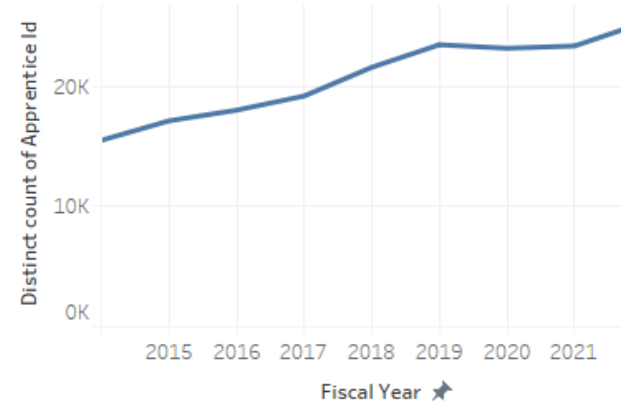
8 280,000

Fiscal Year
2014 to 2023
and Null values

Comparing Other States



Enrollment Trajectory

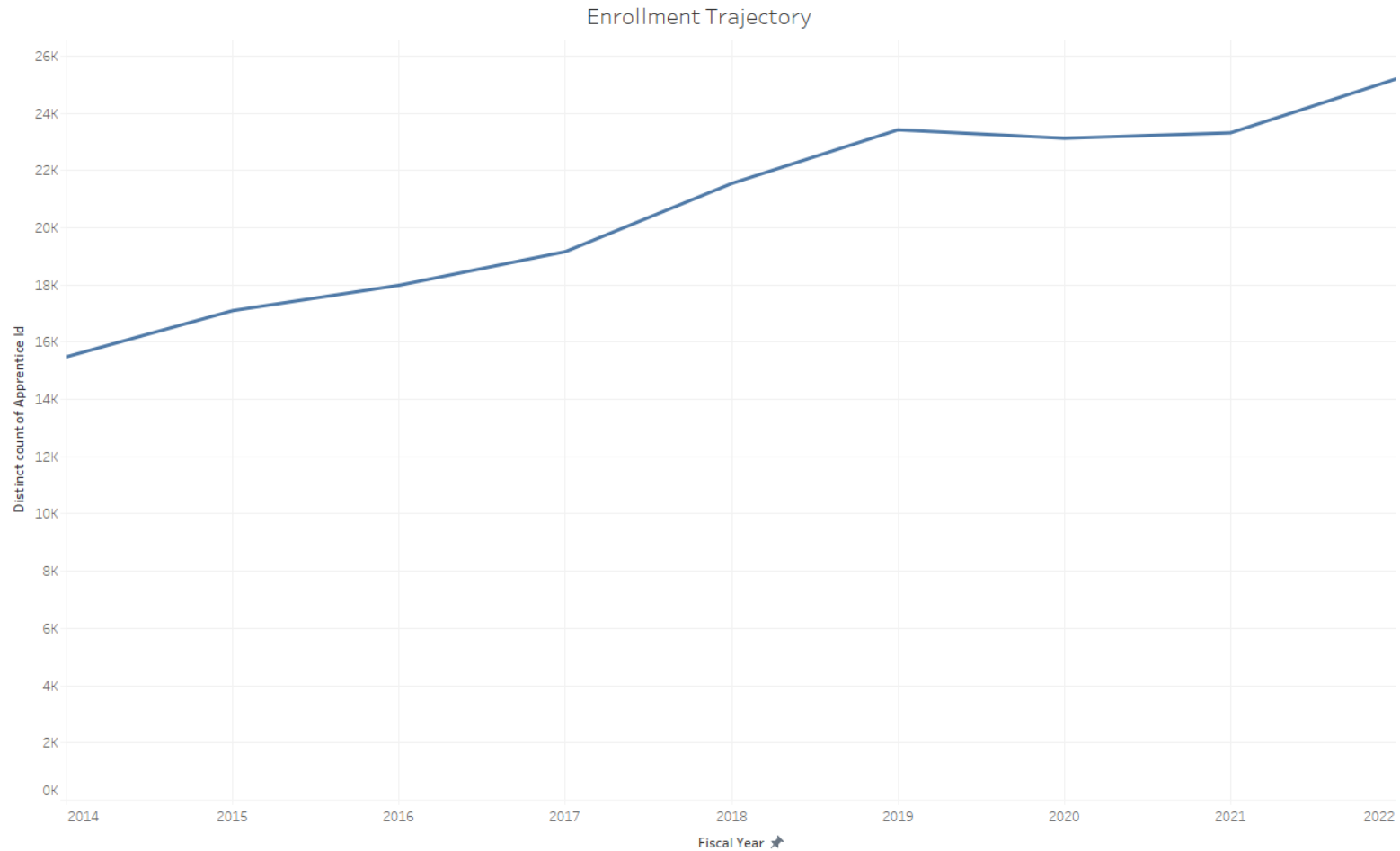


- Individuals with Disabilities**
- No
 - Participant Did Not Sel..
 - Yes

- Apprentice Status Code**
- CA
 - CO
 - RE
 - RI
 - RS
 - SU
 - TR

Status of the apprentice. CA = Cancelled, CO = Completed, RE = Registered, RI = Reinstated, RS = Restore Pending, SU = Suspended, TR = Transferred

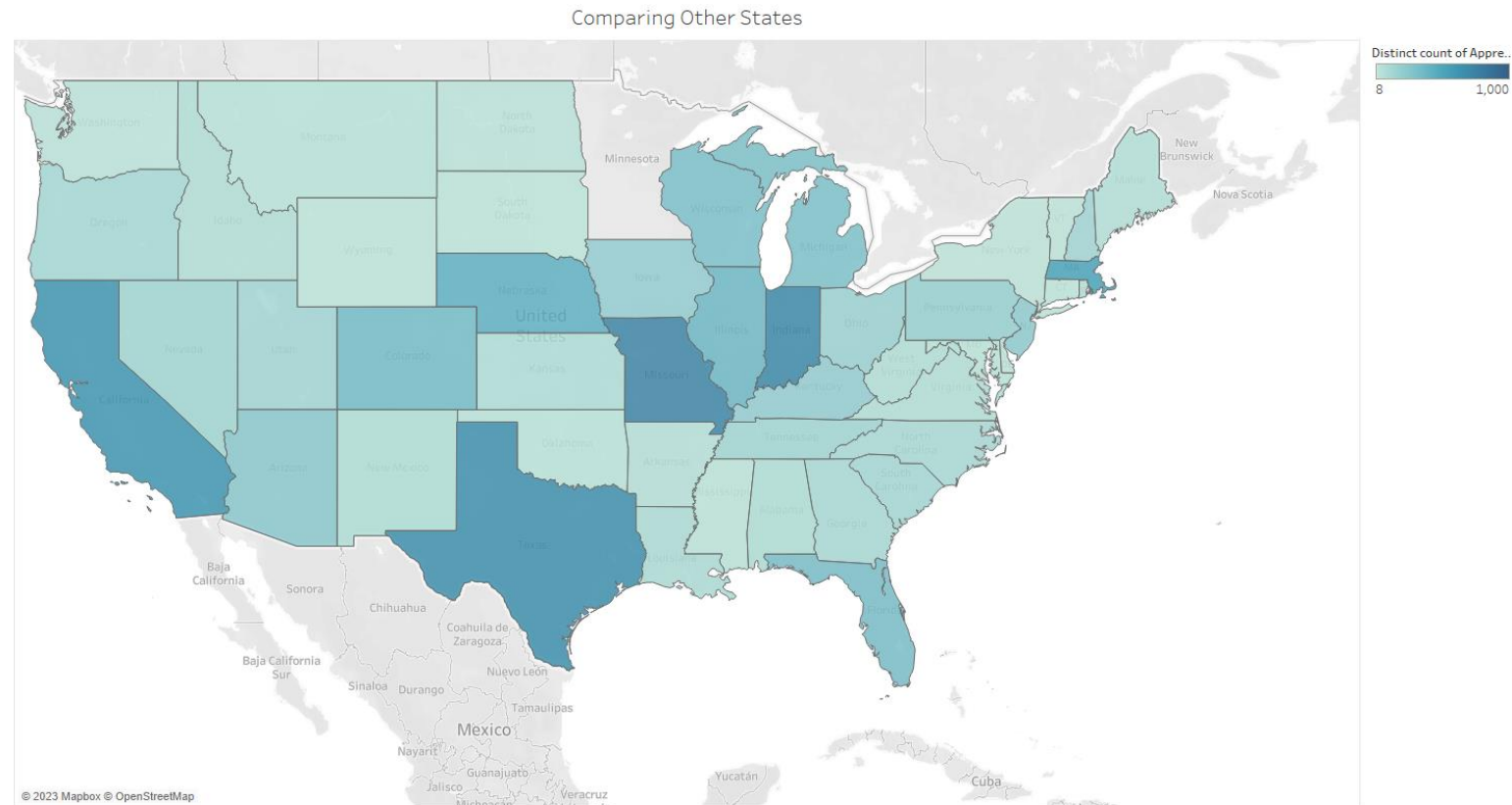
Active Apprenticeship Enrollment



The trend of distinct count of Apprentice Id for Fiscal Year. The data is filtered on State, Individuals with Disabilities and Apprentice Status Code. The State filter keeps OH. The Individuals with Disabilities filter keeps No, Participant Did Not Self-Identify and Yes. The Apprentice Status Code filter keeps 10 of 10 members. The view is filtered on Fiscal Year, which ranges from 2014 to 2023 and keeps Null values.



Individuals with Disabilities in Apprenticeships



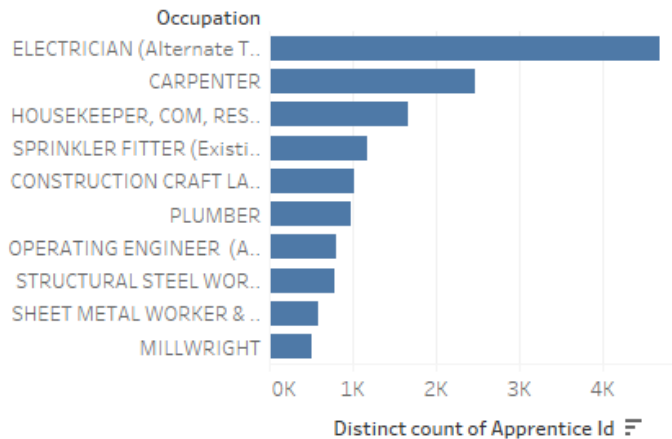
Map based on Longitude (generated) and Latitude (generated). Color shows distinct count of Apprentice Id. Details are shown for State. The data is filtered on Individuals with Disabilities, Fiscal Year and Apprenticeship Status Code. The Individuals with Disabilities filter keeps Yes. The Fiscal Year filter ranges from 2014 to 2023 and keeps Null values. The Apprenticeship Status Code filter keeps 10 of 10 members.

Apprentice Occupations in Ohio in 2023

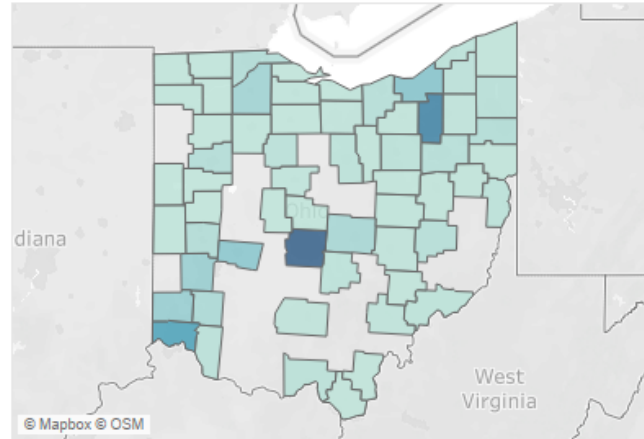
Top 3 Occupations in Each OOD Area

OOD Area	Occupation	Avg. Star..	Distinct cou..
EC	ELECTRICIAN (Alternate Title: ..	14.22	559
	SPRINKLER FITTER (Existing T..	20.39	171
	STRUCTURAL STEEL WORKER ..	19.38	163
NE	CARPENTER	19.42	1,260
	ELECTRICIAN (Alternate Title: ..	14.79	605
	CARPENTER ROOFER SPECIAL..	19.37	256
NW	ELECTRICIAN (Alternate Title: ..	14.20	485
	CARPENTER	18.09	253
	SPRINKLER FITTER (Existing T..	17.87	214
SE	HOUSEKEEPER, COM, RES, IND	0.00	1,664
	ELECTRICIAN (Alternate Title: ..	12.91	1,576
	CONSTRUCTION CRAFT LABOR..	18.61	820
SW	ELECTRICIAN (Alternate Title: ..	14.86	1,457
	PLUMBER	14.82	466
	NURSE ASSISTANT	14.64	425

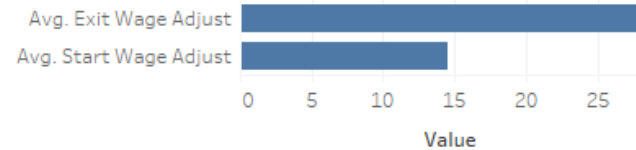
Top 10 Occupations in Ohio



Top Occupation in Each County



Starting and Exit Wage



Apprentice Status Code

- Null
- CA
- CO
- IC
- RE
- RI
- RS
- SU
- TR
- UP

Status of the apprentice. CA = Cancelled, CO = Completed, RE = Registered, RI = Reinstated, RS = Restore Pending, SU = Suspended, TR = Transferred

Individuals with Disabiliti..

- No
- Participant Did Not Se..
- Yes

Distinct count of Apprent..



Top 3 Occupations in Each County

County Name	Occupation	Distinct count of
Allen County	ELECTRICIAN (Alternate Titl..	112
	INDUSTRIAL MACHINIST SYS..	103
	SPRINKLER FITTER (Existing ..	50
Ashland County	TRUCK DRIVER, HEAVY	1
	PRODUCTION MACHINERY E..	1
	PLUMBER	1
Ashtabula County	MAINT MECHANIC (Any Ind) ..	7
	PRODUCTION MACHINERY E..	5

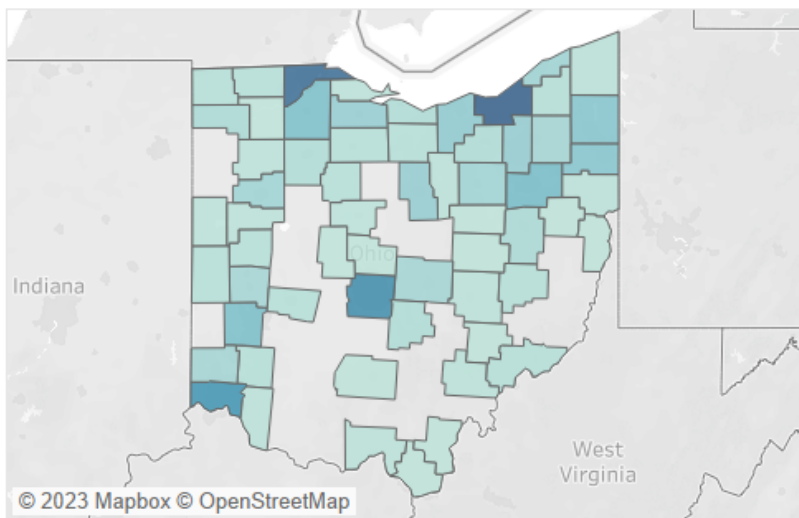
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Apprenticeship Programs in Ohio

Ohio Counties by Number of Programs



Top 10 Counties with the Most Programs

County Name	Distinct count of Pr..
Cuyahoga County	43
Lucas County	39
Franklin County	30
Hamilton County	27
Stark County	15
Montgomery County	14
Wood County	14
Trumbull County	12
Lorain County	10
Summit County	9



Top 10 Largest Apprenticeship Programs

Program Nu..	County Name	Industry	Distinct coun
OH007800007	Franklin Coun..	Public Administratio..	3,150
OH002450006	Summit County	Construction	1,571
OH013780007	Franklin Coun..	Construction	784
OH008060010	Franklin Coun..	Construction	784
OH007850010	Franklin Coun..	Construction	725
OH008730001	Franklin Coun..	Construction	701
2018-OH-69..	Clark County	Health Care and Soci..	698
OH006450002	Butler County	Construction	399
OH011450001	Wood County	Construction	382
OH008050012	Cuyahoga Cou..	Construction	287

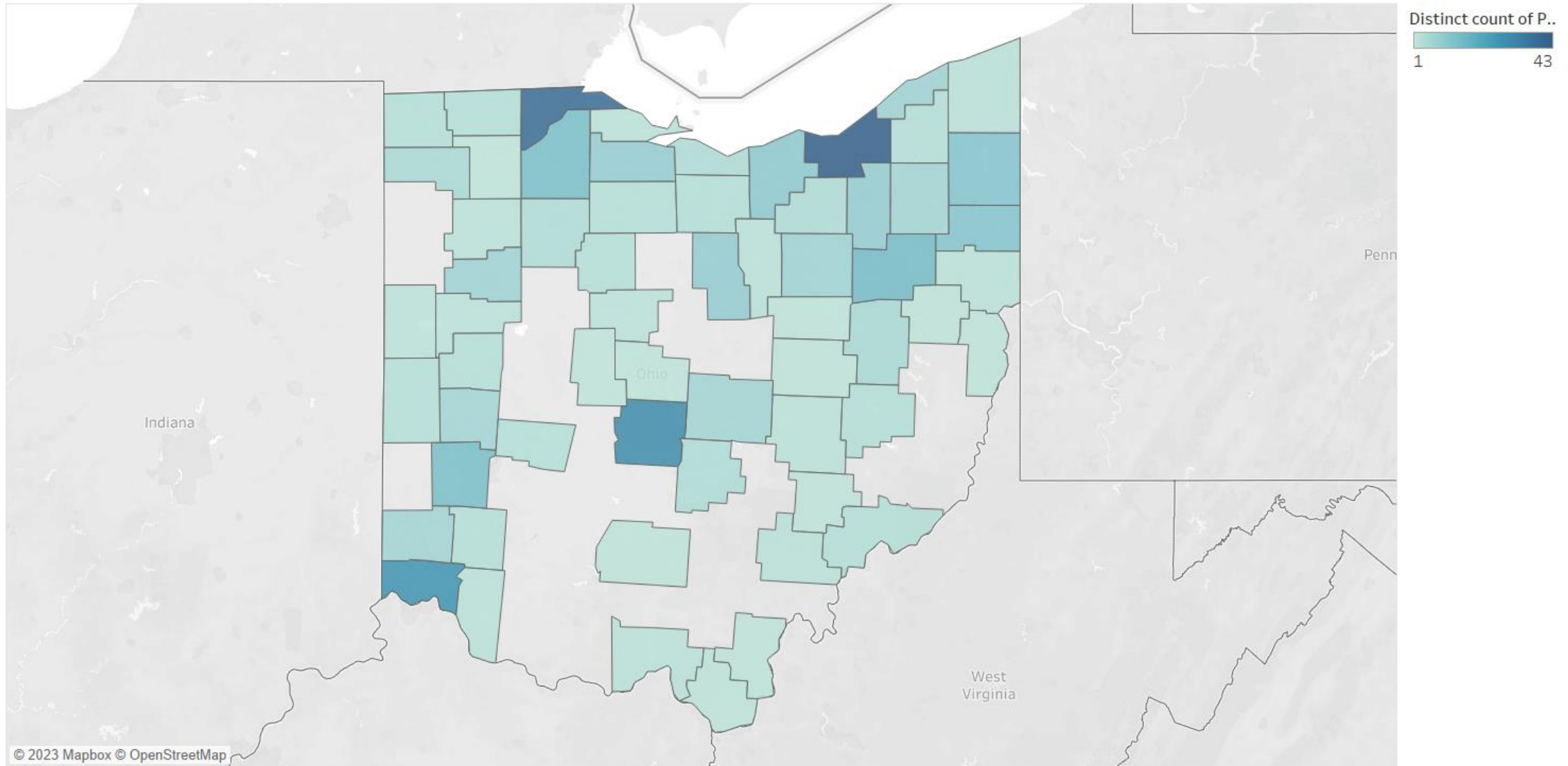
Top 10 Occupations by Number of Programs

Occupation	Prog..	Appre..
DIE MANUFACTURER	66	257
PRODUCTION MACHINE..	54	298
ELECTRICIAN (Alternate ..	44	4,682
MAINT MECHANIC (Any I..	41	206
PLUMBER	27	988
MACHINIST (Alternate T..	23	126
SPRINKLER FITTER (Exis..	21	1,178
HEATING & AIR CONDITI..	19	377
MARINE MACHINERY M..	18	59
INDUSTRIAL MAINTENA..	17	60

- Apprentice Status C..
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 - TR
 - UP

- Individuals with Dis..
- No
 - Participant Did ..
 - Yes

Ohio Counties by Number of Programs



Map based on Longitude (generated) and Latitude (generated). Color shows distinct count of Program Number. Details are shown for County Name. The context is filtered on State, which keeps OH. The data is filtered on Individuals with Disabilities, Fiscal Year and Apprentice Status Code. The Individuals with Disabilities filter keeps multiple members. The Fiscal Year filter ranges from 2023 to 2023. The Apprentice Status Code filter keeps multiple members.

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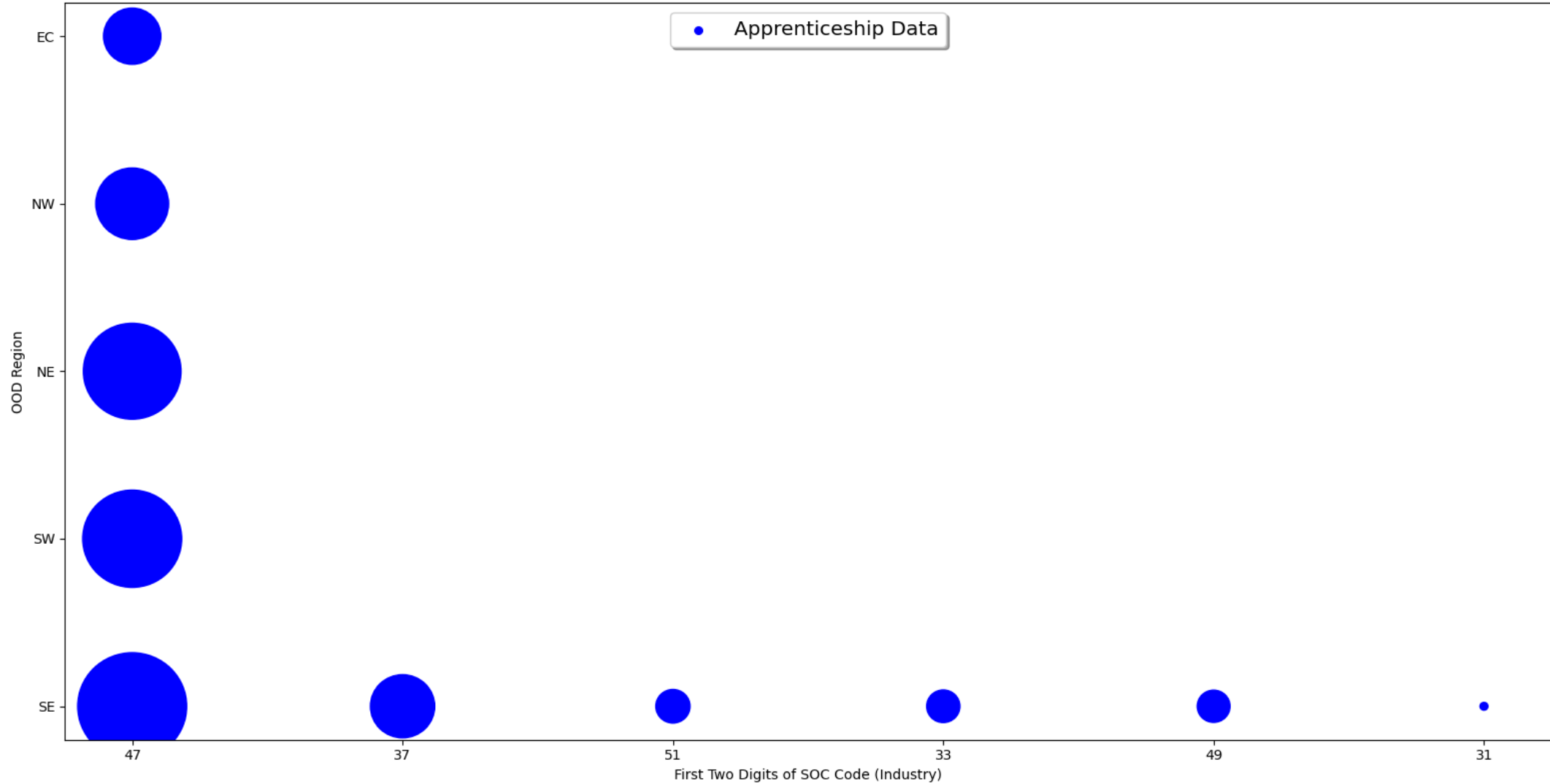


Data Preparation

- Matched county to OOD region using VLOOKUP in Excel
- Took first two digits of SOC code in Python
- Used Kmodes to create clusters of two categorical variables, SOC code and OOD region



2023 Ohio Apprenticeship Data Cluster Analysis



47 = Construction and Extraction Occupations, 37 = Building and Grounds Cleaning and Maintenance Occupations, 51 = Production Occupations, 33 = Protective Service Occupations, 49 = Installation, Maintenance, and Repair Occupations, 31 = Healthcare Support Occupations

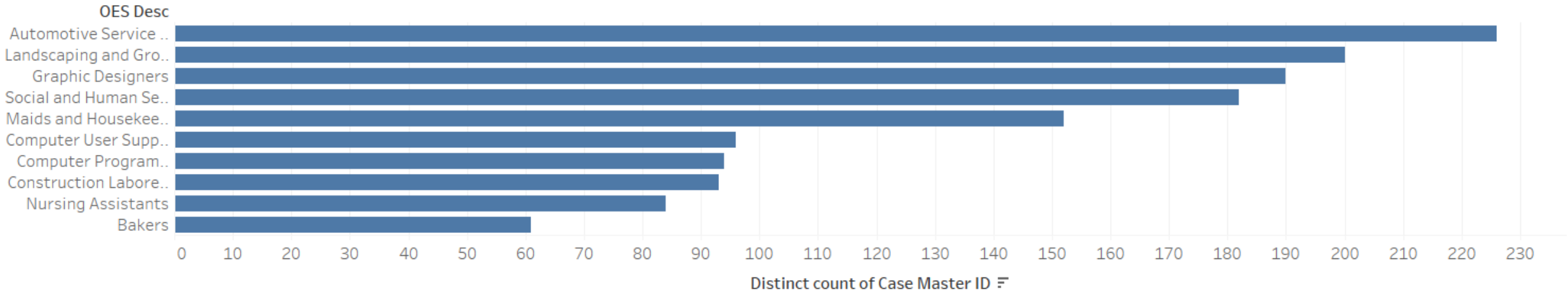
Data Matching

- Matched apprenticeship occupations to SOC code occupations
- Imported both datasets into Tableau
- Filtered data to include only apprenticeable SOC codes



Participant Overlap

Top Apprenticeable Occupations by Number of OOD Participants



Distinct count of Case Master ID for each OES Desc. The data is filtered on Case Status, SOC Code Edit and Index. The Case Status filter keeps Employed and Service. The SOC Code Edit filter keeps 86 members. The Index filter ranges from 1 to 10.



Further Research

- Investigate pre-apprenticeship programs
- How have other states integrated apprenticeship programs into vocational rehabilitation?
- Contact target apprenticeship programs and ask about accommodations for individuals with disabilities



Conclusion

- Majority of apprentices in Ohio were white, male, 25-54, did not identify as disabled, had a GED, and were non-veterans
- 2,455 current OOD VR participants have an IPE aligned with an apprenticeable occupation
- Based on cluster analysis, “hotspots” for apprenticeship programs in construction in each region, other industries in Southeast region



Recommendations

- Use website to search programs
- Flag apprenticeable SOC Codes
- Alert counselors who have participants with apprenticeable SOC code and program in region
- Reporting mechanism for participants who enroll in apprenticeship programs
- Monitor progress and enrollment



Thank you!

