

AUTOMATION IN EARLY CHILDHOOD EDUCATION

Longmont, CO | Office of Data and Analytics

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Keywords:

Automation, Data Architecture, Snowflake

Summary:

To make informed decisions, the Department of Children, Youth, and Families relies on data about Early Childhood Education (ECE). This project aims to help enable the department to receive and utilize the latest data by automating data collection, processing and displaying using Snowflake and PowerBI. Using SQL and Python, Ben imported data from various sources into Snowflake for processing. From there, the data is then connected directly to PowerBI to populate existing tables and graphs and provide the most current data possible.

EARLY CHILDHOOD EDUCATION DASHBOARD UPDATES

City of Longmont, CO - Office of Data and Analytics

Lynn Yarmey — Data and Analytics Manager

coding it forward >



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EARLY CHILDHOOD EDUCATION

Project Overview

EARLY CHILDHOOD EDUCATION

City of Longmont Early Childhood Education (ECE) Dashboard



Demand

Supply

Quality

Barriers

Regional
Comparison

FAQ

Demand data tracks the historical and current demand for ECE in Longmont. This page has information on the enrollment status for 3 to 4-year-olds and population trends for children ages 0-5. It also has demographic data on the general Longmont population which provides additional context on residents.

Longmont Enrollment Overview

2021



[View FAQ page](#)

1,169

▼ -2% from the last year

3 to 4-Year-olds Enrolled
In Formal Care (2021)

Last Updated: Mar-08-2023
Source: U.S. Census

563

▼ -28% from the last year

3 to 4-Year-olds Not Enrolled
In Formal Care (2021)

Last Updated: Mar-08-2023
Source: U.S. Census

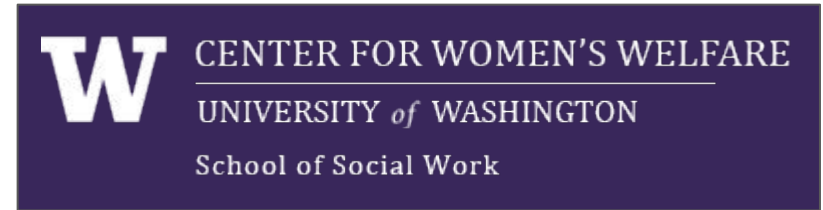
1,732

▼ -12% from the last year

Population of 3 to 4-Year-olds
(2021)

Last Updated: Mar-08-2023
Source: U.S. Census

DATA SOURCES



Colorado Evaluation & Action Lab
UNIVERSITY OF DENVER



COLORADO
Information Marketplace

UPDATING THE DASHBOARD

To automate or not to automate?

SNOWFLAKE AND AUTOMATION

What does Snowflake offer?

- Cloud-based data storage and handling
- PowerBI connection
- Account and access administration/privileges
- Convenient and useful Libraries



DATA SOURCES REVISITED

Source	Data in Use	Data Available
Decennial Census	2020	2020
5-Year Summary	2016-2021	2019-2023
1-Year Summary	2020	2023
Women's Welfare Self-Sufficiency Report	2022	2022
Early Care and Education Data Dashboard	2019	2021
Licensed Child Care Facilities	2023	2025

AUTOMATION PIPELINE



COLORADO
Information Marketplace



snowflake



Power BI

API CONFIGURATION

```
1 CREATE OR REPLACE NETWORK RULE cim_api_network_rule
2   MODE = EGRESS
3   TYPE = HOST_PORT
4   VALUE_LIST = ('data.colorado.gov:443');
```

```
CREATE OR REPLACE EXTERNAL ACCESS INTEGRATION apis_access_integration
  ALLOWED_NETWORK_RULES = (public_api_rule)
  ENABLED = TRUE;
```

```
try:
    response = requests.get(url, timeout=TIMEOUT_SECS)
    response.raise_for_status()
    csv_text = response.text
except requests.exceptions.RequestException as e:
    return f"❌ Error fetching CSV: {str(e)}"
```

DATA INSERTION

```
csv_data = StringIO(csv_text)
df = pd.read_csv(csv_data, dtype=str)
```

```
session.write_pandas(
    df,
    table_name=TABLE,
    database=DATABASE,
    schema=SCHEMA,
    auto_create_table=True,
    overwrite=True
)
```

	PROVIDER_ID	PROVIDER_NAME	PROVIDER_SERVICE_TYPE	STREET_ADDRESS	CITY	STATE	ZIP	C ↓ ↕ 🔍
0	1705435	Longs Peak Learning Center	Child Care Center	1444 E 3RD AVE	Longmont	CO	80501	Boulder
1	1713615	Wild Plum Center- Longs Peak	Child Care Center	851 Meeker Street	Longmont	CO	80504	Boulder
2	1721702	Twin Peaks Preschool	Child Care Center	340 South Sunset Street	Longmont	CO	80501	Boulder
3	1724552	Kristin Bland	Large Family Child Care Home	None	Longmont	CO	80504	Boulder
4	1733469	Juniper Hill Ranch Camp	School-Age Child Care Center	8550 N 39th St	Longmont	CO	80503	Boulder
5	1750644	Aimee Miller	Large Family Child Care Home	None	Longmont	CO	80504	Boulder
6	1754373	Rachel Haynes	Family Child Care Home	None	Longmont	CO	80501	Boulder
7	1763296	YMCA UCC	School-Age Child Care Center	1500 9th Ave	Longmont	CO	80501	Boulder
8	1767026	Here We Grow	Child Care Center	630 15th Ave Ste 105	Longmont	CO	80501	Boulder
9	1768967	Sonya Milam	Large Family Child Care Home	None	Longmont	CO	80503	Boulder

CONNECTING POWERBI

×

Configure snowflake_directq...

extensionDataSourceKind

Snowflake

extensionDataSourcePath

microsoft_partner.east-us-2.azure.snowflakecomputing.com;DEMO_

Authentication method

OAuth2

Privacy level setting for this data source

Public

☒ End users use their own OAuth2 credentials when accessing this data source via DirectQuery. [Learn more](#)

Sign in

Cancel

PROJECT AS A PROCESS

What can be gained outside of the deliverable?

A TEMPLATE FOR FUTURE USE

What is gained from focusing in on the monthly updating data and its automation?

- Application in other departments
- Start a partnership with a service provider
- Assess its viability and utility
- Thorough documentation

TAKEAWAYS

- Snowflake can be very effective but requires very specific setup
- Environment is king
- Timelines are flexible
- Dealing with blocks
- Coming prepared is key

THANK YOU!

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