United States Census Bureau OnTheMap

LODES/OnTheMap Training

LED Partnership Workshop

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Disclaimer

- Any opinions and conclusions expressed herein are those of the authors and do not represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed.

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Agenda

- Intro/Background
- LODES Overview
- LODES Walkthrough
- OnTheMap Overview
- OnTheMap Practice
- Q&A

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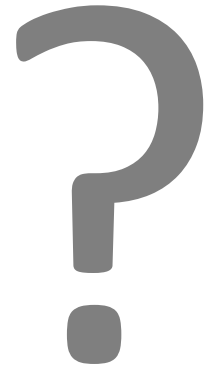
Intro/Background

What Questions Do You Have?



Would you feel comfortable explaining the following to a new work colleague?

- LEHD (or LED)
- Showing them something cool you found in OnTheMap
- How you found the cool thing in OnTheMap
- What the cool thing in OnTheMap means
- Basic information about the LODES dataset (variables, characteristics)
- Detailed info about LODES (coverage, caveats)
- The strengths/weaknesses of LODES

In what content are you most interested?

What functionality in OnTheMap do you have questions about?

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LEHD Data Products

What do you want?	Scope	Data Product
Employment, hires, separations, turnover, or earnings by detailed firm and person characteristics; quarterly time resolution; relatively short data lag	32 Indicators published quarterly, 150 million jobs records processed each quarter.	QWI
Employment for detailed or customized geography; residential patterns of the workforce; relationship between worker employment and home locations	Connects employment and residential locations, census block level.	LODES
Transitions between jobs by timing and firm or worker characteristics; transitions to/from nonemployment	Worker characteristics by firm characteristics.	J2J
Labor market outcomes for specific degree programs at selected colleges/universities	Earnings percentiles for specific grad. cohorts at certain times.	PSEO (Experimental)
Labor market outcomes for recently discharged Army veterans	Earnings percentiles for specific cohorts at certain times.	VEO (Experimental)

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Dissemination Tools/Applications

- J2J Explorer
  - j2jexplorer.ces.census.gov
  - Dashboard-style analysis tool for Job-to-Job Flows
- OnTheMap
  - onthemap.ces.census.gov
  - Map-based analysis tool for LODES
- OnTheMap for Emergency Management
  - onthemap.ces.census.gov/em.html
  - Integrates live feeds of emergency/disaster areas
- QWI Explorer
  - qwiexplorer.ces.census.gov
  - Dashboard-style analysis tool for QWI
- LED Extraction Tool
  - ledextract.ces.census.gov
  - Provides precise extracts of data (QWI only for now)
- PSEO Explorer
  - lehd.ces.census.gov/applications/pseo/
  - Dynamic bar/flow charts for Post-Secondary Employment Outcomes
- VEO Explorer
  - lehd.ces.census.gov/applications/veo/
  - Dynamic bar charts for Veterans Employment Outcomes

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Choosing Among LED Data Access Points

Data Product	Explore the data, answer questions, or get visualizations	Bulk data for use in analysis process/software	Live queries for building web applications
QWI	QWI Explorer	LED Extraction Tool Raw data download	Census Bureau API
LODES	OnTheMap OnTheMap for Emergency Management	Raw data download LED Extraction Tool – Coming in Late 2024	Future development
J2J	Job-to-Job Explorer	LED Extraction Tool Raw data download	Future Development
PSEO	PSEO Explorer	Raw data download	Census Bureau API
VEO	VEO Explorer	Raw data download	Future Development

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LEHD Origin-Destination Employment Statistics (LODES) Overview

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LODES/OnTheMap Updates

- Last Year
  - 2020 and 2021 LODES were released; 2021 TIGER/Line geography
- This Year: 2022 LODES
  - Planned for Fall 2024
  - 2022 data will again be produced using 2020 census blocks
  - OnTheMap will be updated to new geography as well (2023 TIGER)
  - Arkansas data likely added for 2022, potentially also backfilled for missing years (2019-2021)

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What is LODES?

(LEHD Origin-Destination Employment Statistics)

- Developed in mid-2000s as way to get spatially detailed commuting-like information from the LEHD data infrastructure
- Geographic patterns of jobs
  1. by employment locations
  2. and residential locations
  3. as well as the connections between the two
- Tabulated by several categorical variables
  - Age, Earnings, and Industry
  - Sex, Race, Ethnicity, and Education
  - Firm Age and Firm Size
  - Ownership, Job Dominance, and Job Type
- Raw data files available at: lehd.ces.census.gov/data/#lodes

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Details About LODES

(See LODES 8.1 Documentation: https://lehd.ces.census.gov/data/lodes/LODES8/LODESTechDoc8.1.pdf for more info.)

- Employment: Counts of “beginning-of-quarter” jobs
- Job Type:
  - A cross of ownership and job dominance (which job earns a worker the most $)
- Labor Market Segment
  - 10 categories: 3 earnings, 3 industry, 3 worker age, 1 total
  - Used for both OD and residence/workplace tabulations
- Characteristics
  - 51 categories: 3 earnings, 20 industry, 3 worker age, 2 worker sex, 6 worker race, 2 worker ethnicity, 4 education, 5 firm age, 5 firm size, 1 total
  - Used only on residence/workplace tabulations, can be crossed with labor market segments

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More Details About LODES

(See LODES 8.1 Documentation: https://lehd.ces.census.gov/data/lodes/LODES8/LODESTechDoc8.1.pdf for more info.)

- File Types:
  - **rac** – Residence Area Characteristics
  - **wac** – Workplace Area Characteristics
  - **od** – Origin-Destination; 2 flavors:
    - **main** – Work in state and live *in state*
    - **aux** – Work in state and live *out of state*
- File organization:
  - State, file type, year, job type (ownership/dominance), labor market segment, characteristic
  - Example: al_rac_S000_JT00_2021.csv.gz is a
    - Gzipped CSV file (".csv.gz") containing
    - Residence data ("rac")
    - For Alabama ("al")
    - In the Total labor market segment ("S000")
    - In 2021

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LODES Coverage "Scorecard"

Year(s)	Count of Available States	Missing Employment in States/Territories[1]	Federal Jobs	Race, Ethnicity, Education, Sex variables	Firm Age, Firm Size variables[2]
2002	46	Arkansas, Arizona, DC, Massachusetts, Mississippi	No	No	No
2003	47	Arizona, DC, Massachusetts, Mississippi	No	No	No
2004-2008	49	DC, Massachusetts	No	No	No
2009	49	DC, Massachusetts	No	Yes	No
2010	50	Massachusetts	Yes	Yes	No
2011-2016	51	(none)	Yes	Yes	Yes
2017-2018	50	Alaska	Yes	Yes	Yes
2019-2021	48	Alaska, Arkansas, Mississippi	Yes	Yes	Yes

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[1] Employment data in Puerto Rico and the U.S. Virgin Islands are missing from all years of LODES.
[2] Firm Age and Firm Size variables are only available on the All Private Job Type (JT02).

LODES Variable Crossings

Data Type	Residence Block	Workplace Block	Labor Market Segments	Characteristics		
			Total, Industry (3), Earnings (3), Worker Age (3)	Total, NAICS Sector (20), Earnings (3), Worker Age (3)	Race (6), Ethnicity (2), Education (4), Sex(2)[1]	Firm Age (5), Firm Size (5)[2]
Origin-Destination (OD)	Yes	Yes	Yes	No		
Residence Area Characteristics (RAC)	Yes	No	Yes	Yes	Yes	No
Workplace Area Characteristics (WAC)	No	Yes	Yes	Yes	Yes	Yes

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[1] Race, ethnicity, education, and sex: only in data 2009 and later.

[2] Firm age and firm size: Only in available years (2011 and later) and only for All Private Job Type (JT02).

LODES in the Extraction Tool

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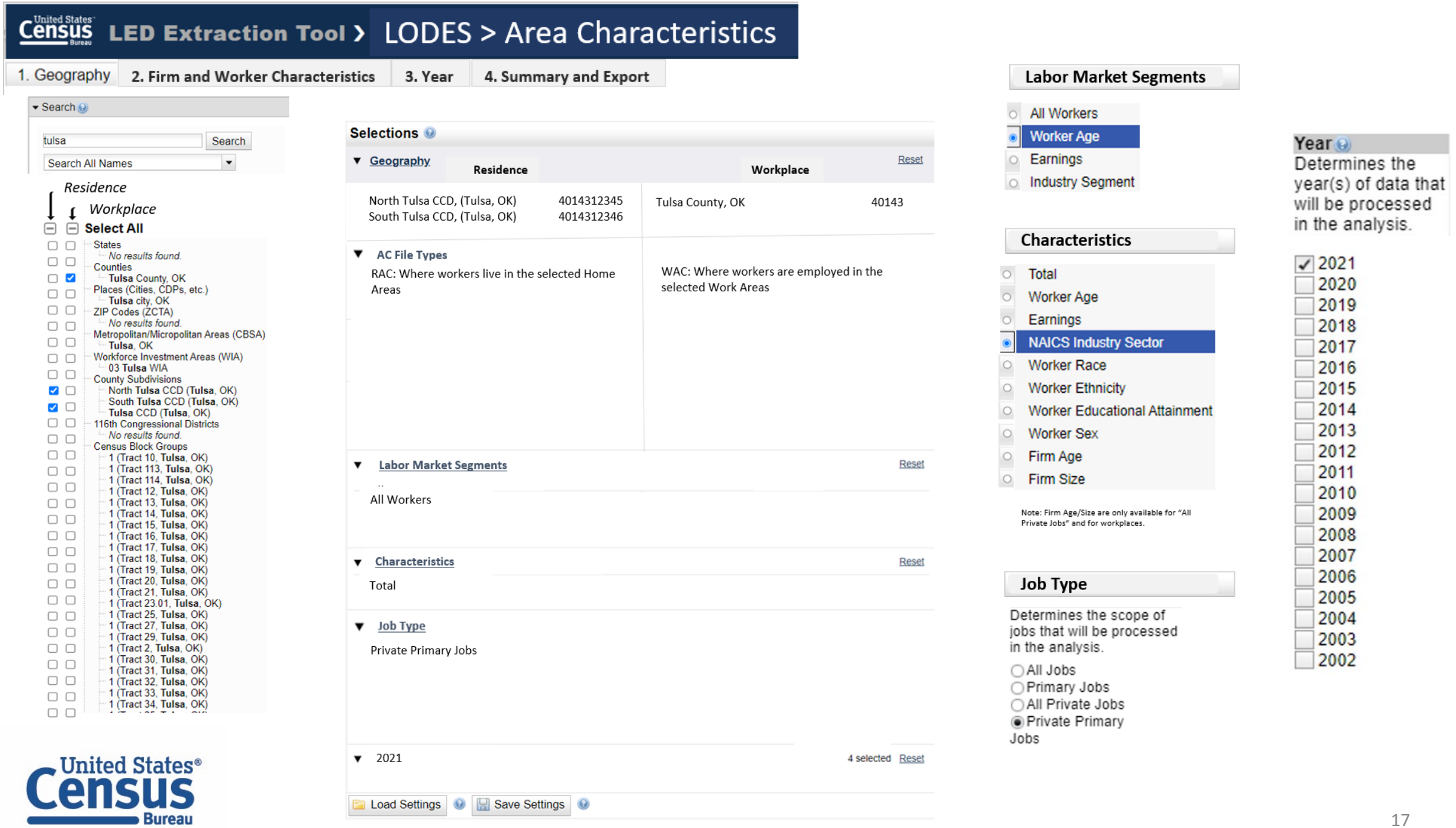

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OnTheMap Overview

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What is OnTheMap

- OnTheMap provides an interface for interacting with the LODES data
- A resource for
  - mapping the employment patterns of workers
  - identifying small-area workforce characteristics
- Outputs maps, charts, tables, and some reports summarizing answers to questions where jobs are located and where workers holding those jobs live.
- OnTheMap Documentation: lehd.ces.census.gov/applications/help/onthemap.html

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OnTheMap Basic Details

- All years of data (2002-2021) available.
- Only 4 of the 6 job types available (federal employment as a separate job type is not accessible via the application)
- 6 analysis types
- Any supported legal/statistical areas (20+) plus custom areas can be used for analyses
- Imports from various spatial data sources and exports to PDF, Excel, Images, etc.

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LODES/OnTheMap References

- LODES
  - LODES Data Overview
  - LODES Data Notices
  - LODES Technical Doc
  - Design Comparison of LODES and ACS Commuting
  - Microdata Comparison of LODES and ACS Commuting
  - LODES and Confidentiality Protection
  - LED in Action: LODES
- OnTheMap
  - OnTheMap Help
  - OnTheMap Analysis Guides
  - Additional OnTheMap Tutorials
  - FAQs
  - LED in Action: OnTheMap

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OnTheMap Practice

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OnTheMap Basic Walkthroughs

- Go to Analysis Guides page of OnTheMap Help: lehd.ces.census.gov/applications/help/onthemap.html#!analysis_guides
- We'll work through a few of them:
  - Area Profile: lehd.ces.census.gov/doc/help/onthemap/OnTheMapSampleWorkAreaProfileAnalysis.pdf
  - Distance/Direction: lehd.ces.census.gov/doc/help/onthemap/OnTheMapSampleDDAnalysis.pdf
  - Inflow/Outflow: lehd.ces.census.gov/doc/help/onthemap/OnTheMapSampleIOAnalysis.pdf
- Try out the others!

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Walkthroughs/Demos of OnTheMap

onthemap.ces.census.gov

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More Advanced Features

- Homing in on specific labor market segments/characteristics
- Defining custom analysis areas
- Multi-Area selections: aggregation vs comparisons
- Paired Area analyses
- Imports and exports

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Questions and Answers

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Questions – For You!

Time to think like an application developer…

- What are your favorite features of OnTheMap?
  - Can't live without it?
  - Very useful?
  - Nice to have?
- How does OnTheMap get in the way of your analyses?
  - Workflow?
  - Perception?
  - Confusion?
- What features would you like to see in OnTheMap?
  - Functionality?
  - Other datasets?
- What features would you like to see in the LODES?
  - Variables, different crossings, categories…
  - What's "missing" from the perspective of your particular analyses?

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Getting Help

- First: Read the Documentation!
- Second: Email us!
  - LODES/OnTheMap/OnTheMap for Emergency Management: CES.OnTheMap.Feedback@census.gov
  - General LEHD/LED Questions: CES.Local.Employment.Dynamics@census.gov
  - These email addresses are monitored by several people, so it's the fastest way to get a response.

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