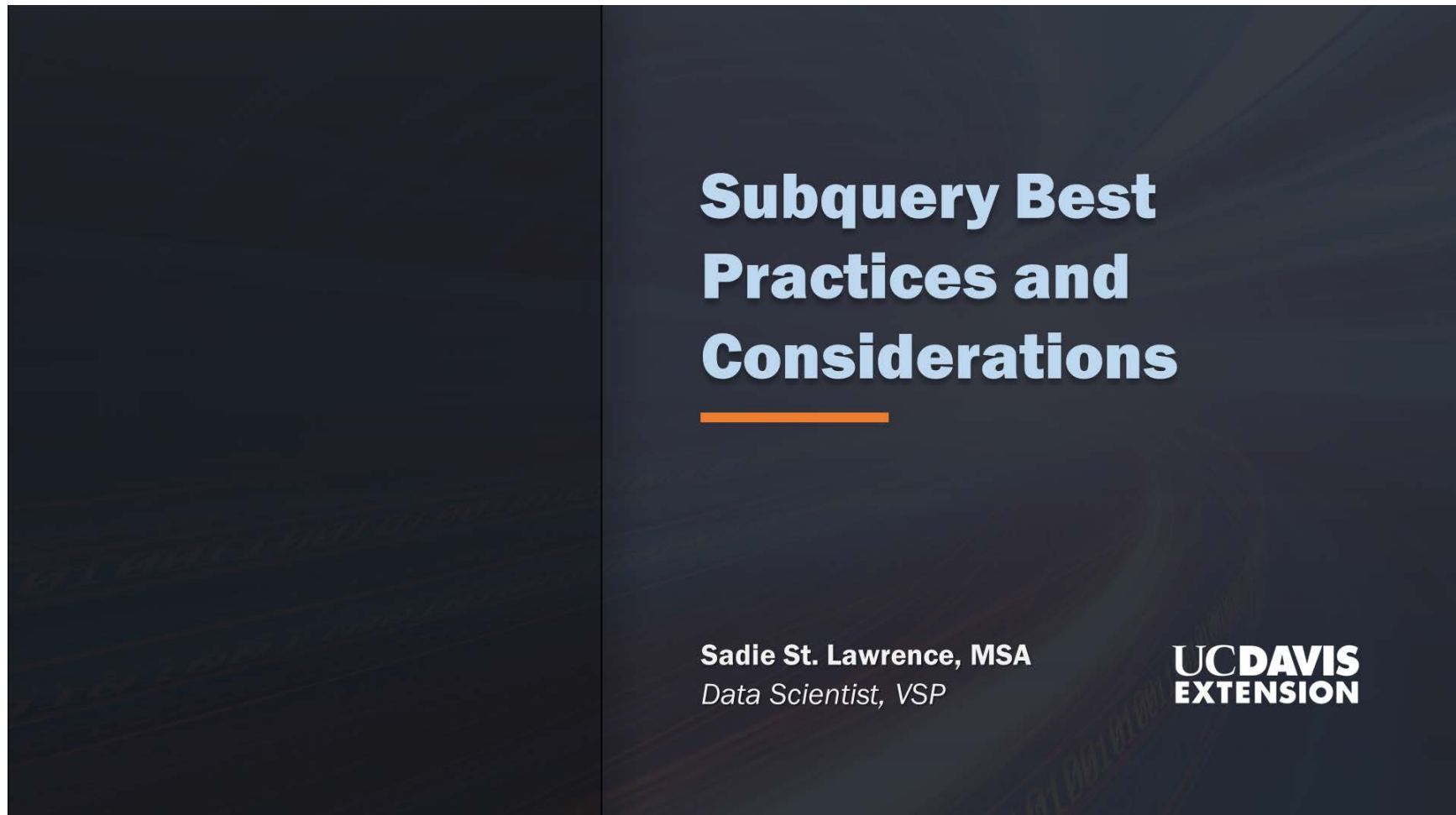


Slide 1: Subquery Best Practices and Considerations

The slide features a dark blue background with a subtle pattern of glowing, overlapping lines that resemble a network or data flow. On the left side, there is a vertical black bar. The main content is on the right, starting with the title 'Subquery Best Practices and Considerations' in a large, bold, white sans-serif font. Below the title is a short, thick orange horizontal line. Further down, the presenter's name 'Sadie St. Lawrence, MSA' is written in a smaller white font, followed by her title 'Data Scientist, VSP' in an italicized white font. In the bottom right corner, the 'UC DAVIS EXTENSION' logo is displayed in white, with 'UC DAVIS' in a larger, bold font and 'EXTENSION' in a smaller font below it.

Subquery Best Practices and Considerations

Sadie St. Lawrence, MSA
Data Scientist, VSP

UC DAVIS
EXTENSION

Slide 2: Learning Objectives

Learning Objectives

Discuss how to write subqueries within subqueries

Discuss performance limitations with overuse of subqueries

Explain how to use subqueries as calculations

Describe best practices using subqueries

Slide 3: Best Practices With Subqueries

Best Practices with Subqueries

There is **no limit** to the number of subqueries you can have

Performance slows when you nest too deeply

Subquery selects can only **retrieve a single column**

Slide 4: Subquery in Subquery

Subquery in Subquery

1. Order numbers for toothbrushes
2. Customer ID's for those orders
3. Customer information for those orders

```
SELECT Customer_name, Customer_contact
FROM Customers
WHERE cust_id IN
    SELECT customer_id
    FROM Orders
    WHERE order_number IN (SELECT order_number
        FROM OrderItems
        WHERE prod_name = 'Toothbrush');
```

Slide 5: Subquery in Subquery

Subquery in Subquery

1. Order numbers for toothbrushes
2. Customer ID's for those orders
3. Customer information for those orders

```
SELECT Customer_name, Customer_contact
FROM Customers
WHERE cust_id IN
  (SELECT customer_id
   FROM Orders
   WHERE order_number IN (SELECT order_number
                        FROM OrderItems
                        WHERE prod_name = 'Toothbrush'));
```

Slide 6: Subquery in Subquery

Subquery in Subquery

1. Order numbers for toothbrushes
2. Customer ID's for those orders
3. Customer information for those orders

```
SELECT Customer_name, Customer_contact
FROM Customers
WHERE cust_id IN
    SELECT customer_id
    FROM Orders
    WHERE order_number IN (SELECT order_number
        FROM OrderItems
        WHERE prod_name = 'Toothbrush');
```

Slide 7: PoorSQL Website

PoorSQL Website

www.poorsql.com

Website will pre-format code

Uses proper indenting

Code is easier to read and troubleshoot

Slide 8: Subqueries for Calculations

Subqueries for Calculations

Total number of orders placed by every customer

Customer_name	Customer_state	Orders
Becky	IA	5
Nita	CA	6
Raj	OH	0
Steve	AZ	1

```
SELECT COUNT (*) AS orders
FROM Orders
WHERE customer_id = '143569';
```

```
SELECT customer_name
       ,customer_state
       ,(SELECT COUNT (*) AS orders
        FROM Orders
        WHERE Orders.customer_id =
        Customer.customer_id) AS orders
FROM customers
ORDER BY Customer_name
```


Slide 9: The Power of Subqueries

The Power of Subqueries

Subqueries are powerful tools

Not always the best option due to performance

Next lesson: using joins