

Retail Sales Analysis Project

A comprehensive data analysis of retail sales transactions using SQL. This project covers data cleaning, exploration, and business insights through 10 key analytical questions.

Project Overview

- **Dataset:** Retail sales transactions
- **Tools:** SQL Server (SSMS)
- **Analysis Focus:** Sales trends, customer behavior, category performance, and time-based patterns

Key Questions & Insights

1. Sales on 2022-11-05

	transactions_id	sale_date	sale_time	customer_id	gender	age	category	quantity	price_per_unit	cogs	total_sale
1	180	2022-11-05	10:47:00.0000000	117	Male	41	Clothing	3	300	129	900
2	240	2022-11-05	11:49:00.0000000	95	Female	23	Beauty	1	300	123	300
3	1256	2022-11-05	09:58:00.0000000	29	Male	23	Clothing	2	500	190	1000
4	1587	2022-11-05	20:06:00.0000000	140	Female	40	Beauty	4	300	105	1200
5	1819	2022-11-05	20:44:00.0000000	83	Female	35	Beauty	2	50	13.5	100
6	943	2022-11-05	19:29:00.0000000	90	Female	57	Clothing	4	300	318	1200
7	1896	2022-11-05	20:19:00.0000000	87	Female	30	Electronics	2	25	30.75	50
8	1137	2022-11-05	22:34:00.0000000	104	Male	46	Beauty	2	500	145	1000
9	856	2022-11-05	17:43:00.0000000	102	Male	54	Electronics	4	30	9.30000019073486	120
10	214	2022-11-05	16:31:00.0000000	53	Male	20	Beauty	2	30	8.10000038146973	60
11	1265	2022-11-05	14:35:00.0000000	86	Male	55	Clothing	3	300	111	900

2. High-quantity clothing sales in Nov 2022

	transactions_id	sale_date	sale_time	customer_id	gender	age	category	quantity	price_per_unit	cogs	total_sale
1	965	2022-11-27	21:45:00.0000000	84	Male	22	Clothing	4	50	13	200
2	735	2022-11-26	21:38:00.0000000	153	Female	64	Clothing	4	500	515	2000
3	1296	2022-11-26	20:42:00.0000000	45	Female	22	Clothing	4	300	342	1200
4	1484	2022-11-23	09:29:00.0000000	22	Female	19	Clothing	4	300	147	1200
5	699	2022-11-21	22:21:00.0000000	129	Female	37	Clothing	4	30	16.2000007629395	120
6	1696	2022-11-21	17:59:00.0000000	24	Female	50	Clothing	4	50	55	200
7	1497	2022-11-19	21:44:00.0000000	109	Male	41	Clothing	4	30	32.4000015258789	120
8	1615	2022-11-17	13:43:00.0000000	82	Female	61	Clothing	4	25	13.5	100
9	64	2022-11-15	06:34:00.0000000	7	Male	49	Clothing	4	25	8.5	100
10	547	2022-11-14	07:36:00.0000000	3	Male	63	Clothing	4	500	250	2000
11	284	2022-11-12	09:17:00.0000000	129	Male	43	Clothing	4	50	20.5	200
12	1476	2022-11-11	22:27:00.0000000	130	Female	27	Clothing	4	500	555	2000
13	146	2022-11-10	22:01:00.0000000	74	Male	38	Clothing	4	50	49	200
14	159	2022-11-10	21:30:00.0000000	42	Male	26	Clothing	4	50	23.5	200
15	1885	2022-11-09	07:32:00.0000000	148	Female	52	Clothing	4	30	10.8000001907349	120
16	943	2022-11-05	19:29:00.0000000	90	Female	57	Clothing	4	300	318	1200
17	1259	2022-11-03	17:31:00.0000000	105	Female	45	Clothing	4	50	21	200

3. Total sales by category

	category	total_sales_by_category
1	Clothing	309995
2	Electronics	311445
3	Beauty	286790

4. Average age of Beauty customers

	avg_age_beauty
1	40

5. High-value transactions (> \$2000)

	transactions_id	sale_date	sale_time	customer_id	gender	age	category	quantiy	price_per_unit	cogs	total_sale
1	15	2022-07-01	11:50:00.00000000	75	Female	42	Electronics	4	500	210	2000
2	743	2022-08-07	07:54:00.00000000	55	Female	34	Beauty	4	500	260	2000
3	1015	2022-03-09	11:53:00.00000000	94	Female	42	Electronics	4	500	200	2000
4	1743	2022-10-26	09:37:00.00000000	47	Female	34	Beauty	4	500	250	2000
5	742	2022-03-19	06:08:00.00000000	37	Female	38	Electronics	4	500	195	2000
6	1742	2022-11-22	08:25:00.00000000	18	Female	38	Electronics	4	500	220	2000
7	420	2022-01-02	10:53:00.00000000	28	Female	22	Clothing	4	500	200	2000
8	1420	2022-04-15	07:01:00.00000000	138	Female	22	Clothing	4	500	205	2000
9	592	2022-12-26	09:15:00.00000000	77	Female	46	Beauty	4	500	275	2000
10	1592	2022-03-16	09:08:00.00000000	81	Female	46	Beauty	4	500	155	2000
11	269	2022-09-19	11:31:00.00000000	87	Male	25	Clothing	4	500	250	2000
12	1269	2022-01-01	08:09:00.00000000	71	Male	25	Clothing	4	500	145	2000
13	577	2022-04-21	11:55:00.00000000	45	Male	21	Beauty	4	500	215	2000
14	1577	2022-09-11	06:22:00.00000000	145	Male	21	Beauty	4	500	160	2000
15	416	2022-08-21	09:29:00.00000000	55	Male	53	Electronics	4	500	245	2000
16	1416	2022-12-29	10:47:00.00000000	111	Male	53	Electronics	4	500	125	2000
17	257	2022-12-10	08:49:00.00000000	130	Male	19	Beauty	4	500	165	2000
18	1257	2022-05-10	11:55:00.00000000	29	Male	19	Beauty	4	500	255	2000
19	152	2022-06-16	11:58:00.00000000	120	Male	43	Electronics	4	500	210	2000
20	1152	2022-12-26	07:48:00.00000000	87	Male	43	Electronics	4	500	170	2000
21	547	2022-11-14	07:36:00.00000000	3	Male	63	Clothing	4	500	250	2000
22	1547	2022-08-11	06:39:00.00000000	142	Male	63	Clothing	4	500	235	2000
23	808	2023-11-22	07:18:00.00000000	30	Male	33	Beauty	4	500	195	2000
24	1808	2023-02-12	10:48:00.00000000	109	Male	33	Beauty	4	500	210	2000
25	166	2023-01-28	11:42:00.00000000	32	Male	34	Clothing	4	500	225	2000
26	1166	2023-07-19	07:45:00.00000000	65	Male	34	Clothing	4	500	245	2000
27	572	2023-12-13	18:33:00.00000000	5	Male	31	Clothing	4	500	185	2000
28	1572	2023-06-18	22:20:00.00000000	1	Male	31	Clothing	4	500	175	2000
29	946	2023-08-08	20:15:00.00000000	2	Male	62	Electronics	4	500	235	2000
30	1946	2023-07-27	20:48:00.00000000	5	Male	62	Electronics	4	500	165	2000
31	731	2023-09-30	18:49:00.00000000	1	Male	54	Clothing	4	500	165	2000
32	1731	2023-12-10	17:41:00.00000000	2	Male	54	Clothing	4	500	165	2000

	transactions_id	sale_date	sale_time	customer_id	gender	age	category	quantity	price_per_unit	cogs	total_sale
32	1731	2023-12-19	17:41:00.0000000	3	Male	54	Clothing	4	500	195	2000
33	118	2023-03-13	20:07:00.0000000	3	Female	30	Electronics	4	500	270	2000
34	970	2023-05-25	18:13:00.0000000	2	Male	59	Electronics	4	500	220	2000
35	1118	2023-10-13	17:24:00.0000000	1	Female	30	Electronics	4	500	170	2000
36	1970	2023-05-22	17:44:00.0000000	5	Male	59	Electronics	4	500	230	2000
37	155	2023-07-18	18:05:00.0000000	3	Male	31	Electronics	4	500	150	2000
38	1155	2023-12-03	18:22:00.0000000	3	Male	31	Electronics	4	500	255	2000
39	72	2023-12-06	19:19:00.0000000	5	Female	20	Electronics	4	500	195	2000
40	281	2023-09-18	20:09:00.0000000	4	Female	29	Beauty	4	500	275	2000
41	1072	2023-02-24	18:10:00.0000000	4	Female	20	Electronics	4	500	180	2000
42	1281	2023-03-14	19:34:00.0000000	4	Female	29	Beauty	4	500	165	2000
43	561	2022-07-29	17:04:00.0000000	34	Female	64	Clothing	4	500	250	2000
44	1561	2023-09-17	19:38:00.0000000	16	Female	64	Clothing	4	500	170	2000
45	157	2022-05-15	21:59:00.0000000	98	Male	62	Electronics	4	500	170	2000
46	927	2022-02-21	17:13:00.0000000	83	Male	43	Electronics	4	500	250	2000
47	1157	2022-12-23	21:24:00.0000000	81	Male	62	Electronics	4	500	270	2000
48	1927	2023-09-06	19:44:00.0000000	46	Male	43	Electronics	4	500	180	2000
49	480	2022-12-22	22:12:00.0000000	126	Female	42	Beauty	4	500	225	2000
50	1480	2023-11-26	18:05:00.0000000	3	Female	42	Beauty	4	500	165	2000
51	447	2023-04-18	17:57:00.0000000	37	Male	22	Beauty	4	500	245	2000
52	1447	2022-05-30	22:21:00.0000000	137	Male	22	Beauty	4	500	155	2000
53	93	2022-01-25	20:52:00.0000000	148	Female	35	Beauty	4	500	140	2000
54	1093	2023-11-06	17:26:00.0000000	87	Female	35	Beauty	4	500	270	2000
55	773	2023-01-14	19:10:00.0000000	3	Male	25	Electronics	4	500	175	2000
56	1773	2023-12-12	18:50:00.0000000	80	Male	25	Electronics	4	500	165	2000
57	487	2023-04-09	21:03:00.0000000	36	Male	44	Clothing	4	500	235	2000
58	1487	2023-02-01	19:01:00.0000000	131	Male	44	Clothing	4	500	140	2000
59	875	2023-11-30	21:47:00.0000000	134	Female	51	Electronics	4	500	135	2000
60	1875	2022-06-03	22:42:00.0000000	141	Female	51	Electronics	4	500	165	2000
61	476	2023-12-12	18:31:00.0000000	131	Female	27	Clothing	4	500	570	2000
62	1476	2022-11-11	22:27:00.0000000	130	Female	27	Clothing	4	500	555	2000
63	253	2023-08-20	21:26:00.0000000	66	Female	53	Clothing	4	500	525	2000

	transactions_id	sale_date	sale_time	customer_id	gender	age	category	quantity	price_per_unit	cogs	total_sale
63	253	2022-09-30	21:26:00.0000000	66	Female	53	Clothing	4	500	525	2000
64	1253	2023-12-03	19:58:00.0000000	108	Female	53	Clothing	4	500	605	2000
65	832	2022-11-13	17:25:00.0000000	106	Male	47	Beauty	4	500	600	2000
66	1832	2023-11-10	21:17:00.0000000	57	Male	47	Beauty	4	500	480	2000
67	412	2022-09-04	19:36:00.0000000	30	Female	19	Electronics	4	500	570	2000
68	1412	2022-10-13	19:59:00.0000000	75	Female	19	Electronics	4	500	615	2000
69	626	2022-10-30	21:01:00.0000000	65	Female	26	Clothing	4	500	555	2000
70	1626	2022-10-10	19:13:00.0000000	19	Female	26	Clothing	4	500	495	2000
71	789	2023-12-06	22:13:00.0000000	34	Female	61	Clothing	4	500	510	2000
72	1789	2023-11-10	17:02:00.0000000	144	Female	61	Clothing	4	500	615	2000
73	89	2023-12-30	21:15:00.0000000	117	Female	55	Electronics	4	500	590	2000
74	1089	2023-10-21	18:44:00.0000000	108	Female	55	Electronics	4	500	555	2000
75	735	2022-11-26	21:38:00.0000000	153	Female	64	Clothing	4	500	515	2000
76	1735	2023-09-05	17:26:00.0000000	86	Female	64	Clothing	4	500	505	2000
77	634	2022-10-10	19:25:00.0000000	68	Male	60	Electronics	4	500	535	2000
78	1634	2023-11-03	17:18:00.0000000	90	Male	60	Electronics	4	500	520	2000
79	109	2023-09-06	19:57:00.0000000	94	Female	34	Electronics	4	500	560	2000
80	1109	2023-12-13	22:13:00.0000000	114	Female	34	Electronics	4	500	590	2000
81	342	2023-11-05	17:24:00.0000000	85	Female	43	Clothing	4	500	500	2000
82	1342	2022-09-18	23:00:00.0000000	114	Female	43	Clothing	4	500	485	2000
83	503	2023-10-08	20:06:00.0000000	63	Male	45	Beauty	4	500	570	2000
84	1503	2022-10-17	18:28:00.0000000	67	Male	45	Beauty	4	500	605	2000
85	124	2022-12-24	21:17:00.0000000	83	Male	33	Clothing	4	500	515	2000
86	1124	2023-10-06	20:04:00.0000000	83	Male	33	Clothing	4	500	515	2000
87	595	2022-10-15	21:35:00.0000000	65	Female	18	Clothing	4	500	210	2000
88	1595	2023-10-04	17:44:00.0000000	115	Female	18	Clothing	4	500	255	2000
89	74	2023-10-05	19:50:00.0000000	56	Female	18	Beauty	4	500	205	2000
90	1074	2022-10-04	20:18:00.0000000	67	Female	18	Beauty	4	500	230	2000
91	65	2022-12-11	20:03:00.0000000	84	Male	51	Electronics	4	500	160	2000
92	1065	2023-10-24	15:16:00.0000000	76	Male	51	Electronics	4	500	175	2000
93	700	2022-09-01	15:07:00.0000000	61	Male	36	Electronics	4	500	250	2000
94	1700	2023-09-27	16:10:00.0000000	87	Male	36	Electronics	4	500	210	2000
95	139	2023-09-15	14:03:00.0000000	113	Male	36	Beauty	4	500	230	2000
96	1139	2023-12-21	14:23:00.0000000	87	Male	36	Beauty	4	500	230	2000
97	664	2022-09-03	16:52:00.0000000	109	Female	44	Clothing	4	500	170	2000
98	1664	2023-12-12	16:44:00.0000000	99	Female	44	Clothing	4	500	245	2000

6. Transactions by gender and category

	gender	total_transactions
1	Female	1012
2	Male	975

7. Best-selling month per year

	year	month	avg_sale
1	2022	7	541
2	2023	2	535

8. Top 5 customers by total spending

	customer_id	total_saled_by_customer
1	3	38440
2	1	30750
3	5	30405
4	2	25295
5	4	23580

10. Unique customers per category

	category	no_of_customers
1	Beauty	141
2	Clothing	149
3	Electronics	144

11. Order volume by time of day (Morning/Afternoon/Evening)

	SHIFT_time	TOTAL_ORDERS
1	evening	1062
2	morning	548
3	afternoon	377