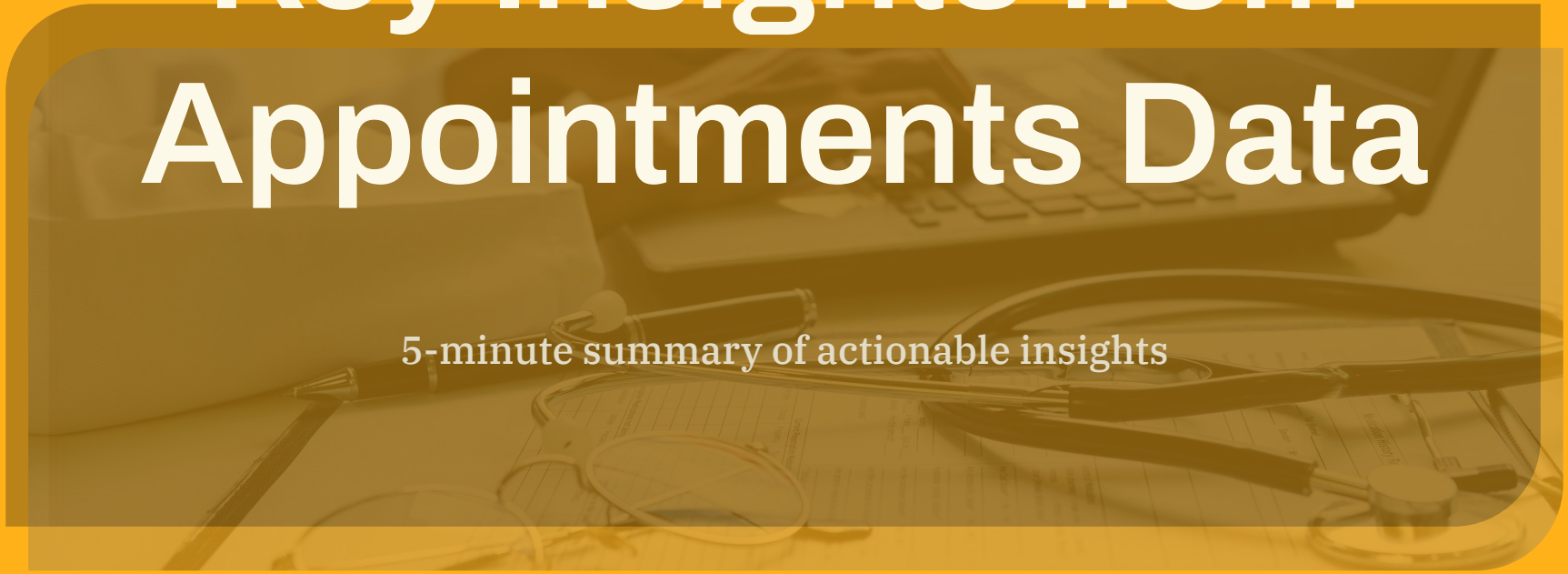
Key Insights from Appointments Data



5-minute summary of actionable insights

Dataset Overview

- 8,030 appointment records from January to December 2023
- Each row represents a single patient appointment associated with a health provider
- 51 unique healthcare providers
- 1,827 unique patients with basic demographic and visit info (age, sex, state, appointment type, status, date, etc.)

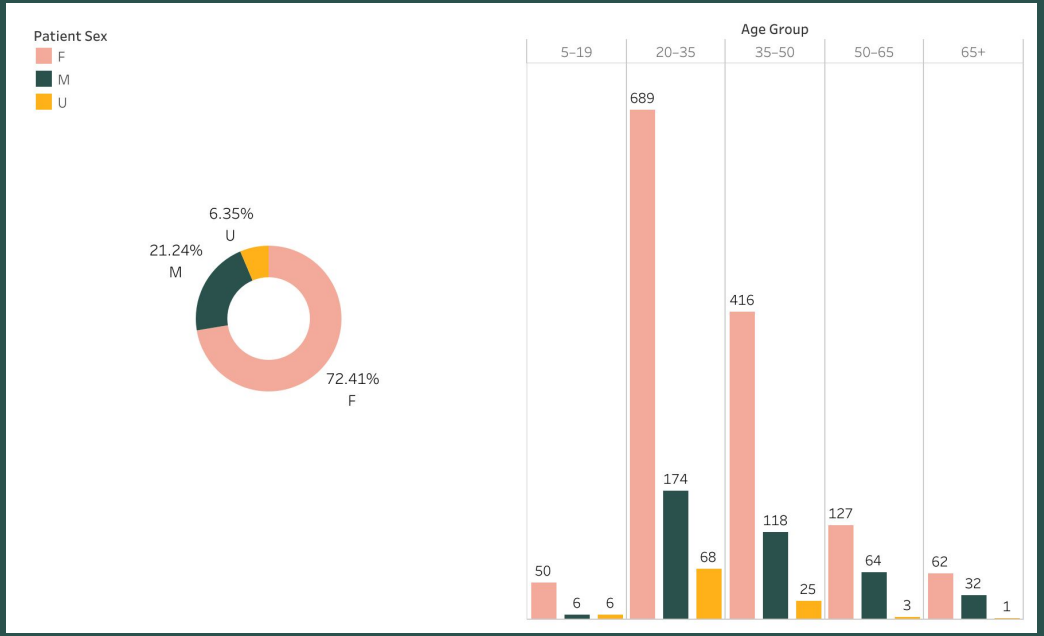
Demographics — Age & Sex

Female-dominant population

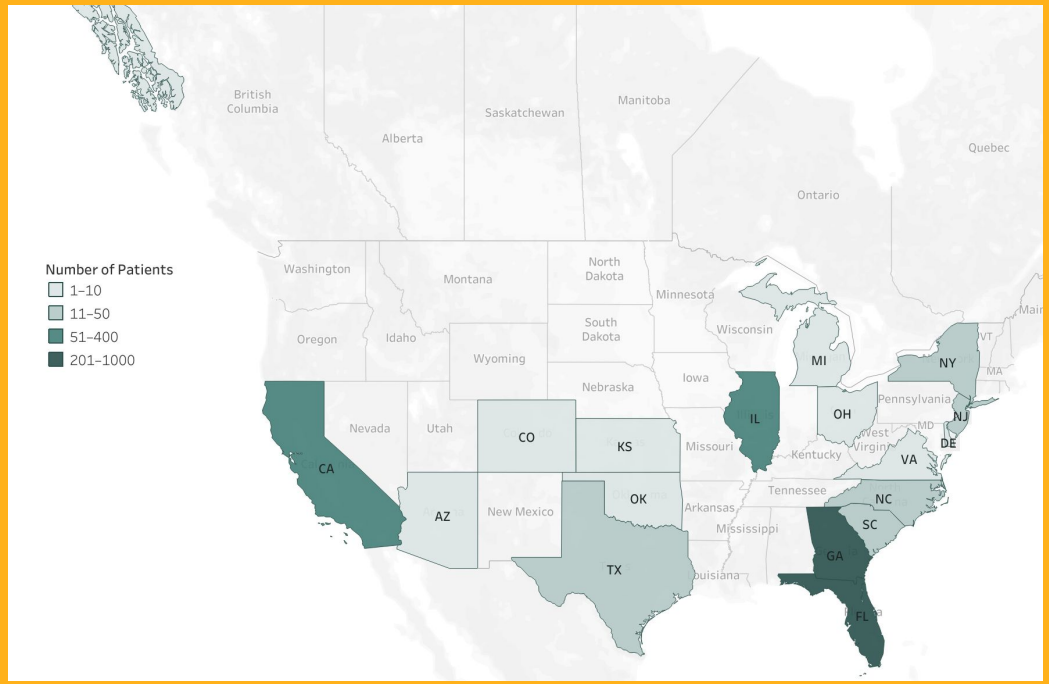
- Over **70%** of patients identify as **female**
- **Male** patients account for **21%**, with **6%** listed as **unknown**

Age concentration in working adults

- Most fall between ages **25–45**
- Highest concentration around **30–35** years old, suggesting primary users to be **working-age adults**



Demographics — State



- Concentrated in Florida and Georgia with over 80% of total records– FL: 4,411 | GA: 2,367
- Most states have fewer than 500 appointments, many under 100
- These gaps may indicate opportunities for provider expansion or targeted outreach

Appointment Volume by Time of Day

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
7–9 AM	9	95	122	123	86	72	45
9AM–12 PM	31	594	623	654	613	355	192
12–2 PM	2	376	355	346	309	169	38
2–5 PM	5	436	516	304	373	184	22
5–8 PM	1	172	279	214	155	43	
8 PM+		22	32	39	15	9	

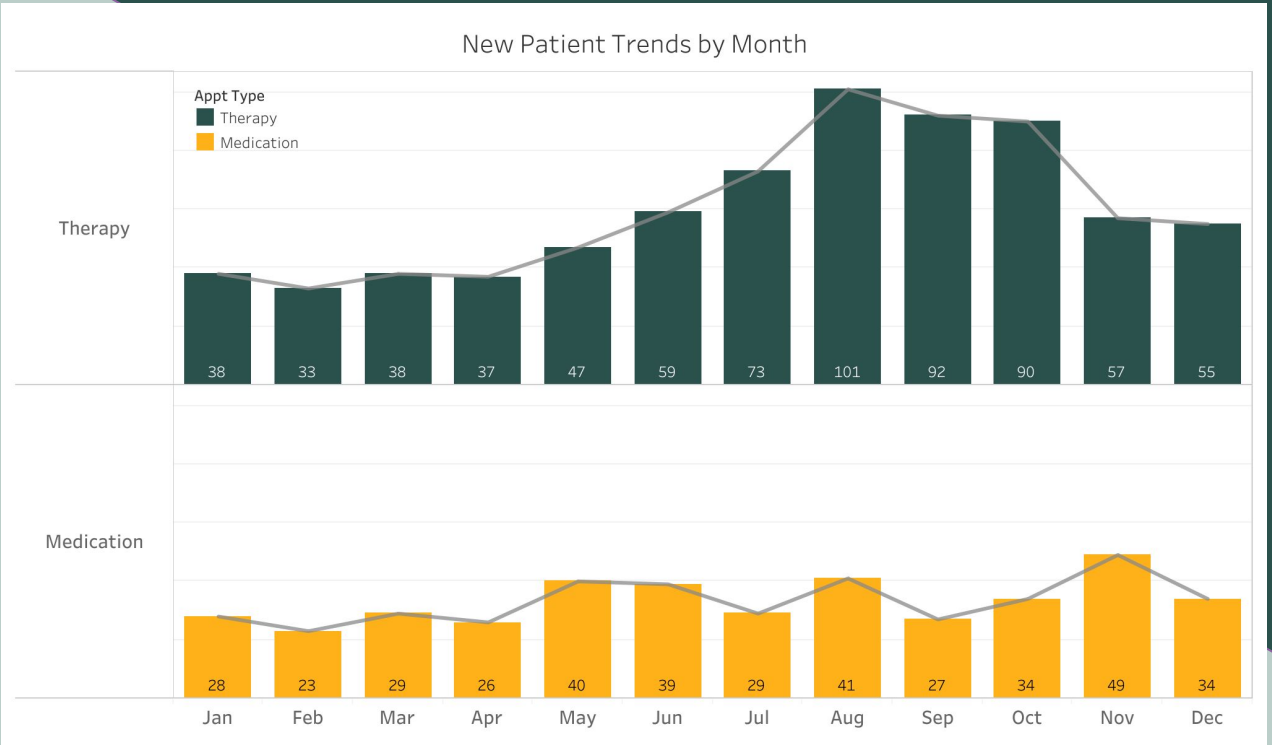
- Peak hours 9–12 PM, especially Tuesday to Thursday
- Early mornings (7–9 AM) and evenings (5 PM onward) have consistently lower volume
- Weekends see fewer appointments, especially Sundays, likely due to limited provider hours
- Consider expanding evening or weekend availability to increase flexibility

- **Highest appointment volume observed in October, November, and December**
- **Weekday volume gradually increases from spring to fall**
- ***Note* – Dataset covers only 2023, limiting deeper seasonality analysis**

Appointment Volume by Day of Week and Month (2023)

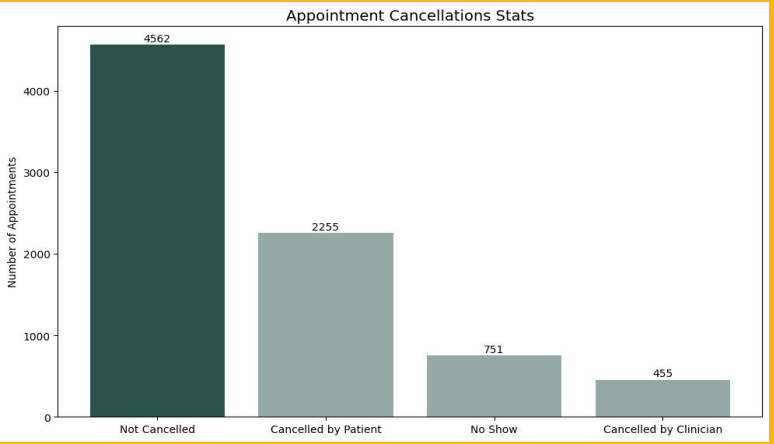
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sun	1			1	10	6	4	8	5	6	6	1
Mon	112	94	109	122	143	147	174	144	117	194	188	151
Tue	120	88	100	105	155	139	103	197	179	274	248	219
Wed	61	83	91	99	146	122	131	168	184	174	250	171
Thu	68	74	93	63	70	118	113	170	194	160	227	201
Fri	34	34	57	61	42	76	67	91	105	70	94	101
Sat	19	19	24	24	33	29	35	25	28	16	23	22

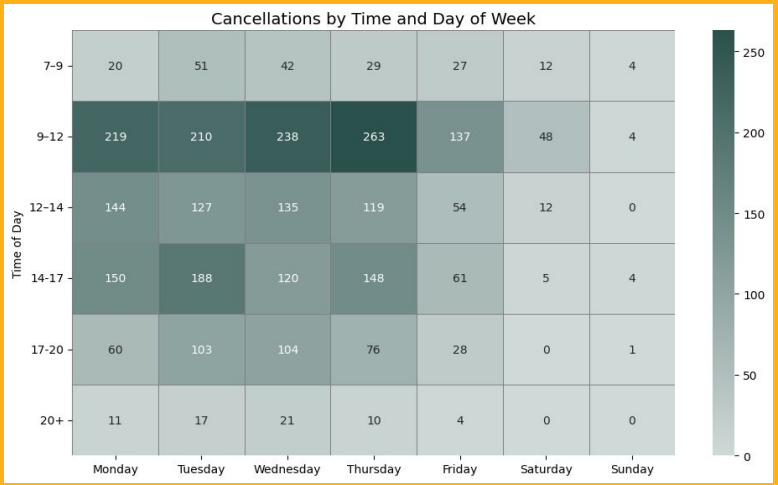
New Patients

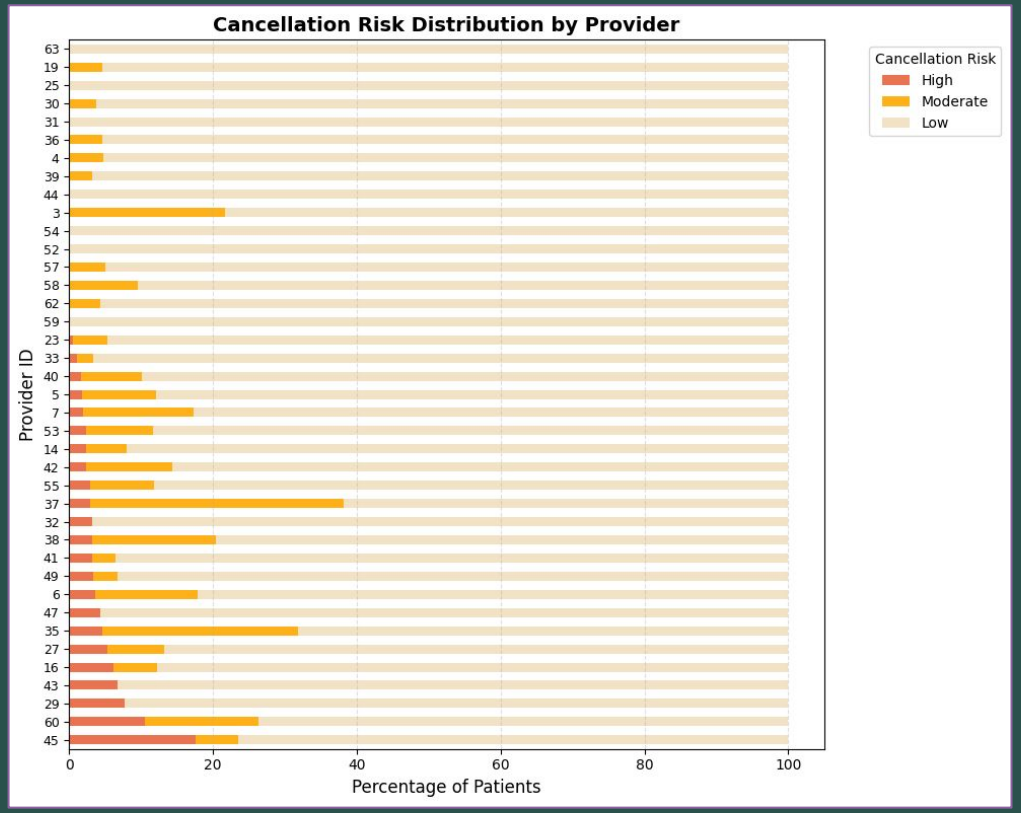


Cancellations

- Over 40% of appointments resulted in cancellation or no-shows
- Most cancellations occur during weekday mornings and early afternoons, peaking on Wednesday 9AM –12 PM
- Consider reinforcing reminders during high-cancellation periods.







- "High Cancellation Risk" are calculated by patient counts with frequent no-shows or cancellations
- Most providers had few or no high-risk patients
- Provider 45 had 17.6% high-risk, far above average (~2.5%)
- May suggest workflow or patient engagement issues in Provider 45

Operational Recommendations

- Expand geographic reach by increasing provider availability in underserved states.
- Investigate the surge in new patients during Oct–Dec 2023 — if driven by campaigns or events, consider replicating this strategy.
- Target cancellation peak hours (9 AM–12 PM) with stronger reminders (e.g., night-before texts/emails or same-day confirmations).
- Review providers with unusually high cancellation risk to assess if workflow or patient communication can be improved.
- Flag At-Risk Patients Early – Implement simple logic to identify and monitor patients who show repeated “no-show” behavior for timely follow-up or outreach.

Data Quality Recommendations

- Standardize appointment status labels to ensure consistent use of terms like “Cancelled,” “Deleted,” and “No Show” across providers.
- Improve tracking of cancellation outcomes to clarify whether missed appointments were billed or charged.
- Extend dataset beyond one year to uncover long-term or seasonal patterns in appointment and cancellation behavior.
- Capture appointment booking dates to analyze lead times and patient scheduling behavior more effectively.

Additional Materials

For additional details on data cleaning and exploration:

github.com/charJin/medical-data-analysis