ANNUAL CONFERENCE 2025 BRECKENRIDGE

# Unlock the Power of Data: Create Your Own Performance Dashboards

Kayley Smiley, MS

Chris Wilson, MPA



## Goal for Workshop

Learn how to create dashboards to monitor government performance or spending.

- You will receive our example code, which can be applied to fit your needs.
- You will also find a step-by-step guide on creating a dashboard in Power BI at the end of this slide deck.

## Agenda

- Overview of tools to create dashboards.
- Dashboard examples.
- Hands-on dashboarding.

# Tools to create dashboards

- Microsoft Power BI
  - Offers enterprise-level licenses.
  - User-friendly.
  - Publish dashboards to government websites.
- Python
  - Free.
  - Requires some technical knowledge.
  - Extensive online resources.
  - Easy to recycle code for new dashboards.
  - Beneficial for internal dashboards.

## Homeless Encampment locations

## Homeless Encampments Audit: Map

Filter by locat	tion type
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All

This interactive map shows locations of encampment cleanups, assessments, and outreach that city agencies conducted from Jan. 1, 2022, through June 30, 2022. **Read our complete audit report** on homeless encampments by visiting DenverAuditor.org.



- Cleanup
- Early Intervention Team
- Encampment Assessment
- Homeless Outreach Team
- Park Rangers
- RV Assessment
- Storage Facility
- Strategic Outreach to Large Encampments Team

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- Street Enforcement Team
- Substance Use Navigators



Source: Created by the Denver Auditor's Office audit analytics team.

## Travel card transactions by risk level



Source: Created by the Denver Auditor's Office audit analytics team.

## Travel card transactions by risk level



# Key steps to create dashboards

- 1. Identify and collect data.
- 2. Identify field(s) to visualize information.
- 3. Review and clean any issues with identified fields.
- 4. Create custom fields to store calculations, if needed.
- 5. Create visualization to identify patterns.

## Case study data and metrics

- We will use a set of fake city employee reimbursements from January 2022 through November 2024.
- We will go through steps to visualize:
  - Count of expense reports each month.
  - Average number of days to review each reimbursement request.

## Python hands-on exercises

Please open the link we provided for the Google Colab notebook.

## Power BI example

- The next set of slides provide a step-by-step guide on how to use Power BI to create dashboards.
- The example uses the same expense report data we used in the hands-on exercises.
- We will create a dashboard that shows count of reimbursements per month and average time for manager review.

# **Step 1:** Open data in Power BI.

- Select "Excel workbook" as the data source, which will open the file explorer.
- Locate the data in your folders, select the data, then select "Open."



In22_nov24	Excel Files ( v/ x/sx;*x/sm;*x/st
	Open 👻 Cancel

### Step 2: Load the data.

- 1. Select the correct sheet.
- 2. Select "Load."

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- 🛚 🛑 ER\_report\_jan22\_nov24.xlsx [1]
- 🗹 💭 Sheet1

ER_Number	Created_by_Worker	Worker_Cost_Center	
ER-25006	812145	5533130 Child Welfare - Direct Services Special Fund	
ER-25014	752124	5073100 Infrastructure Administrative	1
ER-25195	203016	4001300 Excise & Licenses - Code Enforcement	
ER-25205	613405	7033400 My Denver Program	
ER-25206	613405	0117100 Division of Workforce Development Admin	
ER-25234	204142	7021900 Parks Planning, Design & Construction	
ER-25293	422281	5527130 Prevention	
ER-25394	462425	0142300 Development Services - Inspections	
ER-25408	272511	5073100 Infrastructure Administrative	
ER-25414	812145	0107900 Disposable Bag Program Administration	
ER-25416	301714	6502400 Food Safety and Cannabis	
ER-25438	462503	5533010 Child Welfare Administation	
ER-25439	462503	5073300 Infrastructure Bridge	
ER-25440	462503	5064400 Right of Way Services - Development Service	
ER-25442	462503	5533320 Child Welfare Services - Family Engagement	
ER-25453	129183	5533110 Child Welfare - Direct Services	
ER-25454	129183	4511800 City Attorney Victim Assistance	
ER-25470	32264	0142300 Development Services - Inspections	
ER-25480	25103	7040700 Outdoor Recreation	
ER-25481	25103	8110200 DPL City Librarian's Office	
ER-25482	25103	5533110 Child Welfare - Direct Services	
ER-25510	189061	5533400 Child Welfare Services - Chafee Program	
ER-25511	189061	6506100 Administration	
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**Step 3:** Open the Power Query Editor.

Select "Transform data" in the "Home" tab.



# **Step 4:** Change data types, as needed.

- 1. Review data types for each column.
- 2. Right click a column to change the data type.
- 3. Select "Change Type."
- 4. Select the new data type.

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12/13/2024 12:00:00	Remove Errors	И	
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# **Step 5:** Create a custom column.

1. Select "Add Column" tab.

2. Select the "Custom Column" option.

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## **Step 5, continued:** Create a custom column.

- 1. Enter new column name.
- Insert columns into the custom column formula.
   Select "OK."

#### **Custom Column**



No syntax errors have been detected.



# **Step 6:** Transform data, as needed.

- 1. Right click the column.
- 2. Select "Transform."
- 3. Select the new unit for the data in the column.

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**Step 6, continued:** Transform data, as needed.

- 1. Right click the column.
- 2. Select "Transform."
- 3. Select the new unit for the data in the column.

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Step 7: Create a "Group By."

- 1. Select the "Transform Tab."
- 2. Select the "Group By" option.

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## **Step 7, continued:** Create a "Group By."

- 1. Select the "Advanced" option.
- 2. Select "ER\_Date" to group by.
- 3. Enter the column names and adjust the operations for each aggregation.



#### Group By





**Step 8:** Sort grouped data.

 Select the drop-down icon on the date column.
 Select "Sort Ascending."



**Step 9:** Apply changes in the Query Editor to data in Power BI.

 Select the "Home" tab.
 Select the "Close & Apply" option and click "Apply."

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### Step 10: Build dashboard.

 On the "Home" tab in Power BI, select the type of visual.
 Add the columns from the "Data" tab to the x-axis and y-axis fields.

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### **Step 10, continued:** Build dashboard.

- Select "Year" and "Month" from the "ER\_Date" column to use as the xaxis.
- 2. Add the "Average Review Time" to the "Column yaxis."
- 3. Add the "Count of Expense Reports" to the "Line yaxis."



### **Step 10, continued:** Build dashboard.

- 1. Rename axis labels by selecting the drop-down icon.
- 2. Select "Rename for this visual."
- 3. Enter new name.

	Remove field w Time
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ER_Date 🗸	Standard deviation
Year	Variance
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Sum of Average Review Time 🛛 🗸	New quick measure

### **Step 10, continued:** Build dashboard.

Review visual in the window to the left of the "Visualizations" and "Data" tabs.



**Step 11:** Publish dashboard.

- 1. In the "Home" tab, select "Publish."
- 2. Select the destination to publish to.

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ige Review Time and Count of Expense Reports by Year and Month											s	◎ ≫	Visualizations			
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# THANK YOU!

- <u>Christopher.Wilson@denvergov.org</u>
  - <u>Kayley.Smiley@denvergov.org</u>



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- We appreciate your feedback!

