

Opportunity Title: Data Analysis Fellowship at the US Dept. of Transportation

Opportunity Reference Code: USDOT-2020-0005

Organization U.S. Department of Transportation (DOT)

Reference Code USDOT-2020-0005

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A complete application consists of:

- An application
- Transcripts – [Click here for detailed information about acceptable transcripts](#)
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

All documents must be in English or include an official English translation.

If you have questions, send an email to USDOT@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline 10/12/2020 3:00:00 PM Eastern Time Zone

Description **Applications may be reviewed on a rolling-basis and this posting could close before the deadline.*

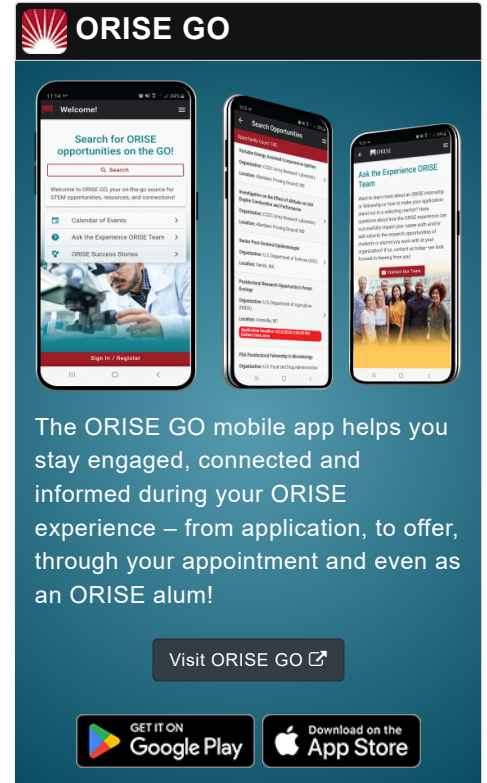
USDOT Office/Lab and Location: A research opportunity is available at the U.S. Department of Transportation (USDOT), Bureau of Transportation Statistics (BTS) located in Washington, D.C.

Research Project: Have you ever wanted to influence and improve the effectiveness of transportation data at the national level? Are you detail-oriented and committed to producing high-quality data products? Come apply your data analytic skills for the public good and join us as we lead the development of new and improved national statistical products and visualizations. We are looking for a graduate student interested in learning new skills and techniques from our data scientists who are working with aviation data.

Throughout the course of this research project, you will use different cloud service solutions such as Virtual Machine, Kafka, Zookeeper, Databricks, Delta Lake, SQL Database, Data Warehouse, HDInsight, Data Factory, Azure Synapse, Glue, Hive, Kinesis stream, Lambda, Redshift, and Data Lake to:


- Connect to new SWIM data streams,
- Perform ETL process on XML and Parquet data formats,
- Parse the FAA SWIM XML messages with Schema Validation into Spark Dataframes
- Create a new Spark Dataframe for each message type and write to Delta Silver and Gold Tables in parallel.
- Batch process the new aviation data into the Datalake.


You will also have the opportunity to create On-time Performance estimates for Airports and Airlines and learn how to develop visualization dashboards for the real-





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time FAA SWIM data streams. Your project will include the use of Tableau and Python visualization libraries, Seaborn, Matplotlib, Plotly, Dash, Folium, and Magellan to visualize:

- On-time Performance estimate of Airport/Airline by causes.
- Weather Impact on Air System,
- Real-time Flight Mapping,
- Operational and Economic Impact of Delays/Diversions/Cancellations.

Learning Objectives: This fellowship provides a learning opportunity to strengthen your skills in data compilation, statistical analysis, machine learning, and data mining. You will learn techniques to collect, organize and unify aviation datasets from different sources.

Mentor(s): The mentor for this opportunity is Dr. Mehdi Hashemipour (m.hashemipour@dot.gov) If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: September 1, 2020. All start dates are flexible and vary depending on numerous factors.

Appointment Length: The appointment will initially be for nine months, but may be renewed upon recommendation of the USDOT contingent on the availability of funds.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience.

About BTS: Who are we? We are the U.S. Department of Transportation's Bureau of Transportation Statistics (BTS). BTS is an independent federal statistical agency that provides objective, comprehensive, and relevant information on the extent and use of the Nation's transportation systems. Learn more about the work we do at www.bts.dot.gov.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and DOT. Participants do not become employees of DOT, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program.

Questions: After reading, if you have additional questions about the application process please email USDOT@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should be currently pursuing or have received a master's or doctoral degree in one of the relevant fields. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Demonstrated experience with Python, PySpark and SQL
- Experience preferred but not required on Tableau, SCALA, Dash, Folium,

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Databricks, ArcGIS, Git, and Power BI

- Strong written and verbal communications skills
- A self-starter with the ability to perform work with limited supervision and changing outcome goals
- Knowledge of and interest in U.S. transportation systems
- Experience presenting results in a clear, effective, and attractive manner to inform next steps
- Proficiency translating high level business requirements into detailed design specifications
- Ability to work across various offices and work units to obtain information, collaborate on data-related projects, and validate findings and conclusions

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
 - **Business** (2 )
 - **Communications and Graphics Design** (1 )
 - **Computer, Information, and Data Sciences** (16 )
 - **Earth and Geosciences** (1 )
 - **Engineering** (7 )
 - **Life Health and Medical Sciences** (1 )
 - **Mathematics and Statistics** (10 )
 - **Physics** (3 )