

Load the Dataset

```
orders = pd.read_csv("olist_orders_dataset.csv")

items = pd.read_csv("olist_order_items_dataset.csv")

customers = pd.read_csv("olist_customers_dataset.csv")
```

Data Exploration

```
print(orders.shape)
print(items.shape)
print(customers.shape)
```

... (99441, 8)
(112650, 7)
(99441, 5)

```
orders.head()
```

	order_id	customer_id	order_status	order_purchase_timestamp	order_approved_at	ord
0	e481f51cbdc54678b7cc49136f2d6af7	9ef432eb6251297304e76186b10a928d	delivered	2017-10-02 10:56:33	2017-10-02 11:07:15	ord
1	53cdb2fc8bc7dce0b6741e2150273451	b0830fb4747a6c6d20dea0b8c802d7ef	delivered	2018-07-24 20:41:37	2018-07-26 03:24:27	
2	47770eb9100c2d0c44946d9cf07ec65d	41ce2a54c0b03bf3443c3d931a367089	delivered	2018-08-08 08:38:49	2018-08-08 08:55:23	
3	949d5b44dbf5de918fe9c16f97b45f8a	f88197465ea7920adcdbec7375364d82	delivered	2017-11-18 19:28:06	2017-11-18 19:45:59	
4	ad21c59c0840e6cb83a9ceb5573f8159	8ab97904e6daea8866dbdbc4fb7aad2c	delivered	2018-02-13 21:18:39	2018-02-13 22:20:29	

```
items.head()
```

...

	order_id	order_item_id	product_id	seller_id	shipping_lim
0	00010242fe8c5a6d1ba2dd792cb16214	1	4244733e06e7ecb4970a6e2683c13e61	48436dade18ac8b2bce089ec2a041202	2017-09-19
1	00018f77f2f0320c557190d7a144bdd3	1	e5f2d52b802189ee658865ca93d83a8f	dd7ddc04e1b6c2c614352b383efe2d36	2017-05-03
2	000229ec398224ef6ca0657da4fc703e	1	c777355d18b72b67abbeef9df44fd0fd	5b51032eddd242adc84c38acab88f23d	2018-01-18
3	00024acbcd0a6daa1e931b038114c75	1	7634da152a4610f1595efa32f14722fc	9d7a1d34a5052409006425275ba1c2b4	2018-08-15
4	00042b26cf59d7ce69dfabb4e55b4fd9	1	ac6c3623068f30de03045865e4e10089	df560393f3a51e74553ab94004ba5c87	2017-02-13

```
customers.head()
```

...

	customer_id	customer_unique_id	customer_zip_code_prefix	customer_city	customer_state
0	06b8999e2fba1a1fbc88172c00ba8bc7	861eff4711a542e4b93843c6dd7febb0	14409	franca	SP
1	18955e83d337fd6b2def6b18a428ac77	290c77bc529b7ac935b93aa66c333dc3	9790	sao bernardo do campo	SP
2	4e7b3e00288586ebd08712fdd0374a03	060e732b5b29e8181a18229c7b0b2b5e	1151	sao paulo	SP
3	b2b6027bc5c5109e529d4dc6358b12c3	259dac757896d24d7702b9acbbff3f3c	8775	mogi das cruzeiros	SP
4	4f2d8ab171c80ec8364f7c12e35b23ad	345ecd01c38d18a9036ed96c73b8d066	13056	campinas	SP

Missing Values Check

Missing Values in Each Column:

```
order_month    0
total_sales    0
month_index    0
dtype: int64
```

Total Missing Values: 0

... Dataset Shape: (23, 3)

Columns:

Index(['order_month', 'total_sales', 'month_index'], dtype='object')

Dataset Info:

<class 'pandas.core.frame.DataFrame'>

RangeIndex: 23 entries, 0 to 22

Data columns (total 3 columns):

#	Column	Non-Null Count	Dtype
0	order_month	23 non-null	object
1	total_sales	23 non-null	float64
2	month_index	23 non-null	int64

dtypes: float64(1), int64(1), object(1)

memory usage: 684.0+ bytes

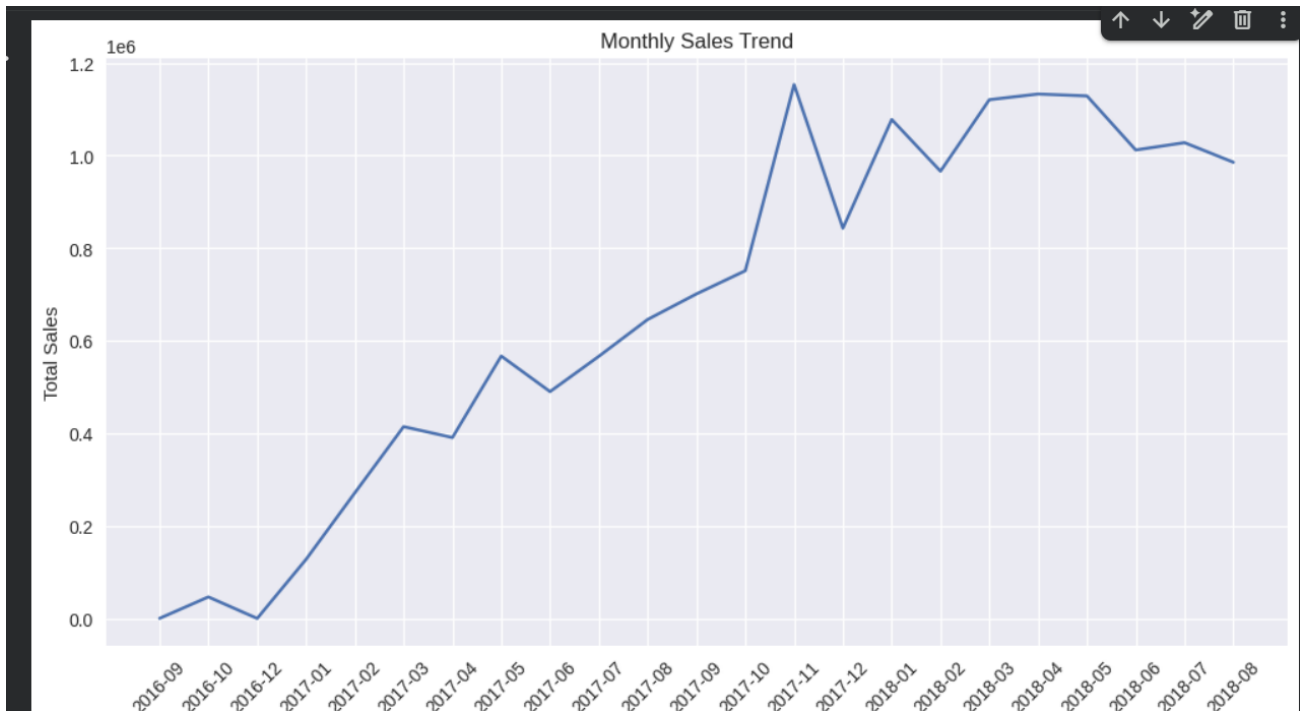
Monthly sales

```
monthly_sales = (
    sales_data
    .groupby('order_month')['total_sales']
    .sum()
    .reset_index()
)
```

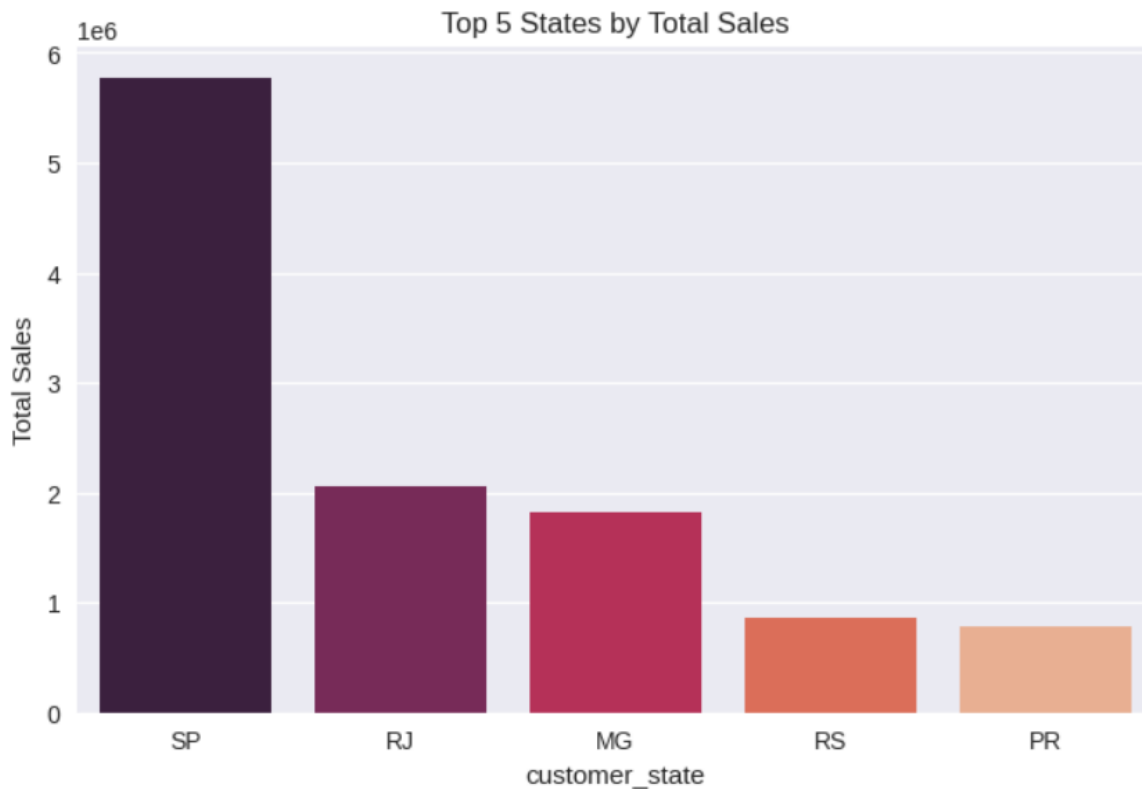
```
monthly_sales['order_month'] = monthly_sales['order_month'].astype(str)
monthly_sales.head()
```

	order_month	total_sales
0	2016-09	143.46
1	2016-10	46490.66
2	2016-12	19.62
3	2017-01	127482.37
4	2017-02	271239.32

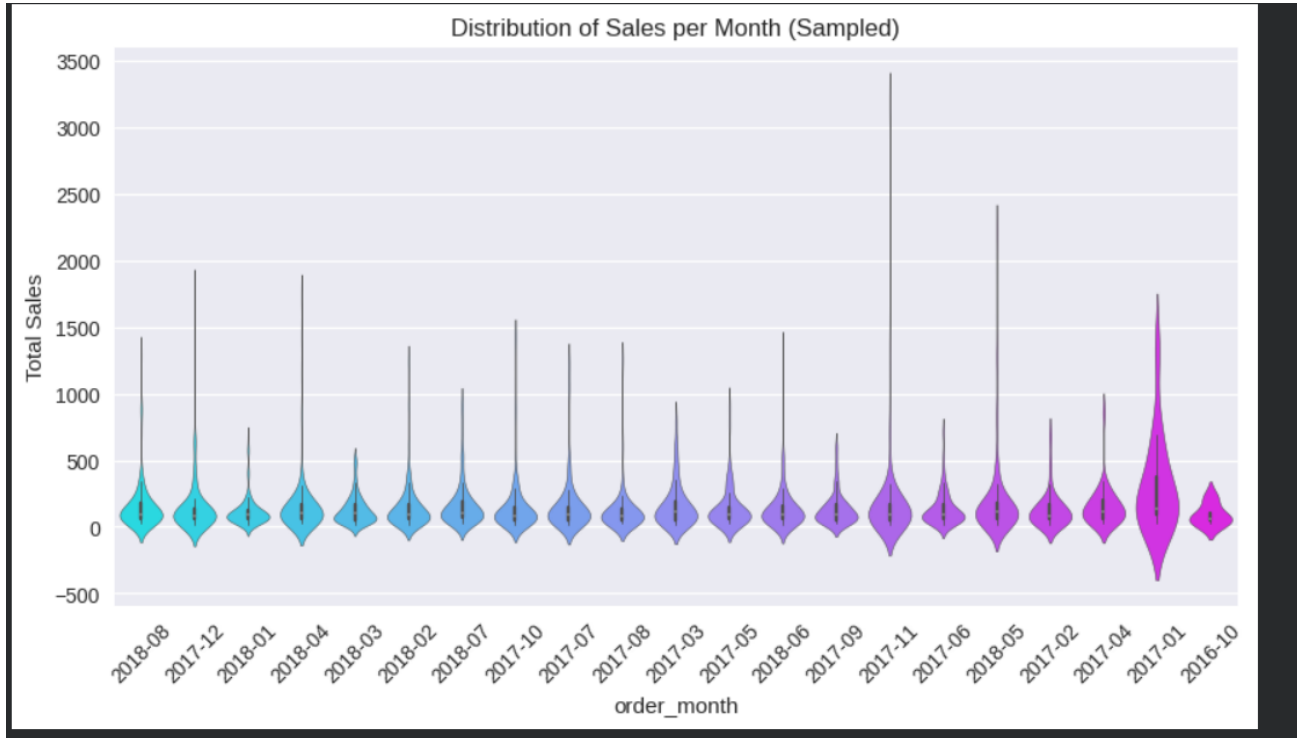
Monthly Sales Trend (LINE GRAPH)



States by Total Sales Graph



Sales Distribution Image



Evaluation Metrics

--- Linear Regression Evaluation ---

MAE: 299368.58

RMSE: 337428.93

R2 Score: -29.12

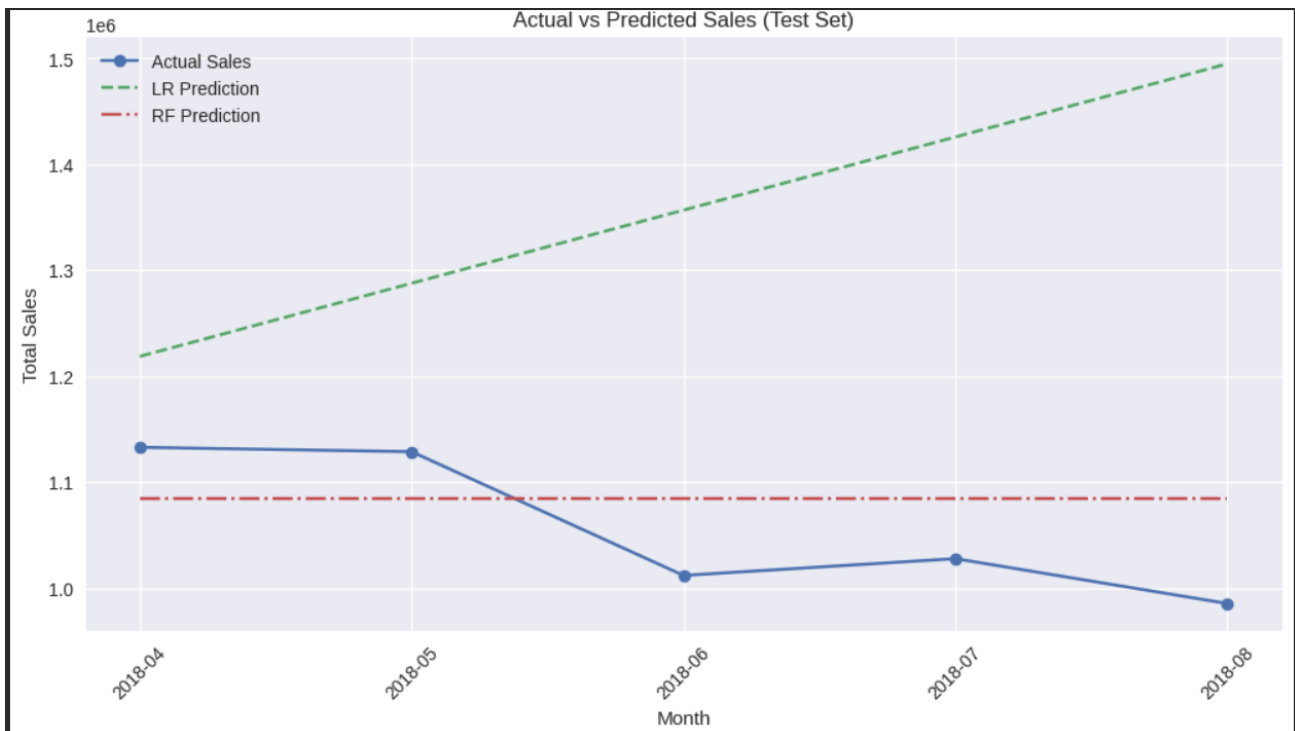
--- Random Forest Regressor Evaluation ---

MAE: 64147.02

RMSE: 67139.7

R2 Score: -0.19

Actual vs Predicted Graph



Gradio UI

```
Requirement already satisfied: gradio in /usr/local/lib/python3.12/dist-packages (5.50.0)
... Requirement already satisfied: aiofiles<25.0,>=22.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (24.1.0)
Requirement already satisfied: anyio<5.0,>=3.0 in /usr/local/lib/python3.12/dist-packages (from gradio) (4.12.1)
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Requirement already satisfied: websockets<16.0,>=13.0 in /usr/local/lib/python3.12/dist-packages (from gradio-client==1.14.0->gradio)
```

Output

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run `gradio deploy` from the terminal.

OLIST Sales Forecast Predictor

Select the future month index to predict sales. Linear Regression & Random Forest predictions will be shown.

Select Month Index (1 = Next Month, 2 = Month after...)

↻

1

12

Clear

Submit

Flag

Predicted Sales

Linear Regression Forecast: ₹45227.69

Random Forest Forecast: ₹34579.2

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