Airbnb Interview Preparation Guide

Sr. Manager, Advanced Analytics, Marketing

Candidate: Vasily Souzdenkov
Date: 2024
Role: Sr. Manager, Advanced Analytics, Marketing
Reference: Position #7167656

Executive Summary

This comprehensive preparation guide is tailored for the Sr. Manager, Advanced Analytics role at Airbnb, combining your extensive 15-year background in marketing analytics with Airbnb's specific business context and interview expectations.

Part 1: Conceptual Knowledge & Behavioral Interview Preparation

Interview Strategy: Use STAR Method

- Situation - Set the context
- Task - Describe the challenge
- Action - Explain your specific actions
- Result - Quantify your impact

1. Analytics Strategy & Leadership

Key Concepts:

- Vision setting and analytics roadmap development
- Building and scaling high-performing analytics teams
- Stakeholder management and executive communication
- Prioritization frameworks for analytics initiatives
- Translating data insights into business strategy

Preparation Focus:

- Prepare detailed stories about building/transforming analytics teams at Adobe and Credit Sesame
- Focus on team development, process implementation, and stakeholder alignment
- Research Airbnb's two-sided marketplace dynamics
- Formulate questions about Airbnb's current analytics maturity and challenges

2. Marketing Measurement & Attribution

Key Concepts:

- MTA (Multi-Touch Attribution) vs. MMM (Media Mix Modeling) vs. Incrementality Testing
- LTV/CAC dynamics and Marketing Efficiency Ratio (MER)
- Budget optimization across channels
- Forecasting accuracy and confidence intervals

Preparation Focus:

- Detail your "advanced attribution modeling" for Shopify - explain model selection and validation
- Discuss $12M budget optimization at Adobe - how MMM and MTA worked together
- **Critical:** Research Airbnb's shift to incrementality testing (geo-matched markets, holdout groups)
- Frame your experience to show alignment with Airbnb's data-driven philosophy

3. Growth Analytics & Experimentation

Key Concepts:

- Hypothesis framing and experimental design
- Sample size calculation and power analysis
- Statistical significance (p-values) and confidence intervals
- Multivariate testing frameworks
- Interpreting results and avoiding common pitfalls

Preparation Focus:

- Discuss your multivariate testing framework implementation at Adobe
- Prepare examples of surprising test results and how you investigated them
- Be ready to design an A/B test for hypothetical Airbnb features
- Practice defining primary metrics, secondary metrics, and guardrails

4. Data Science & Technical Concepts

Key Concepts:

- Regression analysis for media mix modeling
- Forecasting techniques and time series analysis
- Clustering for customer segmentation
- Machine learning applications in marketing

Preparation Focus:

- Articulate how you've used regression in MMM at a high level
- Explain clustering applications for audience segmentation
- Focus on business applications rather than technical implementation

5. Product Sense & Business Acumen

Key Concepts:

- Two-sided marketplace dynamics
- Guest acquisition vs. host supply growth
- Seasonality patterns and international expansion
- Trust and safety considerations

Preparation Focus:

- Understand key Airbnb metrics: Nights Booked, Gross Booking Value, Active Listings
- Formulate hypotheses about potential growth levers for Airbnb
- Prepare to discuss how you'd validate growth ideas with data

Part 2: SQL Technical Assessment Preparation

Core SQL Concepts to Master

Essential Topics:

1. **JOINs** - INNER, LEFT/RIGHT, FULL OUTER
2. **Aggregation** - GROUP BY, HAVING, SUM, COUNT, COUNT(DISTINCT), AVG
3. **Window Functions** - CRITICAL for advanced analysis
4. **Common Table Expressions (CTEs)** - For complex problem breakdown
5. **Date/Time Functions** - DATE_TRUNC, DATEDIFF, EXTRACT
6. **CASE Statements** - Conditional logic and segmentation
7. **Data Quality** - Handling NULLs, duplicates, edge cases

Window Functions Deep Dive:

- `ROW_NUMBER()`, `RANK()`, `DENSE_RANK()` - for attribution and ranking
- `LAG()`, `LEAD()` - for time-based pattern analysis
- `SUM() OVER (PARTITION BY ... ORDER BY ...)` - running totals and cohorts

Practice Problem Archetypes

Assume Typical Tables:

- `users` (user_id, signup_date, country)
- `bookings` (booking_id, guest_id, host_id, booking_date, nights, price)
- `marketing_touches` (user_id, campaign_id, touch_date, channel, cost)
- `sessions` (session_id, user_id, action, timestamp)

Practice Writing Queries For:

1. **Cohort Analysis**
   - Calculate retention rates by signup month
   - Analyze user behavior over time
2. **Marketing Attribution**
   - Assign credit to first/last touch campaigns
   - Compare attribution models
3. **LTV Calculation**
   - 90-day LTV by acquisition channel
   - Cohort-based LTV analysis
4. **Funnel Analysis**
   - Conversion rates from session to booking
   - Drop-off point identification
5. **A/B Test Analysis**
   - Compare metrics between test groups
   - Statistical significance calculation
6. **Time Series Analysis**
   - Rolling averages and trends
   - Seasonality detection
7. **Performance Ranking**
   - Top channels by ROAS
   - Customer segment performance

Recommended Practice Resources

- **StrataScratch** - Real Airbnb interview questions
- **LeetCode** - Database problems (Medium/Hard)
- **DataLemur** - SQL interview practice
- **Mode Analytics** - Window function tutorial

Part 3: Airbnb-Specific Context

Key Business Metrics to Understand

- **Nights Booked** - Core volume metric
- **Gross Booking Value (GBV)** - Revenue equivalent
- **Active Listings** - Supply side health
- **Take Rate** - Revenue as percentage of bookings
- **Guest and Host Growth** - Two-sided marketplace dynamics

Airbnb's Data Culture

- Heavy emphasis on incrementality testing
- Geo-matched market experiments
- Sophisticated experimentation platform
- Data-informed rather than data-driven decision making

Research Preparation

- Review recent Airbnb earnings reports
- Study Airbnb's business model evolution
- Understand their international expansion strategy
- Research their approach to trust and safety

Final Preparation Checklist

One Week Before Interview

- Research Airbnb's current business priorities
- Practice 5-7 STAR stories covering leadership and technical achievements
- Complete 10+ complex SQL problems under time pressure
- Study Airbnb's incrementality testing approach

Two Days Before Interview

- Refine your analytics leadership philosophy
- Practice explaining complex concepts simply
- Review your resume accomplishments and metrics
- [*] Prepare questions for your interviewers

Interview Day

- Have your STAR stories mentally prepared
- Be ready to write clean, efficient SQL code
- Demonstrate business acumen about Airbnb's model
- Show enthusiasm for Airbnb's mission