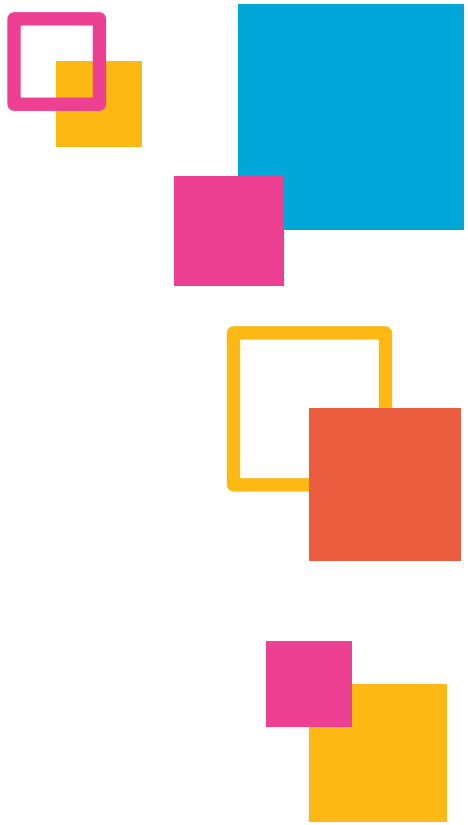
#JOINdata
@lookerdata



Hands-on Lab: Dive into the Details: Powerful Data Drills

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Select the **Dive into the Details: Powerful Data Drills** lab in the drop-down

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Agenda

Introductions

Storytelling with data

Liquid

Custom limits & sorts

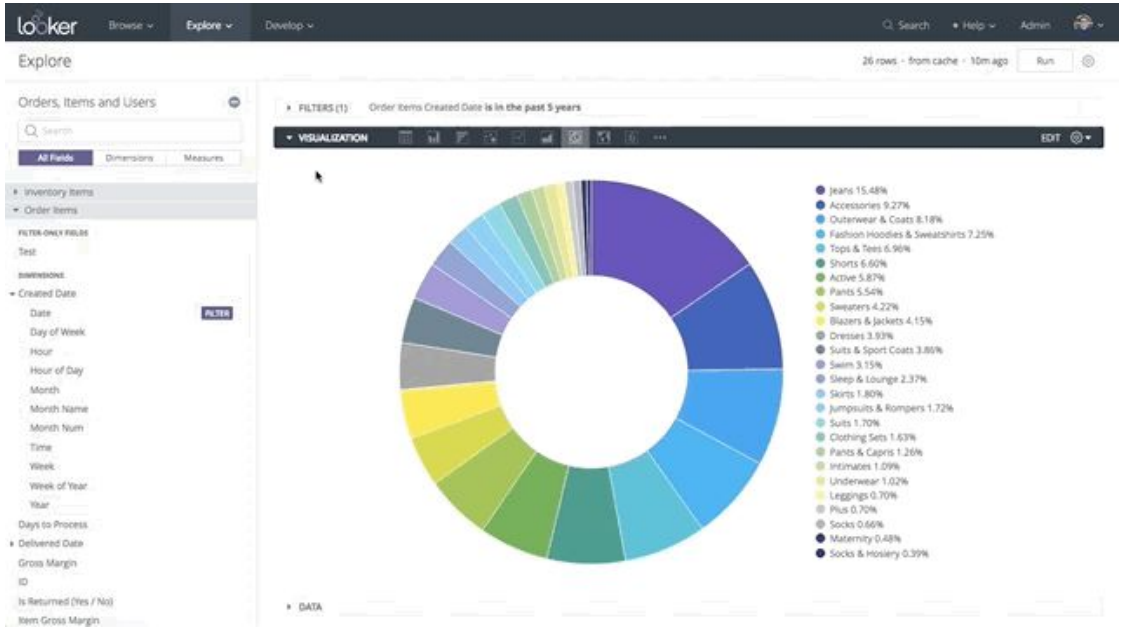
Visual drills

Questions

Storytelling with data (drills)

What is drilling?

Drills allow you to go from **high-level metrics** like sums and counts into the **row-level data** that goes into those calculations. This has the benefit of showing general trends, while also allowing deeper dives to find outliers that may not surface at the high level.



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Why drill?

A great place to start is to talk to your users and ask what questions come up when viewing reports.

- **What is the next question they have after seeing a number?**
- Do certain visualizations always lead them to ask iterative questions?
- What values do they think might have contributed to a number that they'd like to confirm?

Designing your drills with these questions in mind will improve your users' experience and help them tell better stories from the data.

Drill Examples

Adding drilling capabilities to metrics opens up the door to follow-up questions and diving deeper into the story of your data.

- Drill into out of stock items to see which orders will be affected.
- Click on an NPS score to show the names of the least satisfied customers.
- Show distribution of average time spent on a webpage in a boxplot drill.
- Reveal and understand outliers in an average number.
- Understand the breakdown of sources that feed into an overall number (e.g., contracts, premier offerings, etc).

Liquid

What is Liquid?

Liquid is an open-source, Ruby-based template language created by Shopify. It can be used in in conjunction with LookML to build more flexible, dynamic code.

Liquid code is denoted by braces {} and falls into 3 different categories:

1. **Objects**: Tell Liquid where to show content on a page

```
dimension: product_image {
  sql: ${product_id} ;;
  html: <img src="http://www.acme.com/product_images/{{ value }}.jpg" /> ;;
}
```

1. **Tags**: Create the logic and control flow for templates

```
label: "{% if _user_attributes['customer'] == 'A' %} Standard Margin
        {% else %} Gross Margin {% endif %}"
```

1. **Filters**: Change the output of a Liquid object

```
{% assign last_filter = part_split_at_sorts | first %}
{% assign user_filters = user_filters | append:'&f' %}
```


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Using Liquid in Looker

There are two places in LookML where Liquid can be used to affect a drill:

- The `html` parameter
- The `link` parameter

A reference sheet for all available Liquid variables can be found here.

Liquid Parameters

Referencing LookML Objects

Variable	Definition	Example Output
`value`	The raw value of the field returned by the database query.	8521935
`rendered_value`	The value of the field with Looker's default formatting.	$8,521,935.00
`filterable_value`	The value of the field formatted for use as a filter in a Looker URL.	8521935
`link`	The URL to Looker's default drill link. Note that some fields will not have any default link.	/explore/thelook/orders?fields=orders.order_amount&limit=500
`linked_value`	The value of the field with Looker's default formatting and default linking.	$8,521,935.00

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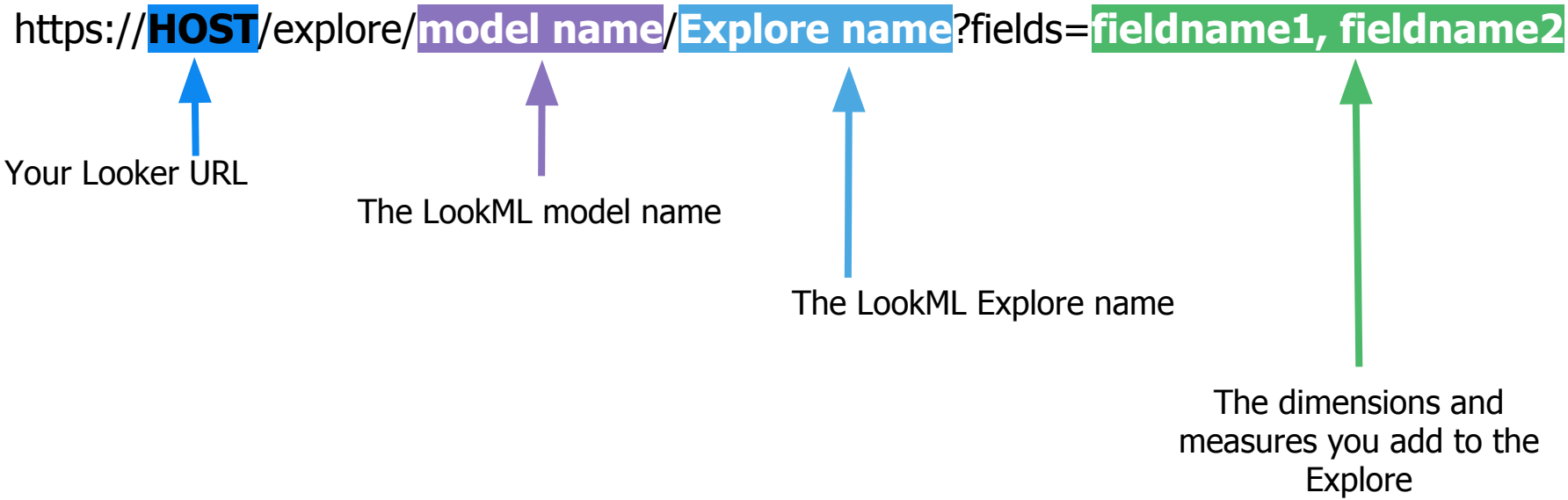
Looker URLs

Components of a URL



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Components of a URL

https://HOST/explore/model name/Explore name?fields=fieldname1, fieldname2

`&pivots=fieldname` sets the pivots

`&f[fieldname]=FOOBAR` sets the filters

`&sorts=fieldname` sets the sort fields

`&limit=500` sets the limit fields

`&vis=vis settings` sets the visualization settings

`&filter_config=filter settings` sets the filters settings (`contains`, etc)

`&dynamic_fields=[table calc or custom fields]`

Components of a URL

Try it out! Navigate to join2019.looker.com and open the **Order and Sales** Explore. Play around with adding fields and filters, and changing the visualization settings.

Looker will shorten the URL components into a hash, so to see the full URL type **Command-U** for a Mac and **Ctrl+U** for Windows.

It may help to decode the URL to better see the components.

Components of a URL

You can use `{{ link }}` to reference the URL to Looker's default drill link. By adding in URL parameters like `limit` or `sort`, you can change the behavior of the drill.

```
{{ link }}&limit=500
```

Let’s build

Custom limits and sorts

Custom limits and sorts

Default drill path:

- 500 rows
- Sorted by first measure

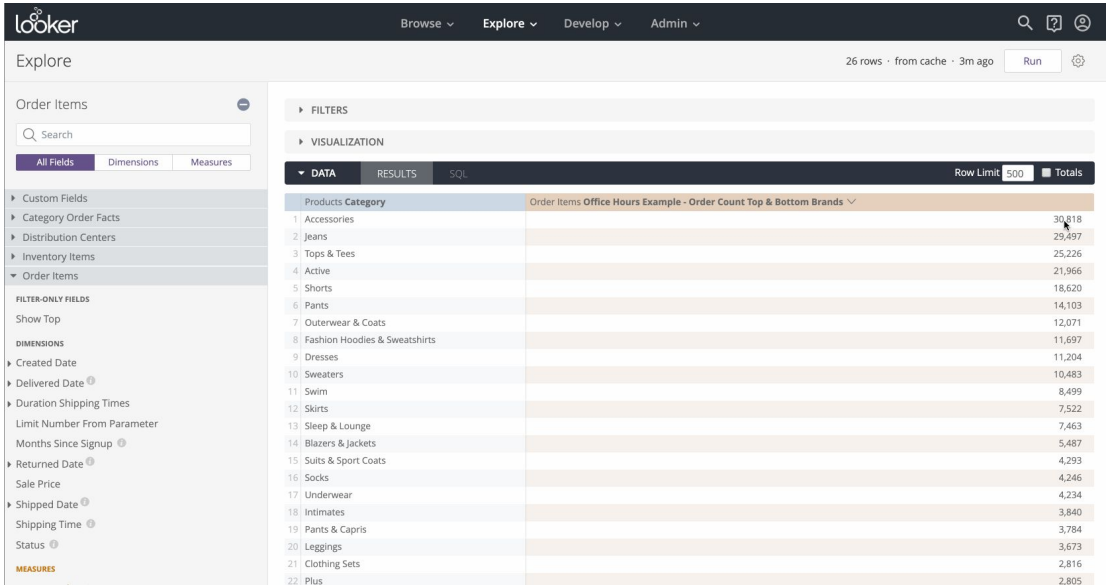
Custom drill path:

- Limit rows displayed
- Choose the measure and direction to sort by

We can accomplish this using **Liquid** and adding to the **URL** of our drill path!

Custom limits and sorts example

Your fellow project managers wish to see the top 20 brands, bottom 20 brands, and number of orders for each brand when they drill into a category. We can create multiple custom drills!



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Custom limits and sorts format

You can control the number of rows that are displayed in a drill by adding **&limit=##** to the URL and you can control the sorting by adding **&sorts='view_name.field_name'**

```
{{link}}&limit=number
{{link}}&sorts=fieldname+asc
```

Because you can create multiple links, you can make multiple drills with different sorts.

```
measure: order_count {
  type: count
  drill_fields: [detail*]
  link: { label: "Explore Top 20 Brands"
          url: "{{link}}&sorts=order_items.order_count+desc&limit=20"}
    link: { label: "Explore Bottom 20 Brands"
          url: "{{link}}&sorts=order_items.order_count+asc&limit=20" }}
```


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Custom limits and sorts exercise

Try it out! As the product manager of an e-commerce clothing store, you need to be able to see how many orders are being made in each product category. The **Order Items** Explore is a good place to start.

Let's add two custom drills to the count measure so that our fellow project managers can see the top/bottom 20 brands and number of orders for each brand when they drill into a category.

```
measure: order_count {
  type: count
        }
```

Custom limits and sorts exercise

```
measure: order_count {
  type: count
  drill_fields: [products.brand, order_count]
  link: { label: "Explore Top 20 Brands"
          url: "{{link}}&sorts=order_items.order_count+desc&limit=20"}
   link: { label: "Explore Bottom 20 Brands"

          url: "{{link}}&sorts=order_items.order_count+asc&limit=20" }}
```

Visual drilling

Visual drilling

Default drill path:

- Looker automatically picks a visualization based on the data
- Often results in a data table for complex drill configurations

Custom drill path:

- Choose the visualization and data to be displayed
- Enables you to consume much larger quantities of data at once

We can accomplish this by setting `vis_config` in the **URL**

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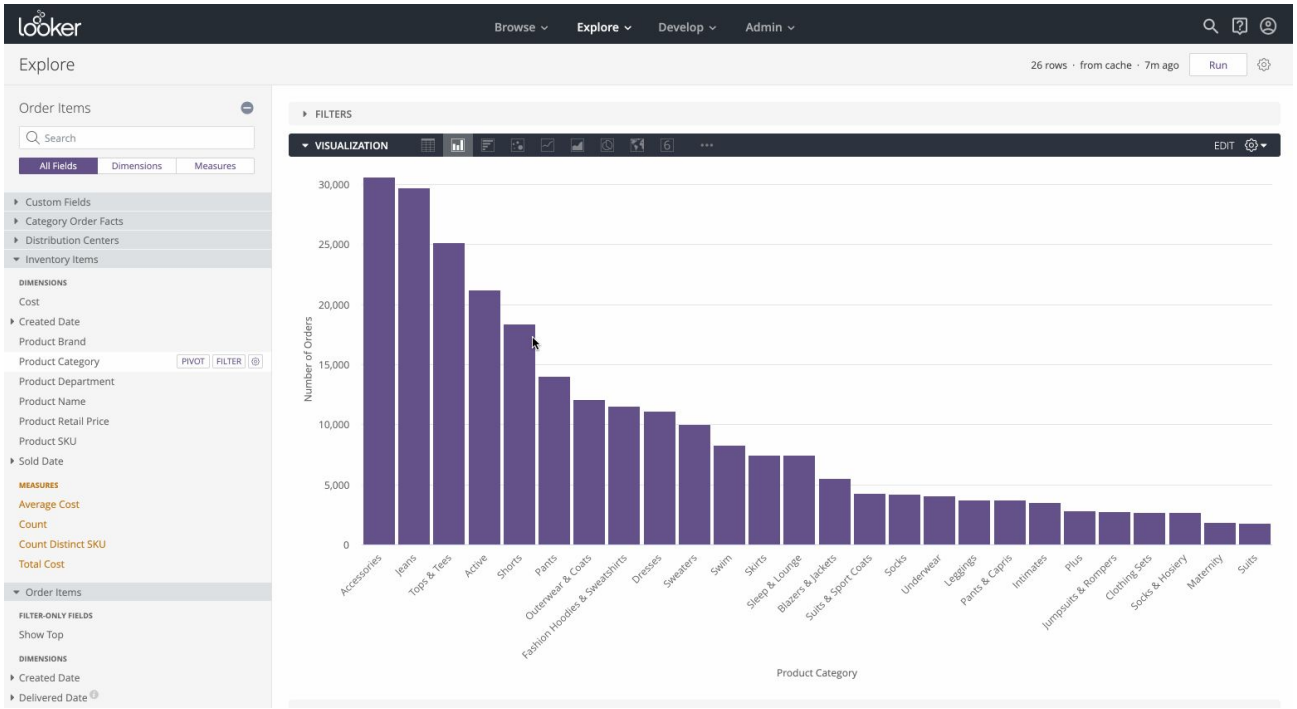
Visual drilling example



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Visual drilling

It's possible to make these drill visualizations highly customized by setting the visualization configuration in the URL. Visualization type, colors, labels, and all other attributes can be controlled in the URL.

https://**HOST**/explore/**model name**/**Explore name**?fields=**fieldname1, fieldname2**&vis=**vis settings**

{{ link }}&vis=**vis settings**

Visual drilling

Using the `assign` tag in Liquid allows you to predefine all of the visualization settings as JSON strings. You can then apply those settings to the drill link using Liquid substitution.

```
link: {
    label: "Label Text Here"
    url: "
      {% assign vis_config = 'VISUALIZATION SETTINGS' %}
    {{link}}&vis_config={{ vis_config | encode_uri }}
      "
  }
```

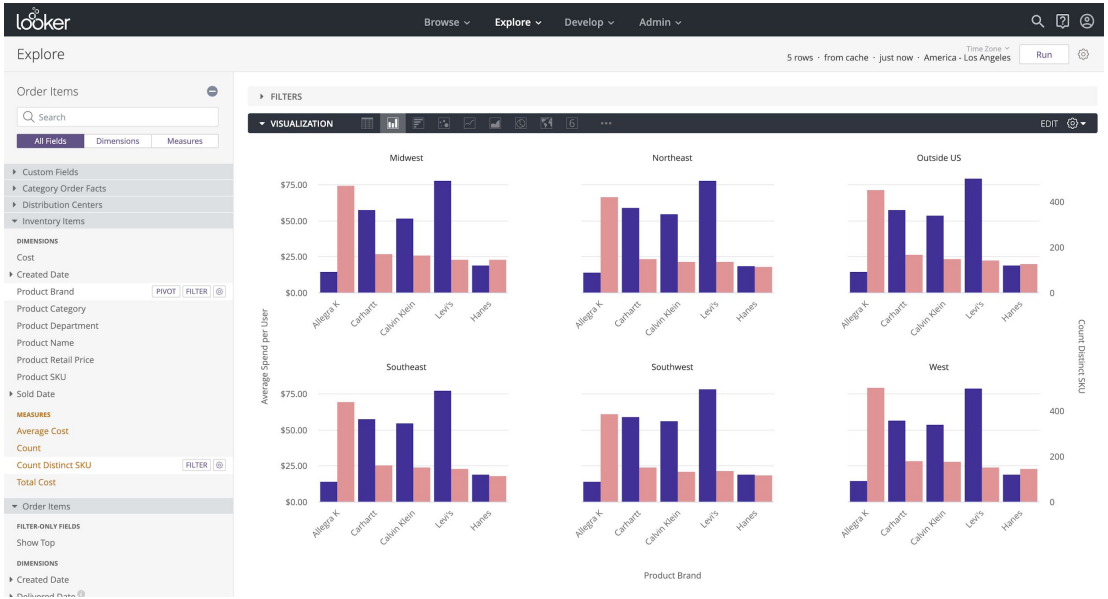
Visual drilling

GitHub repo for URL generator:

https://xin-looker.github.io/

Visual drilling exercise, part 1

The first step to creating a custom visualization drill is to use an Explore to build the visualization you want in the drill modal. This will serve as the basis for the visualization setting in the URL.



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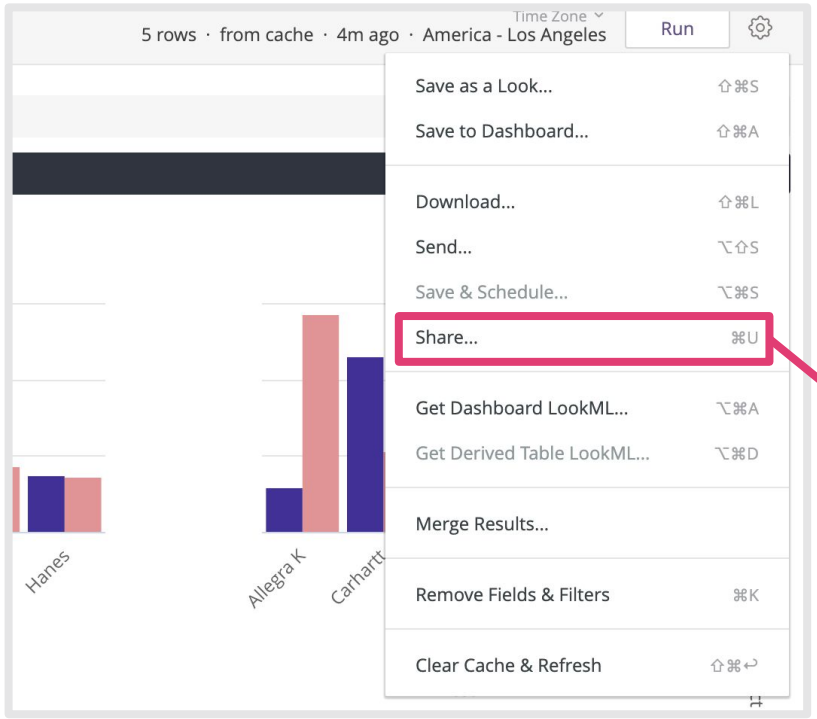
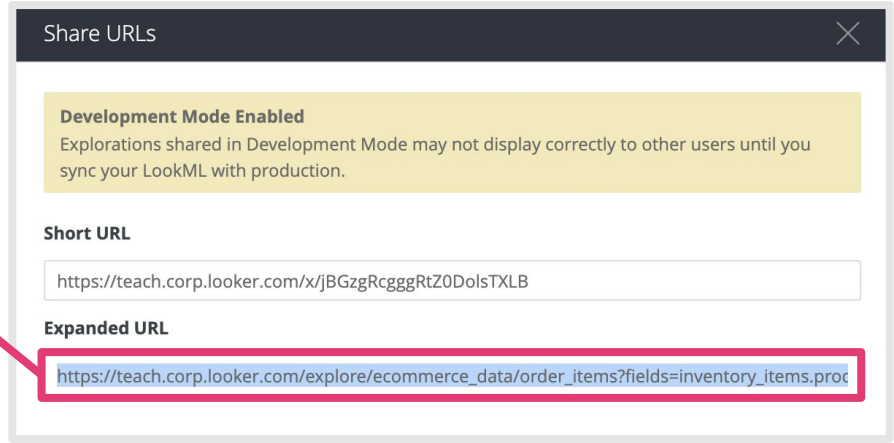
Visual drilling exercise, part 2

Get the expanded URL, which contains the visualization settings.

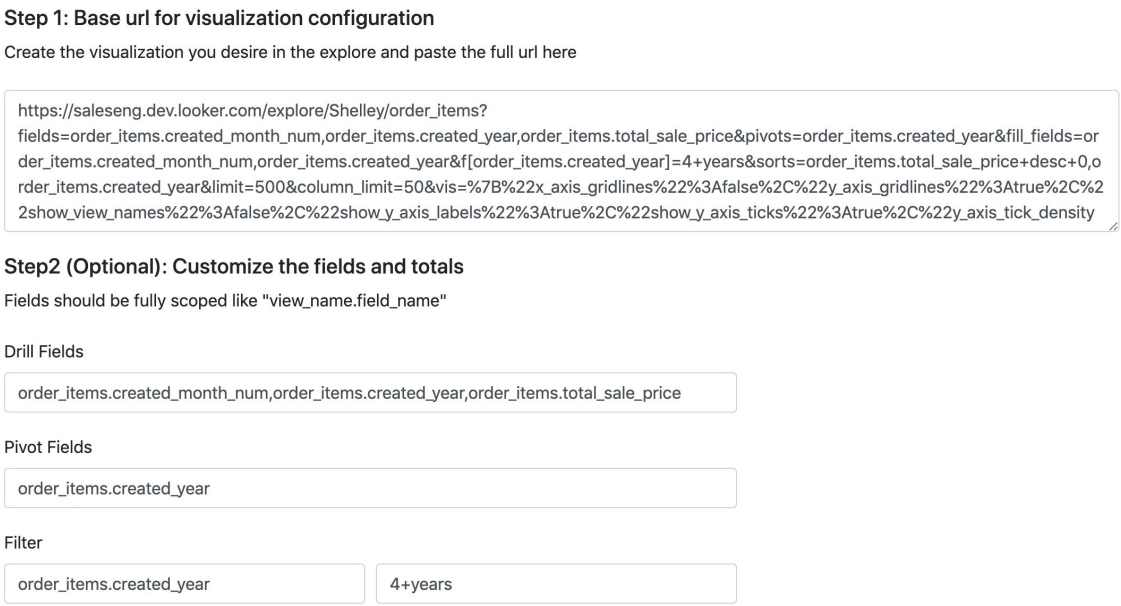




Visual drilling exercise, part 3

Use this URL generator to get the part of the URL that contains the visualization settings.

https://xin-looker.github.io/



Visual drilling exercise, part 4

Paste the generated URL from the converter into the LookML `url` field between double quotation marks (“”). Note: Make sure the fields in the visual drill are also in the LookML `drill_fields:` field.

```
link: {
    label: "Label Text Here"
    url: "
      {% assign vis_config = 'VISUALIZATION SETTINGS' %}
    {{link}}&vis_config={{ vis_config | encode_uri }}
      "
}
```

URL from generator

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Questions?


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