# Business Patterns and Seasonality

Business patterns are all about generating insights to help maximize your efficiency and to anticipate future trends business may exhibit some sort of seasonality, whether that could be monthly it could be slow in the summertime it could be jam-packed during the week, but slower on the weekends, it could be business that does better in the evenings.

Some everyday use cases:
- We can do a day parting analysis to understand how much support staff you might need at different times or days of the week.
- We can analyze seasonality to better prepare for upcoming spikes or slowdowns.
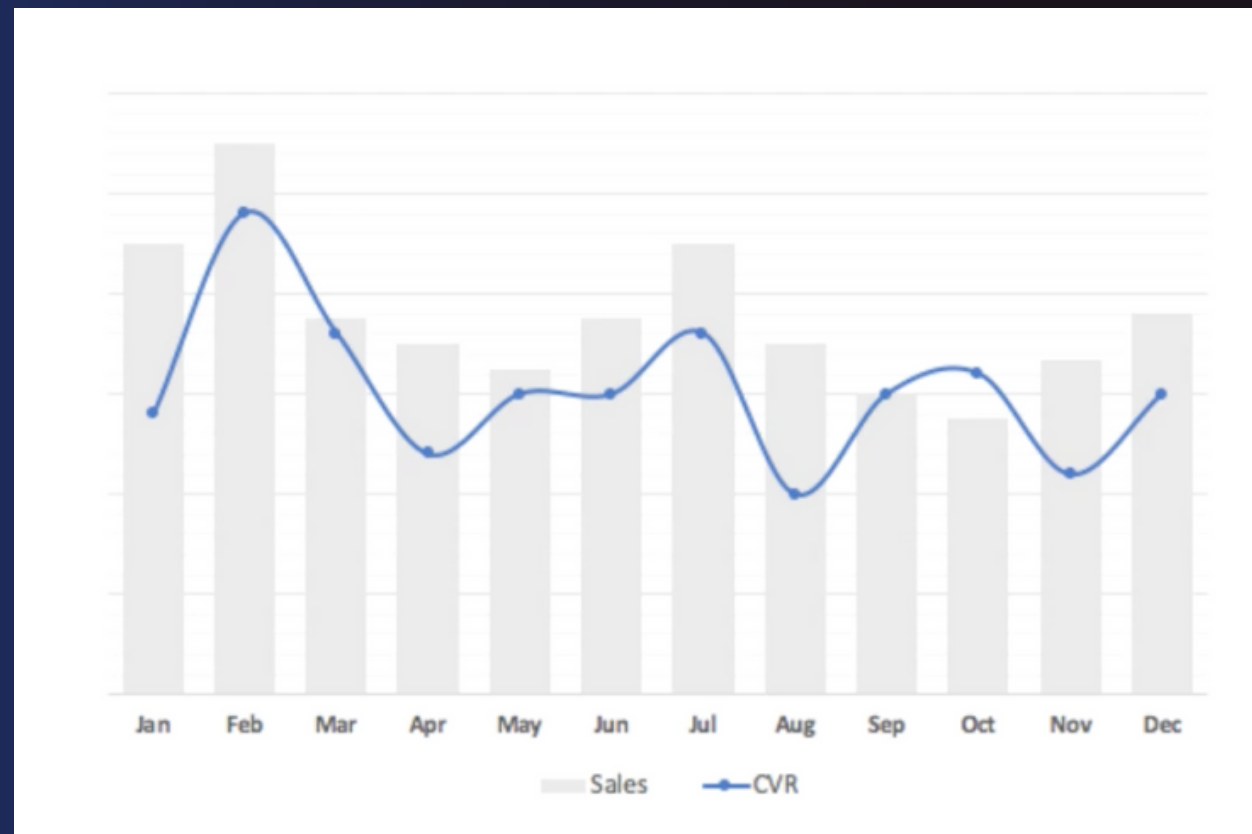
Traffic and Orders Trend Analysis | SQL

```sql
5     -- Monthly Trend Analysis of Traffic and Orders
6
7     SELECT
8         YEAR(W.created_at),
9         MONTH(W.created_at),
10        COUNT(DISTINCT W.website_session_id) AS sessions,
11        COUNT(DISTINCT O.order_id) AS orders,
12        COUNT(DISTINCT O.order_id)/COUNT(DISTINCT W.website_session_id) AS conversion_rate
13    FROM website_sessions AS W
14        LEFT JOIN orders AS O ON W.website_session_id = O.website_session_id
15    WHERE W.created_at < '2013-01-02'
16    GROUP BY 1,2
17    ORDER BY 1,2;
18
```

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Result Grid | Filter Rows: Search | Export:

YEAR(W.created_at)	MONTH(W.created_...	sessions	orders	conversion_rate
2012	3	1879	60	0.0319
2012	4	3734	99	0.0265
2012	5	3736	108	0.0289
2012	6	3963	140	0.0353
2012	7	4249	169	0.0398
2012	8	6097	228	0.0374
2012	9	6546	287	0.0438
2012	10	8183	371	0.0453
2012	11	14011	618	0.0441
2012	12	10072	506	0.0502
2013	1	217	13	0.0599

Traffic and Orders Trend Analysis | SQL

Orders and Sessions | Monthly Trend Analysis
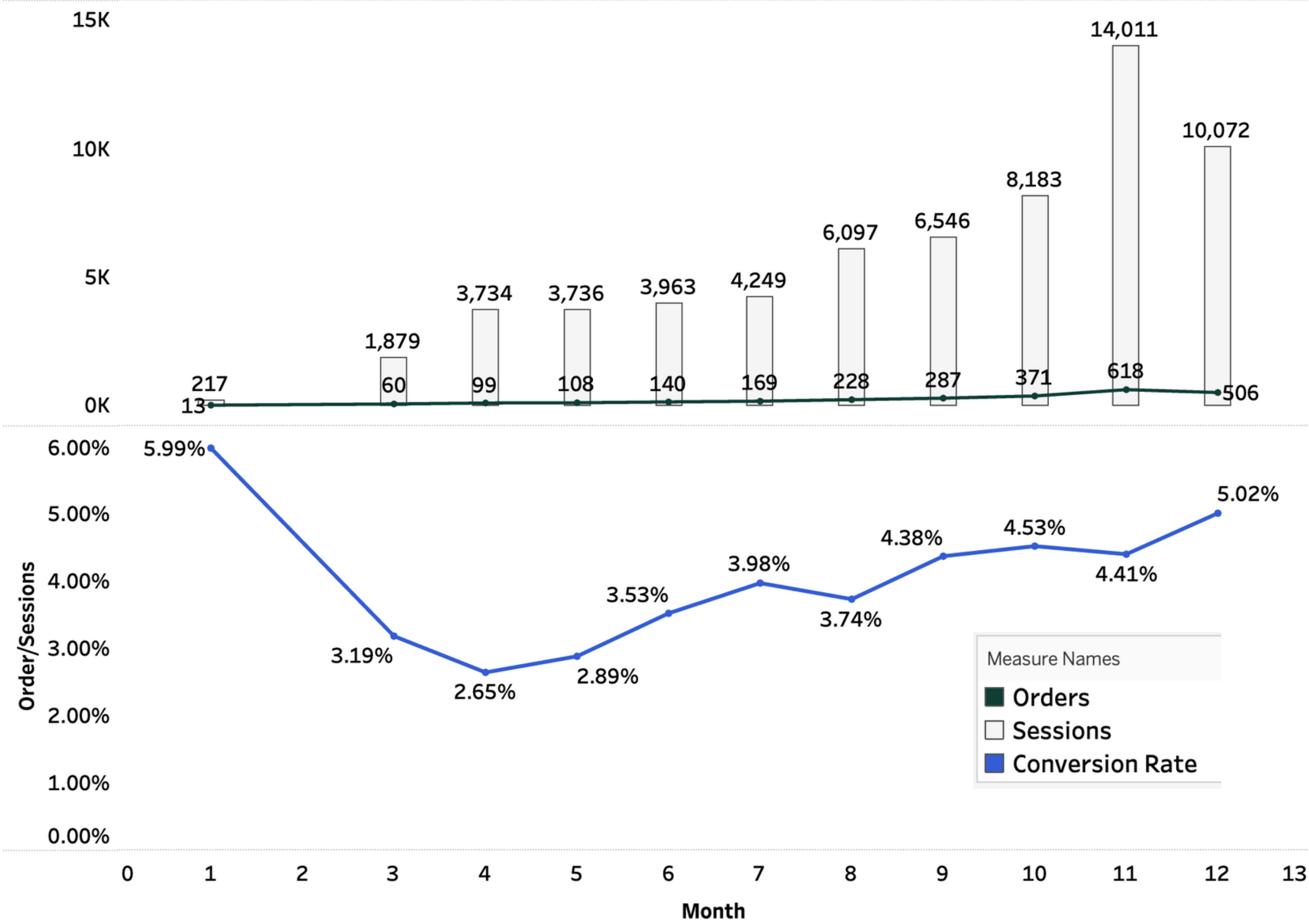
Findings:

- We look at the sessions we definitely see them growing overtime.
- November looks like it's the peak season with 14,000 sessions.
- All of the months show a little bit of growth and then at the end December looks a little bit lighter than November but it's still pretty high relative to where we started the year.

Website sessions throught day and day of the week | SQL

```sql
37    -- How are  website sessions throught day and day of the week?
38    SELECT
39        Hour,
40        ROUND(AVG(CASE WHEN wkday = 0 THEN website_sessions ELSE NULL END),1) AS monday_sessions,
41        ROUND(AVG(CASE WHEN wkday = 1 THEN website_sessions ELSE NULL END),1) AS tuesday_sessions,
42        ROUND(AVG(CASE WHEN wkday = 2 THEN website_sessions ELSE NULL END),1) AS wednesday_sessions,
43        ROUND(AVG(CASE WHEN wkday = 3 THEN website_sessions ELSE NULL END),1) AS thursday_sessions,
44        ROUND(AVG(CASE WHEN wkday = 4 THEN website_sessions ELSE NULL END),1) AS friday_sessions,
45        ROUND(AVG(CASE WHEN wkday = 5 THEN website_sessions ELSE NULL END),1) AS saturday_sessions,
46        ROUND(AVG(CASE WHEN wkday = 6 THEN website_sessions ELSE NULL END),1) AS sunday_sessions
47    FROM (
48        SELECT
49            DATE(created_at) AS created_at,
50            WEEKDAY(created_at) AS wkday,
51            HOUR(created_at) AS Hour,
52            COUNT(DISTINCT website_session_id) AS website_sessions
53        FROM website_sessions
54        WHERE created_at BETWEEN '2012-09-15' AND '2012-11-15'
55        GROUP BY 1,2,3) AS average_sessions
56    GROUP BY 1 ORDER BY 1;
57
```

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Result Grid   Filter Rows: Search   Export:

Hour	monday_sessions	tuesday_sessions	wednesday_sessions	thursday_sessions	friday_sessions	saturday_sessions	sunday_sessions
0	8.7	7.7	6.3	7.4	6.8	5.0	5.0
1	6.6	6.7	5.3	4.9	7.1	5.0	3.0
2	6.1	4.4	4.4	6.1	4.6	3.7	3.0
3	5.7	4.0	4.7	4.6	3.6	3.9	3.4
4	5.9	6.3	6.0	4.0	6.1	2.8	2.4
5	5.0	5.4	5.1	5.4	4.6	4.3	3.9
6	5.4	5.6	4.8	6.0	6.8	4.0	2.6
7	7.3	7.8	7.4	10.6	7.0	5.7	4.8
8	12.3	12.2	13.0	16.5	10.5	4.3	4.1
9	17.6	15.7	19.6	19.3	17.5	7.6	6.0
10	18.4	17.7	21.0	18.4	19.0	8.3	6.3
11	18.0	19.1	24.9	21.6	20.9	7.2	7.7
12	21.1	23.3	22.8	24.1	19.0	8.6	6.1
13	17.8	23.0	20.8	20.6	21.6	8.1	8.4
14	17.9	21.6	22.3	18.5	19.5	8.7	6.7
15	21.6	17.1	25.3	23.5	21.3	6.9	7.1
16	21.1	23.7	23.7	19.6	20.9	7.6	6.6
17	19.4	15.9	20.2	19.8	12.9	6.4	7.6
18	12.7	15.0	14.8	15.3	10.9	5.3	6.8
19	12.4	14.1	13.3	11.6	14.3	7.1	6.4
20	12.1	12.4	14.2	10.6	10.3	5.7	8.4
21	9.1	12.6	11.4	9.4	7.3	5.7	10.2

Average Website sessions throught day and day of the week

Hour	Monday Sessi..	Tuesday Sessi..	Wednesday S..	Thursday Ses..	Friday Sessio..	Saturday Sess..	Sunday Sessi..
0	8.70	7.70	6.30	7.40	6.80	5.00	5.00
1	6.60	6.70	5.30	4.90	7.10	5.00	3.00
2	6.10	4.40	4.40	6.10	4.60	3.70	3.00
3	5.70	4.00	4.70	4.60	3.60	3.90	3.40
4	5.90	6.30	6.00	4.00	6.10	2.80	2.40
5	5.00	5.40	5.10	5.40	4.60	4.30	3.90
6	5.40	5.60	4.80	6.00	6.80	4.00	2.60
7	7.30	7.80	7.40	10.60	7.00	5.70	4.80
8	12.30	12.20	13.00	16.50	10.50	4.30	4.10
9	17.60	15.70	19.60	19.30	17.50	7.60	6.00
10	18.40	17.70	21.00	18.40	19.00	8.30	6.30
11	18.00	19.10	24.90	21.60	20.90	7.20	7.70
12	21.10	23.30	22.80	24.10	19.00	8.60	6.10
13	17.80	23.00	20.80	20.60	21.60	8.10	8.40
14	17.90	21.60	22.30	18.50	19.50	8.70	6.70
15	21.60	17.10	25.30	23.50	21.30	6.90	7.10
16	21.10	23.70	23.70	19.60	20.90	7.60	6.60
17	19.40	15.90	20.20	19.80	12.90	6.40	7.60
18	12.70	15.00	14.80	15.30	10.90	5.30	6.80
19	12.40	14.10	13.30	11.60	14.30	7.10	6.40
20	12.10	12.40	14.20	10.60	10.30	5.70	8.40
21	9.10	12.60	11.40	9.40	7.30	5.70	10.20
22	9.10	10.00	9.80	12.10	6.00	5.70	10.20
23	8.80	8.60	9.60	10.60	7.60	5.30	8.30

Measure Values

2.40   25.30
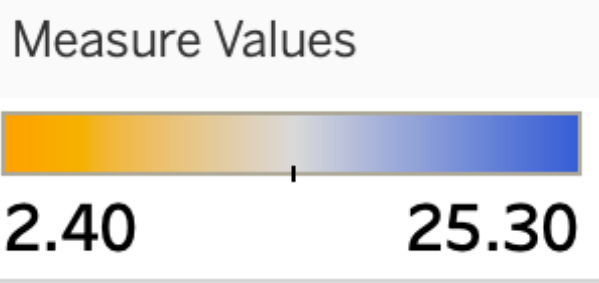
Findings:

- We're getting more sessions from Morning at 9:00 AM to Evening at 5:00 PM.

- It's interesting to see that the traffic generally seems a little bit lighter on Saturday and Sunday as well, never breaking into the double digits in terms of the average per hour, where we're well over 20 for some hours during the week.