DATA KLUB 2.
DATA SCIENCE COMPETITION

MORGENS - HOTELS

Bernadett Katalin Horváth

DECEMBER , 2024

THE PURPOSE OF THE ANALYSIS

- Analysis of marketing (sources, mediums, campaigns) and preparation of a conversion analysis

- Comprehensive analysis of search, booking, and occupancy data

- Based on search, booking, and occupancy data, is it possible to develop a warning system for marketing expenses and for maximizing occupancy through optimal pricing?

KEY HOTEL METRICS

- Average Length of Stay (ALOS)

- Average Guests per Booking

- Lead Time

- Average Daily Rate (ADR)

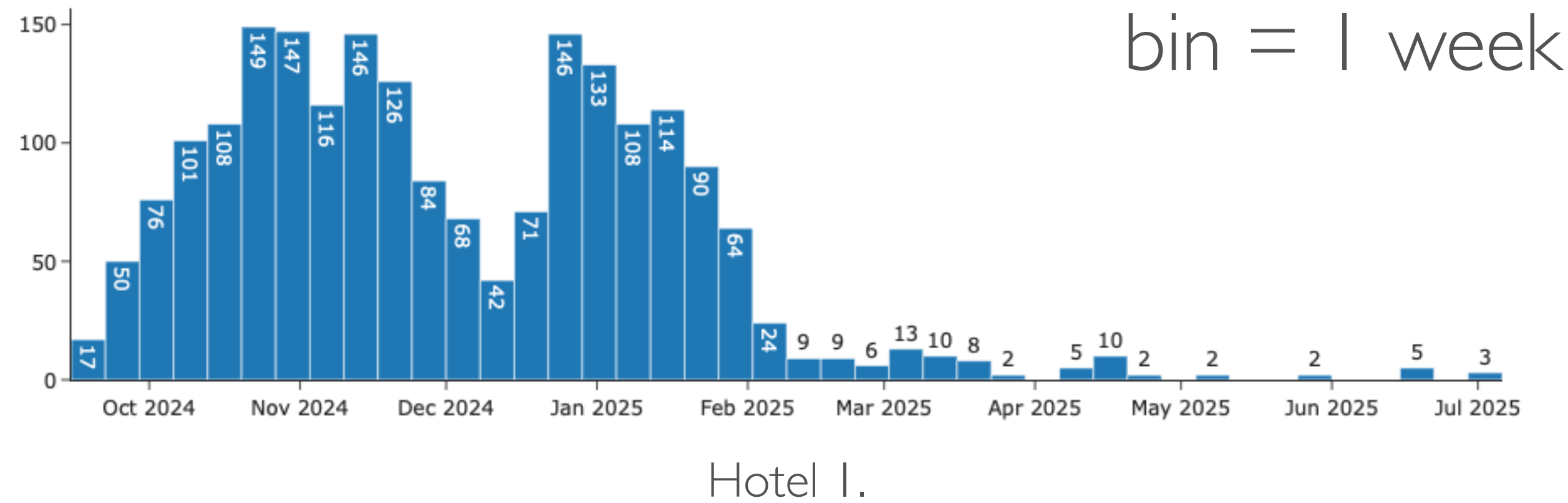- Marketing Cost per Booking (MCPB)

- Marketing Cost Percentage

MORGENS HOTEL DATA

- 3 Hungarian Hotels: 1., 2., 3.

- 11 table per hotel

- Marketing spend and website traffic period: 2024.09.18 - 2024.10.18.

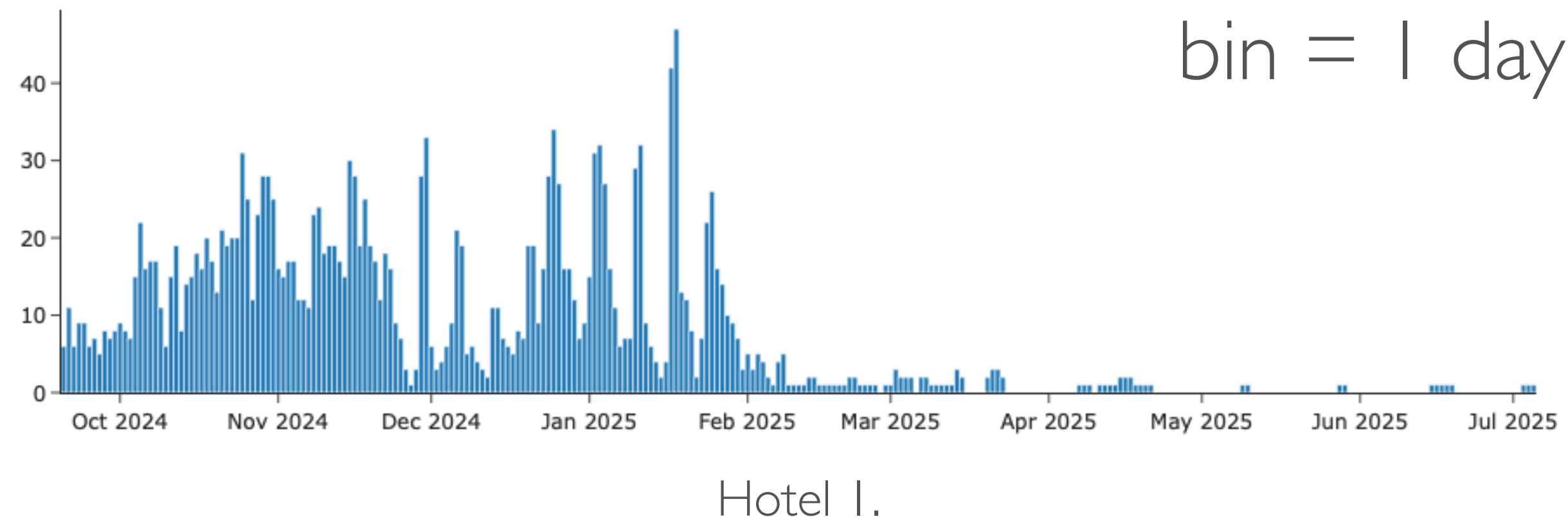- Search and booking period: 2024.09.20 - 2025.12.31

FOR WHICH DATES THE GUESTS SEARCH DURING THE 31 DAY?
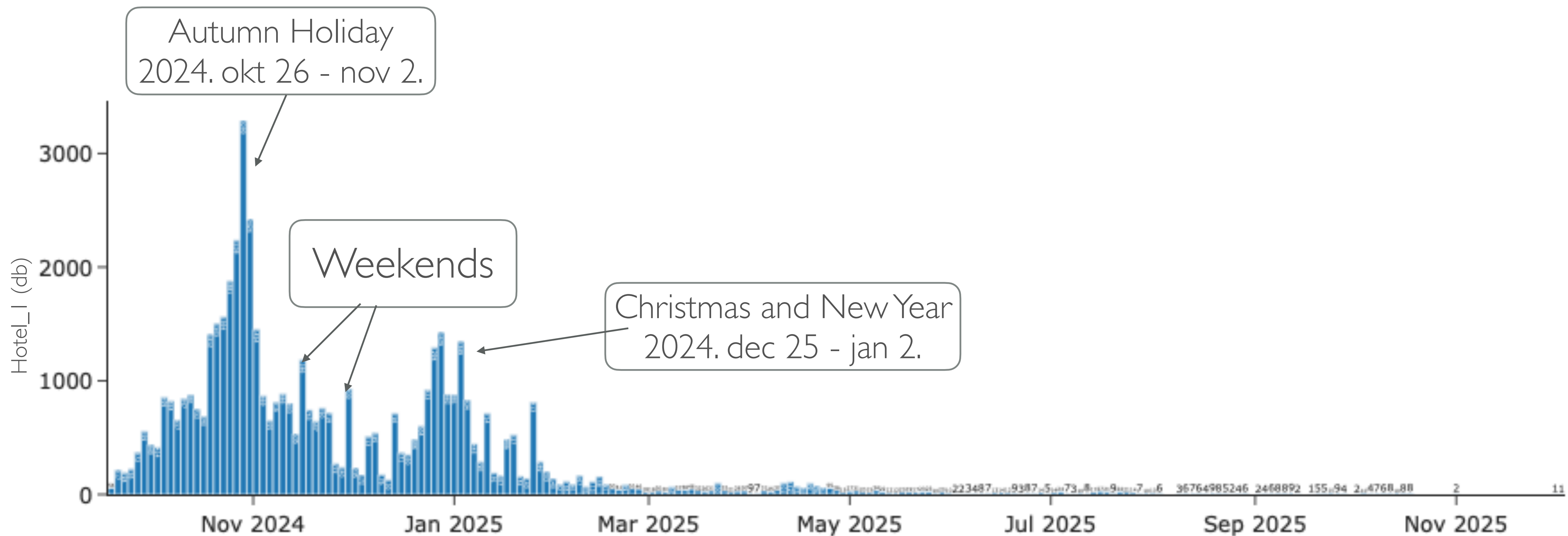
FOR WHICH DATES THE SEARCHES RESULT IN BOOKINGS?

bin = 1 week

Hotel 1.

Main booking purposes in this period:
- School Autumn Holiday: end of October
- Christmas and New Year Period
- Weekends

bin = 1 day

Hotel 1.

At higher resolution the advance booking of weekends (Friday and Saturday nights) can be clearly seen 3-4 months ahead.

LEAD TIME ANALYSIS
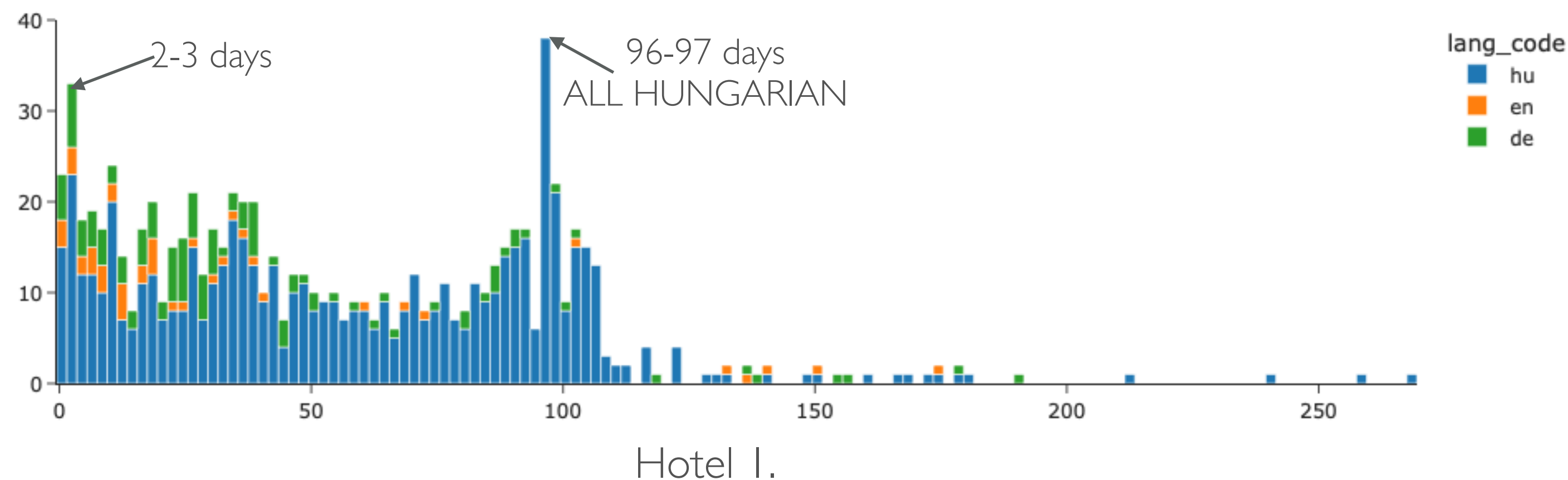

SEARCHES

6-7 nap

18-19 nap

conversion
- -1.0
- 1.0

Hotel 1.
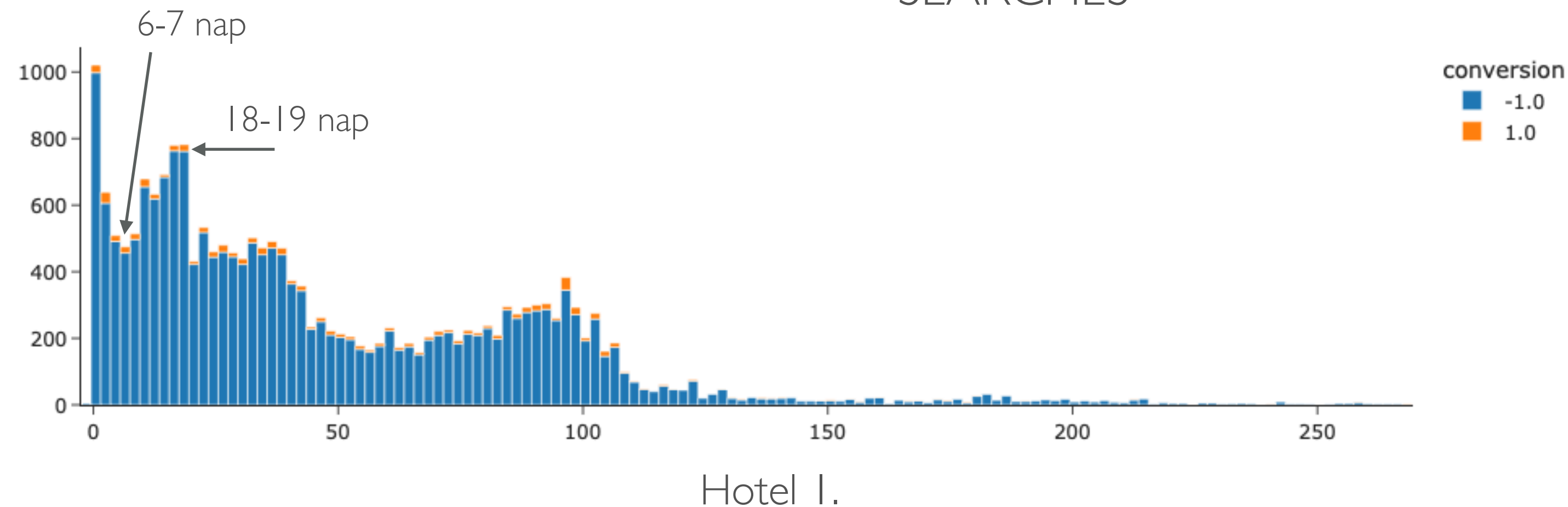
The peak of searches occurs one day before the requested period, followed by an 18-day booking window.

BOOKINGS

2-3 days

96-97 days
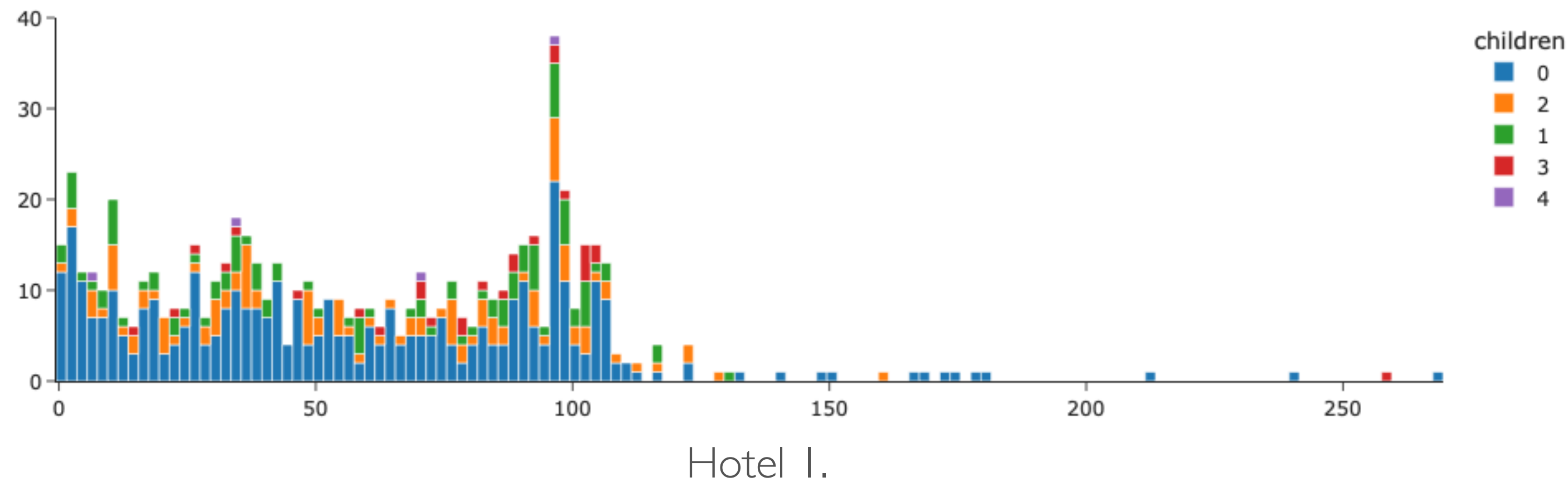ALL HUNGARIAN

lang_code
- hu
- en
- de

Hotel 1.

4.1% of bookings were made 2–3 days before the trip, while 4.7% were made 96–97 days in advance.
The latter were for the year-end holidays and the weekend of January 17, 2025.

FROM A PLANNING PERSPECTIVE, WHAT PERCENTAGE OF SEARCHES TURNED INTO ACTUAL BOOKINGS
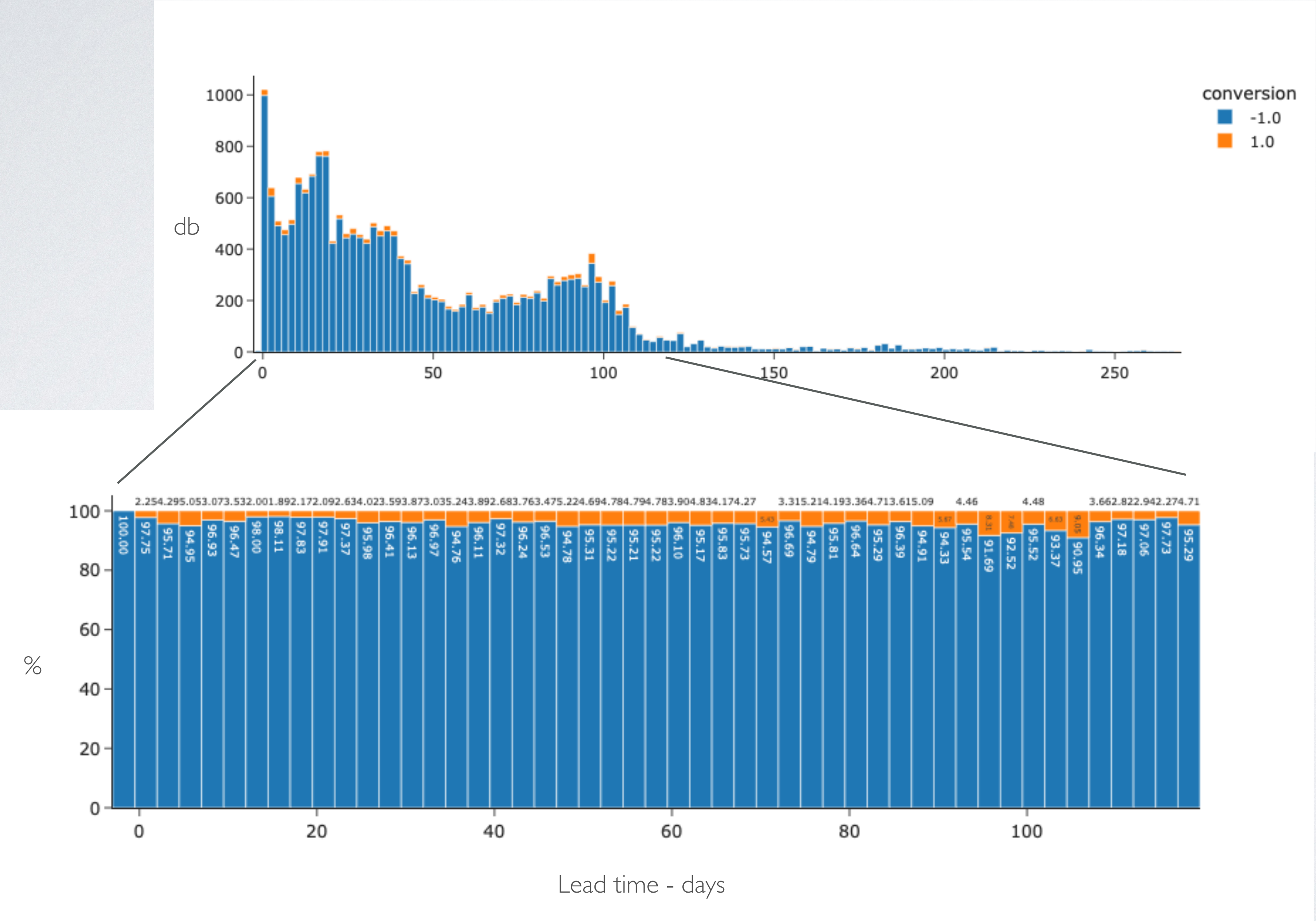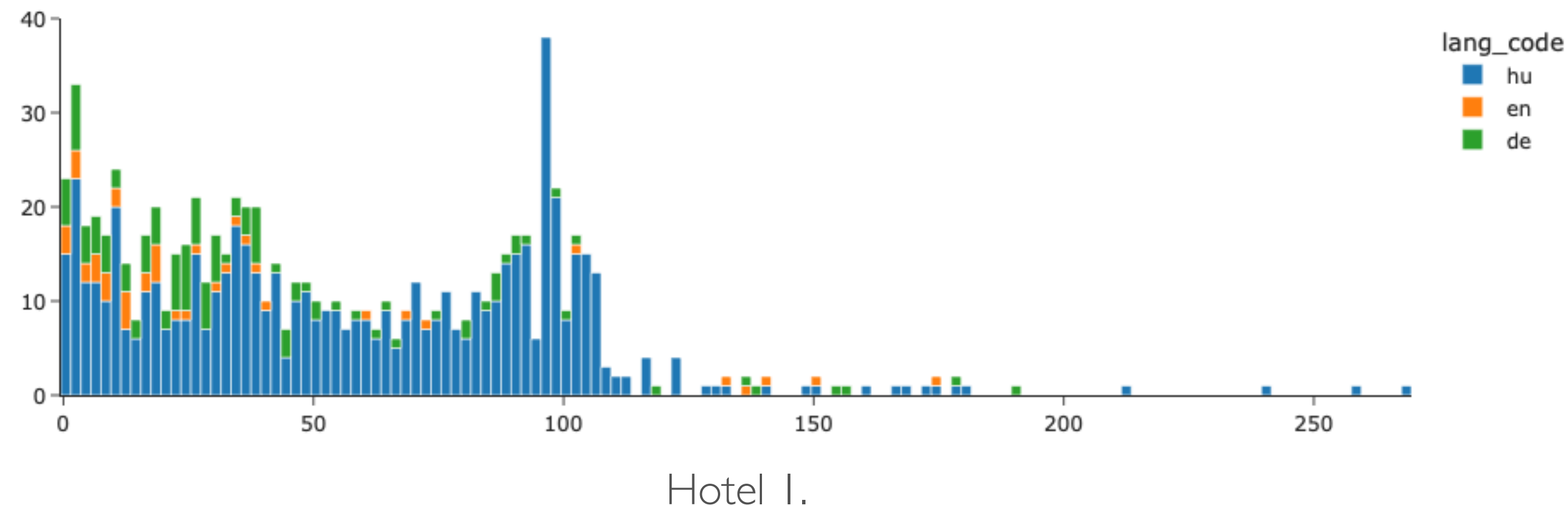
ANALYSIS OF BOOKING WINDOW

Hotel I.

Hotel I.
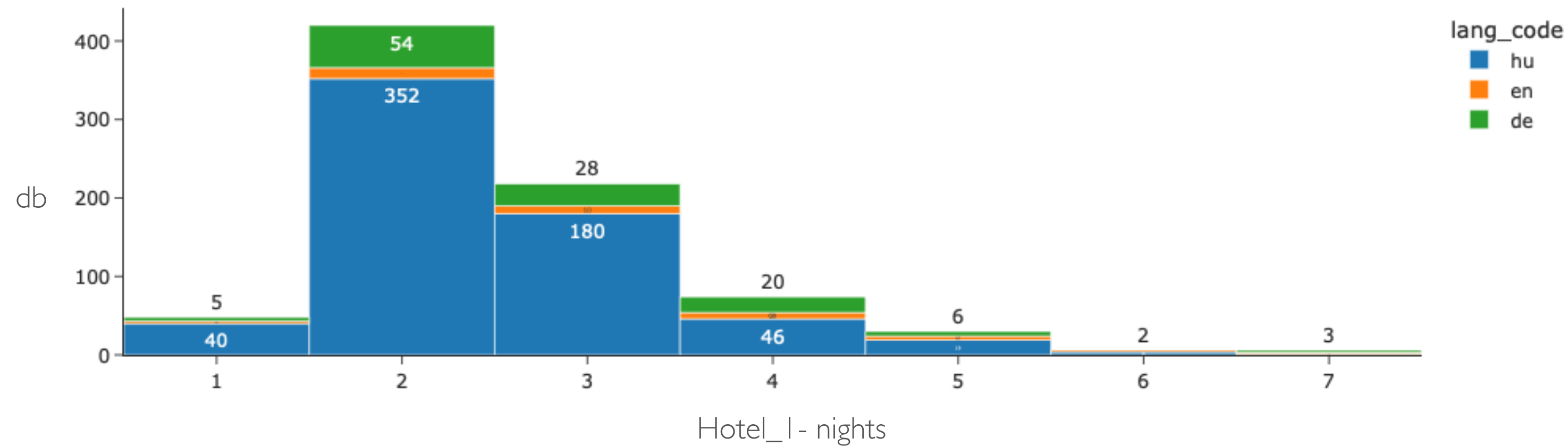
Do families with children like to plan ahead?

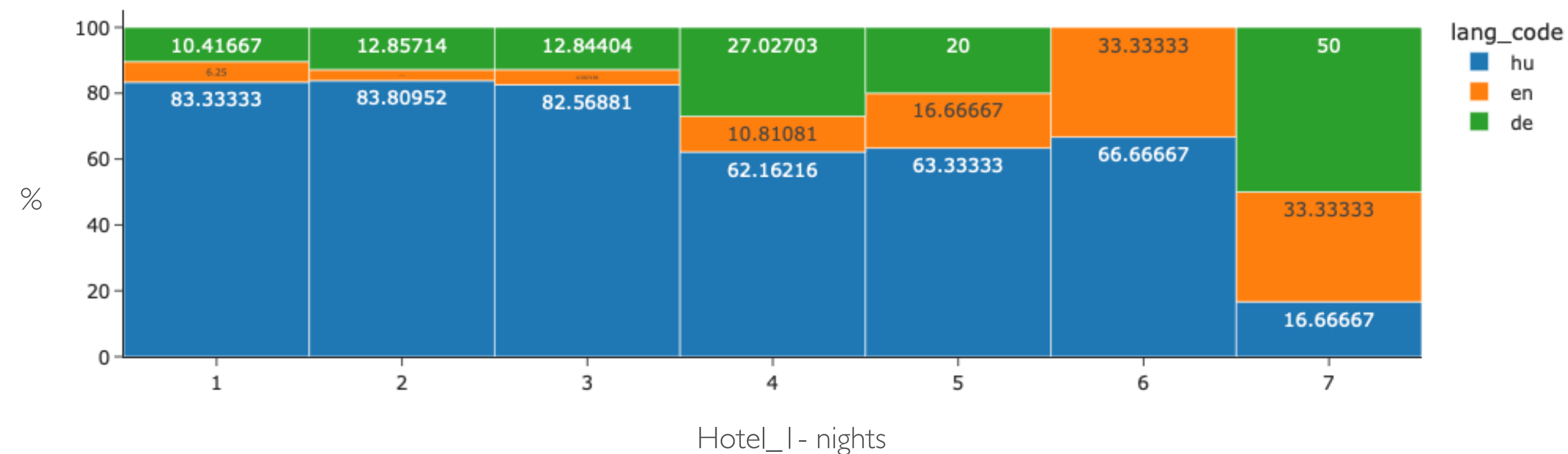The proportion of guests with children who book on impulse (1-3 days in advance) is lower.

Do Hungarian or international guests have a longer booking window?

The proportion of Hungarian guests is much higher among those who plan ahead, months in advance.
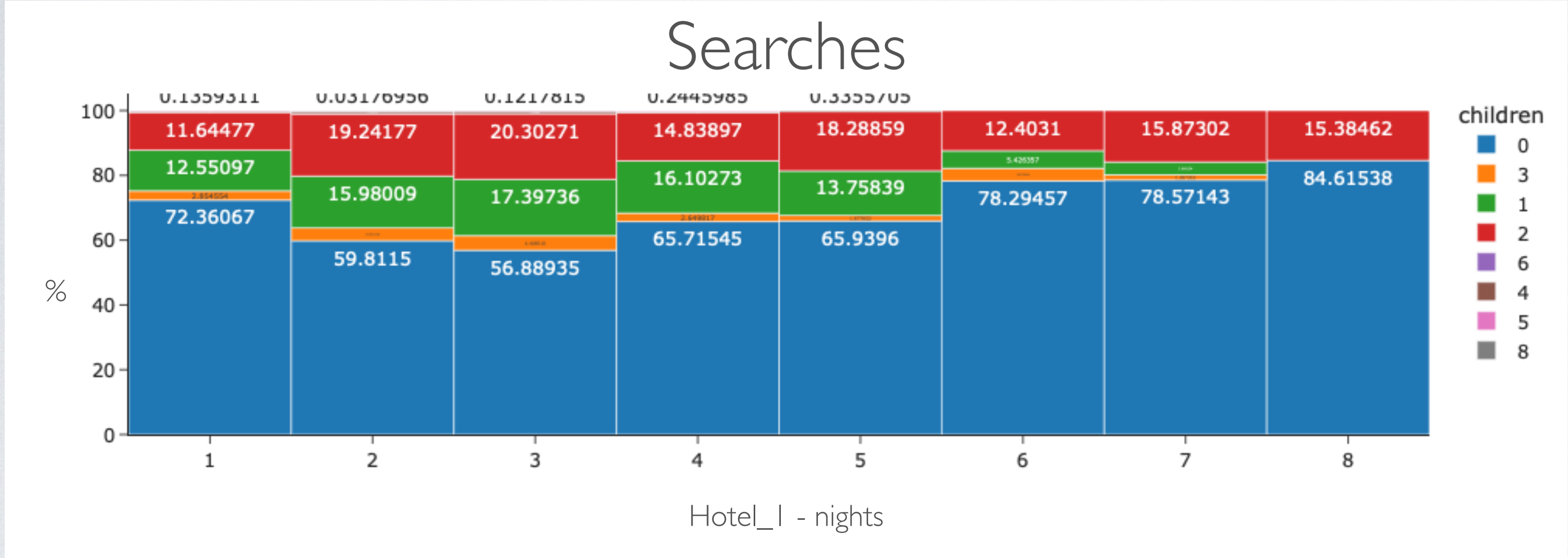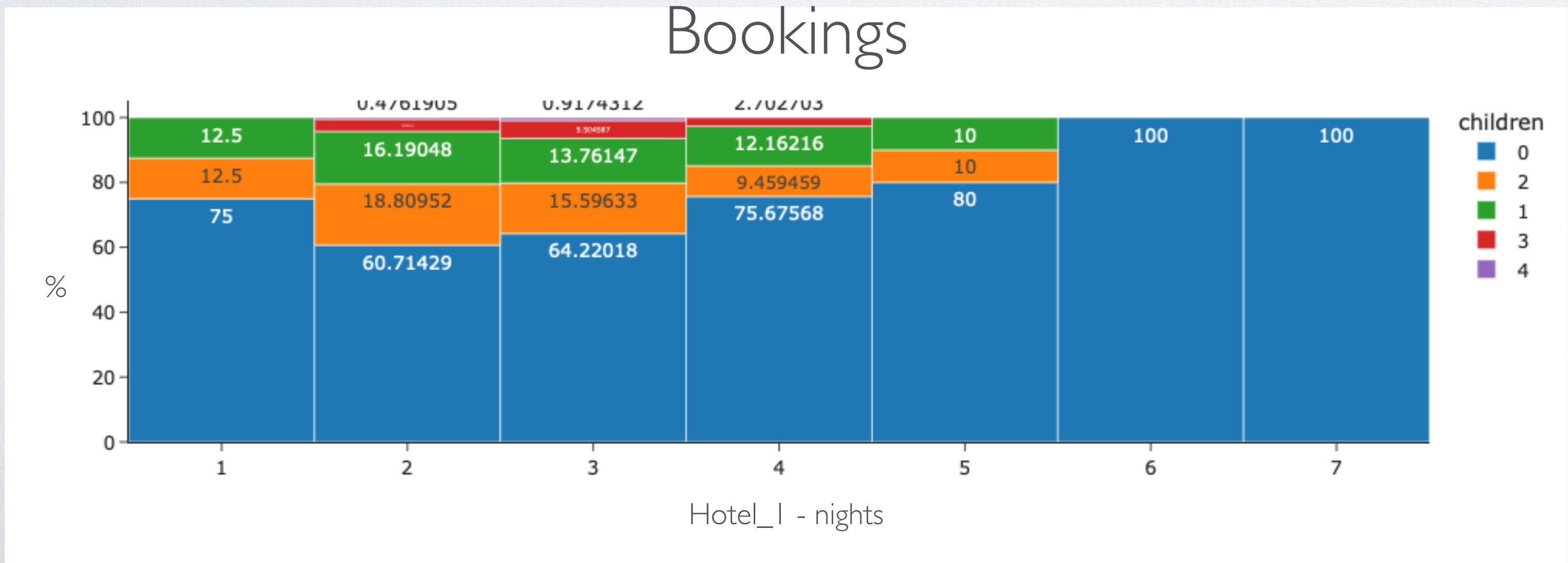
AVERAGE LENGTH OF STAY

Hotel_1 - 2,55 days

The proportion of international bookings increases with longer stays.
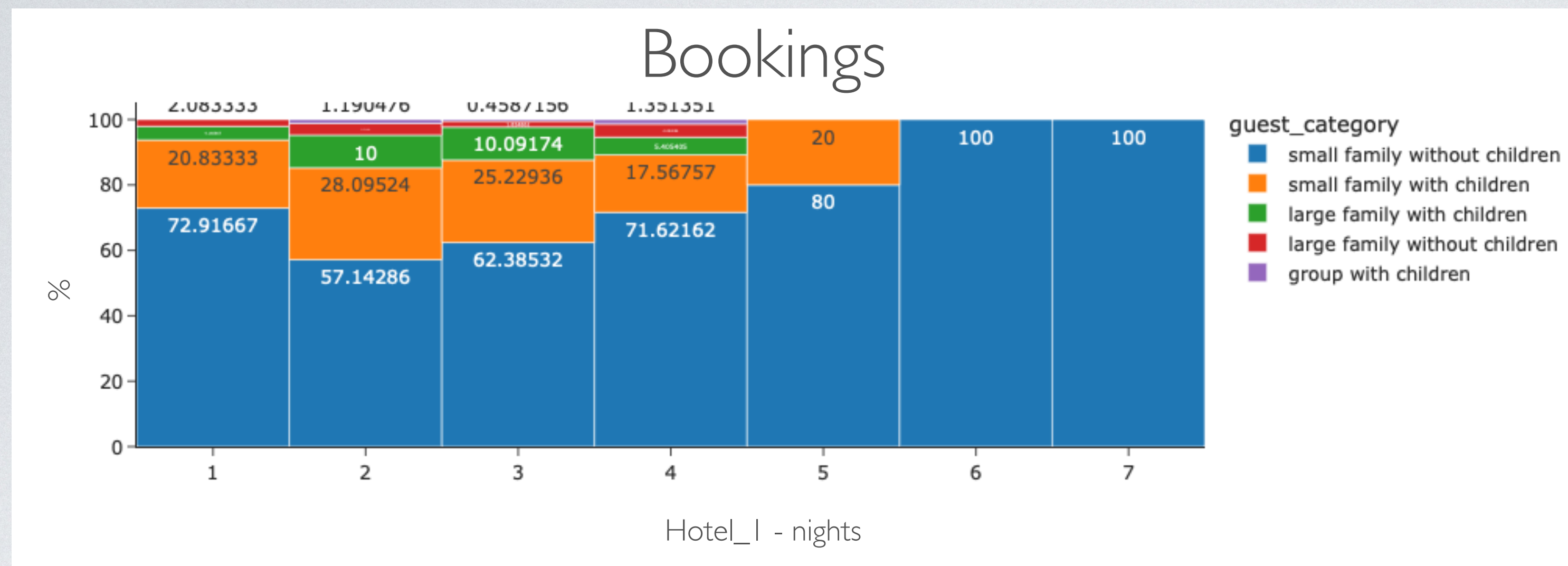
HOW DOES THE LENGTH OF STAY VARY WITH THE NUMBER OF CHILDREN?

Families with more children search for longer stays than the bookings that are ultimately made.
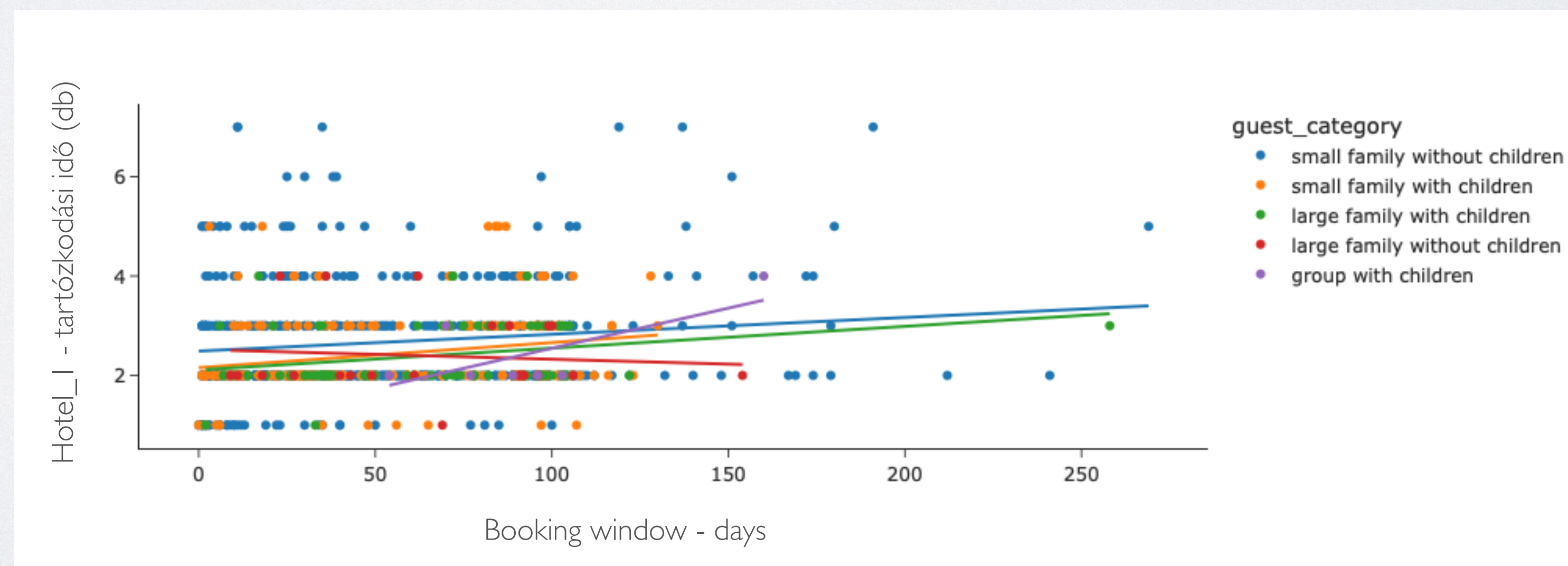
It is striking that families with two children are underrepresented in actual bookings compared to searches.

Bookings

Percentage distribution of bookings among the six social segments.

Small family: < 5
Large family: 5 < 9
Group: 9 <

Longer bookings are associated with a longer booking window, except for the childless groups.

HOTEL I- ANALYSIS OF ROOM TYPES
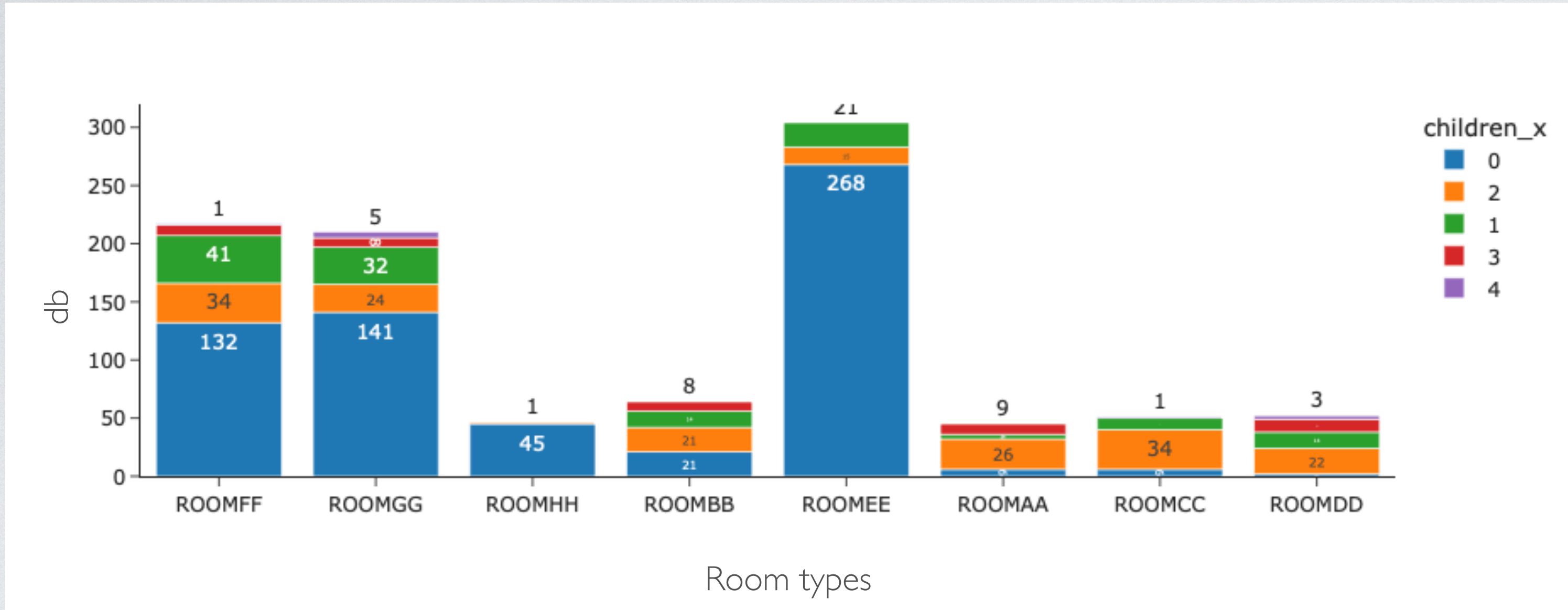
Distribution of booked room types by number of children.
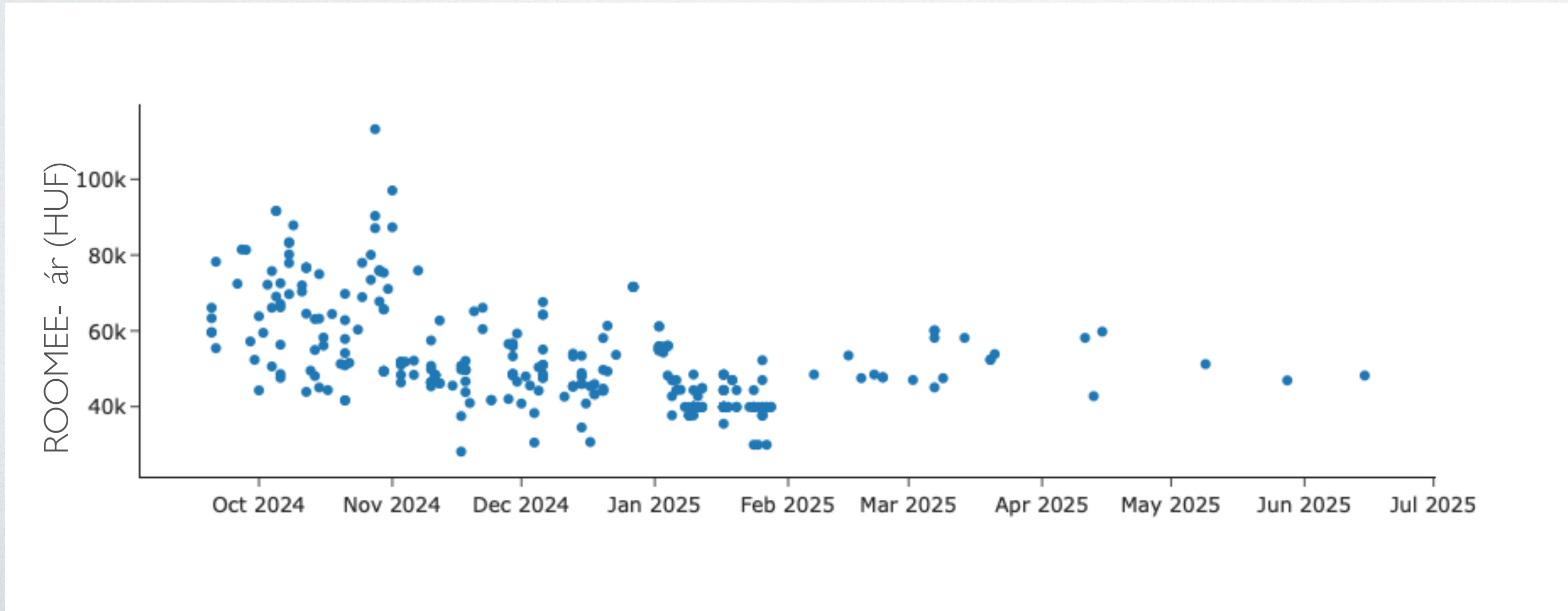
Price changes of the best-selling room type by booking window: the dynamic pricing is clearly visible.

TREND IN THE AVERAGE NUMBER OF GUESTS PER BOOKING
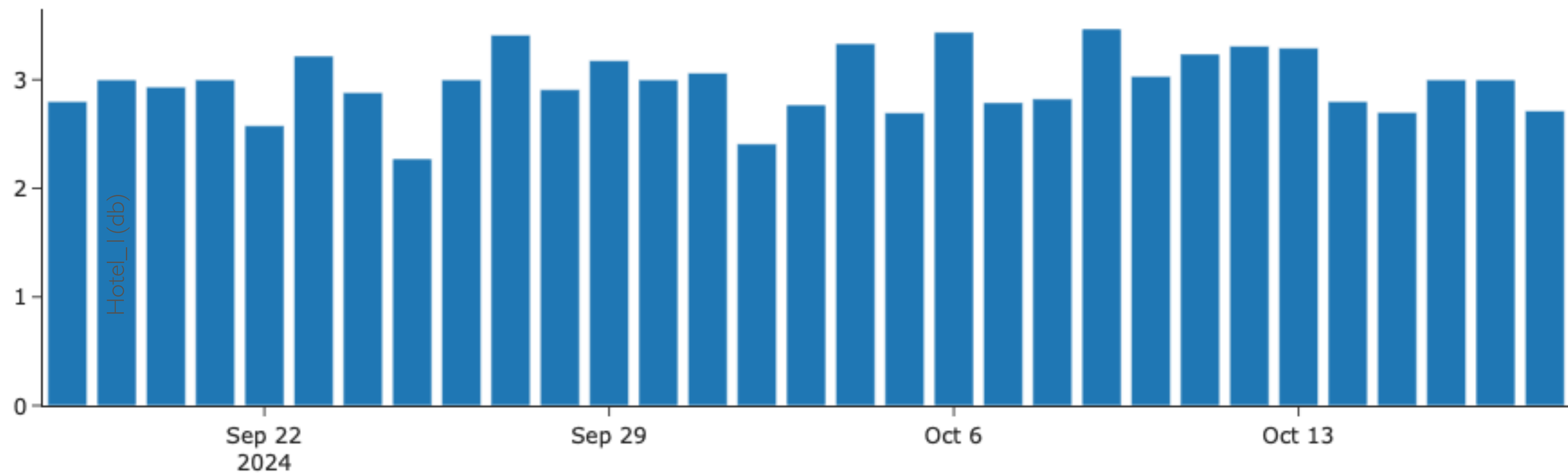
HOTEl_1 : 2,55 db
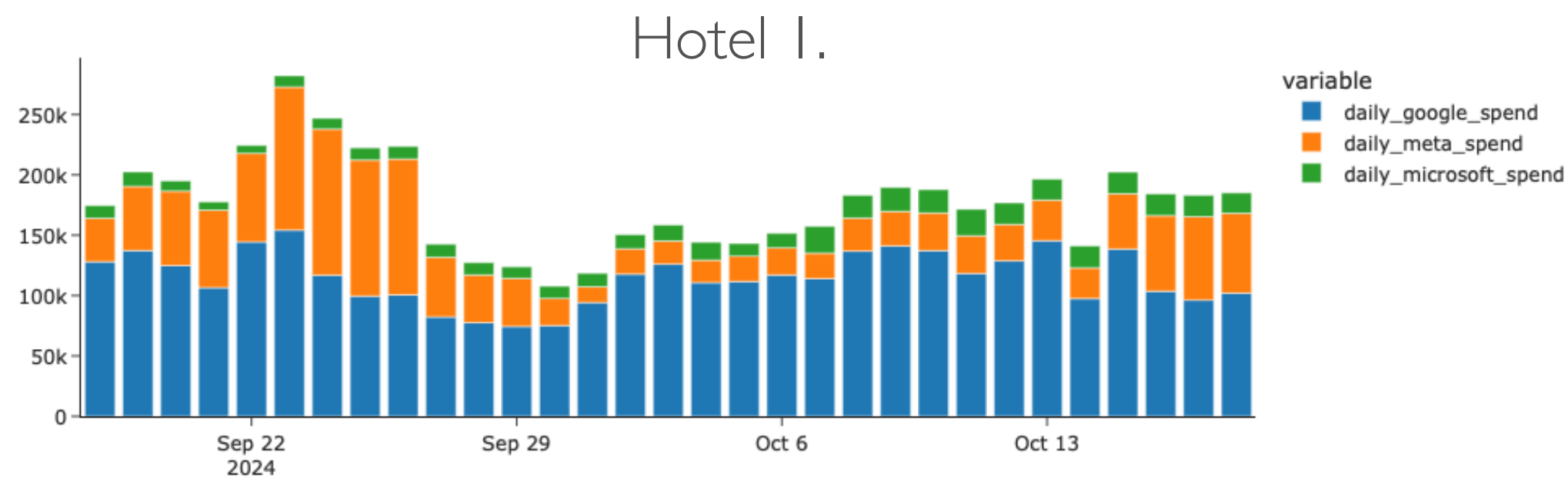
Hotel I.

Daily marketing cost by source
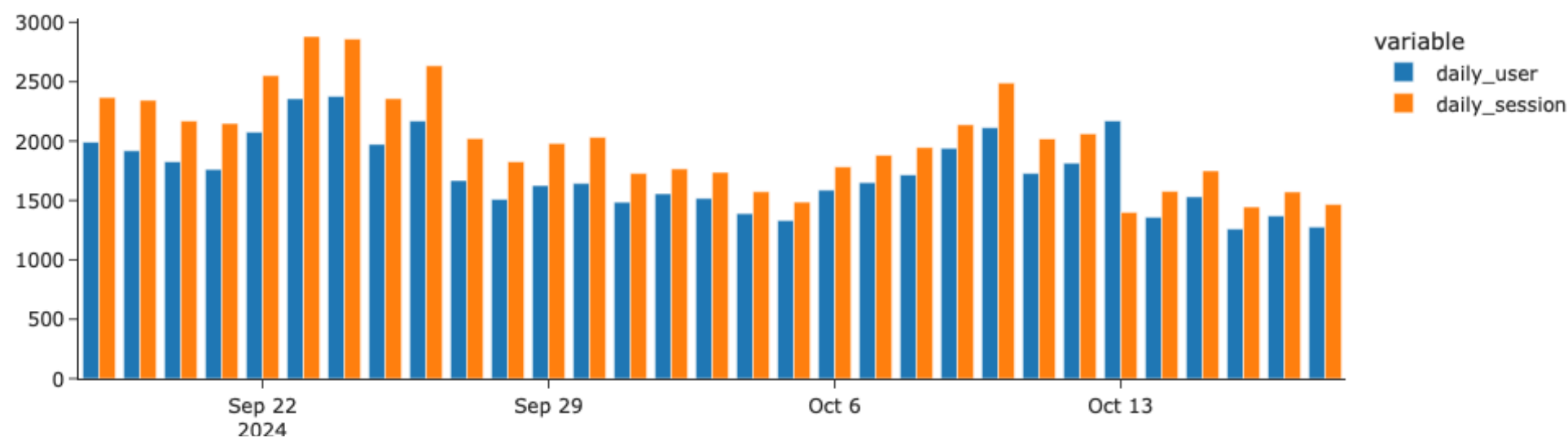
Total users / their sessions per day

Total date selectors / their sessions per day

Total revenue per day

Daily marketing cost by source

Total users / their sessions per day

Total date selectors / their sessions per day

Number of bookings per day

Total marketing spend – total users – total date pickers – total revenue

Total marketing spend – paid visitor – paid date picker – campaign revenue

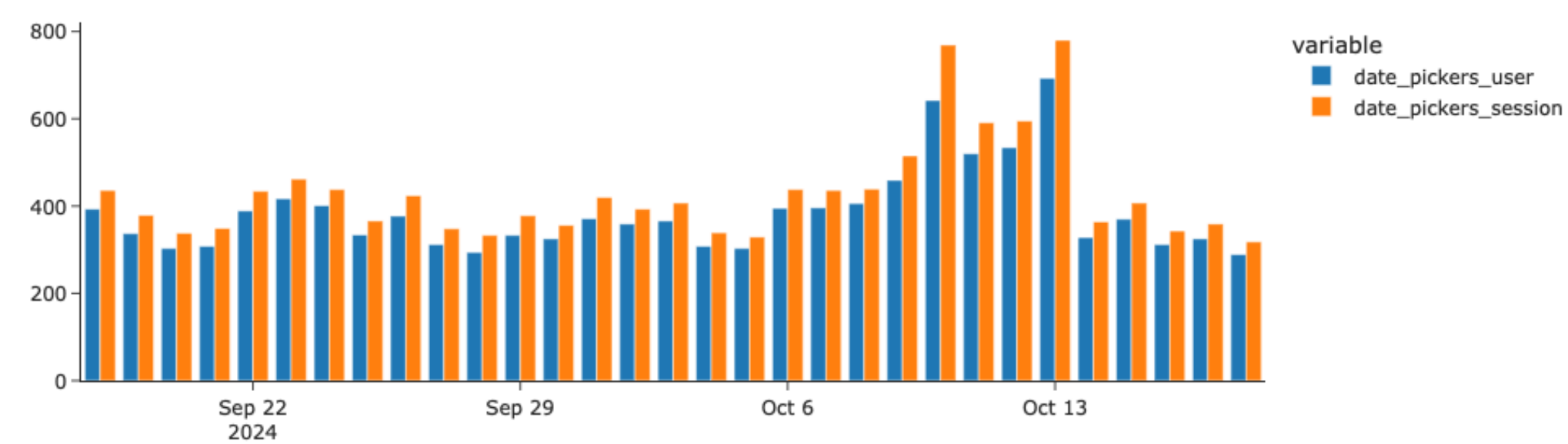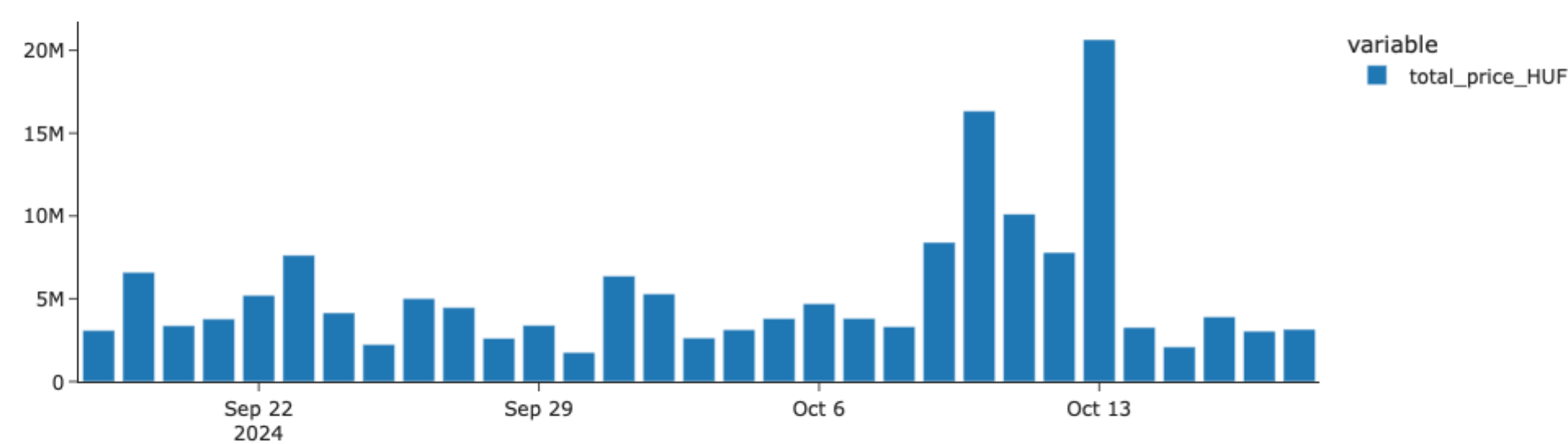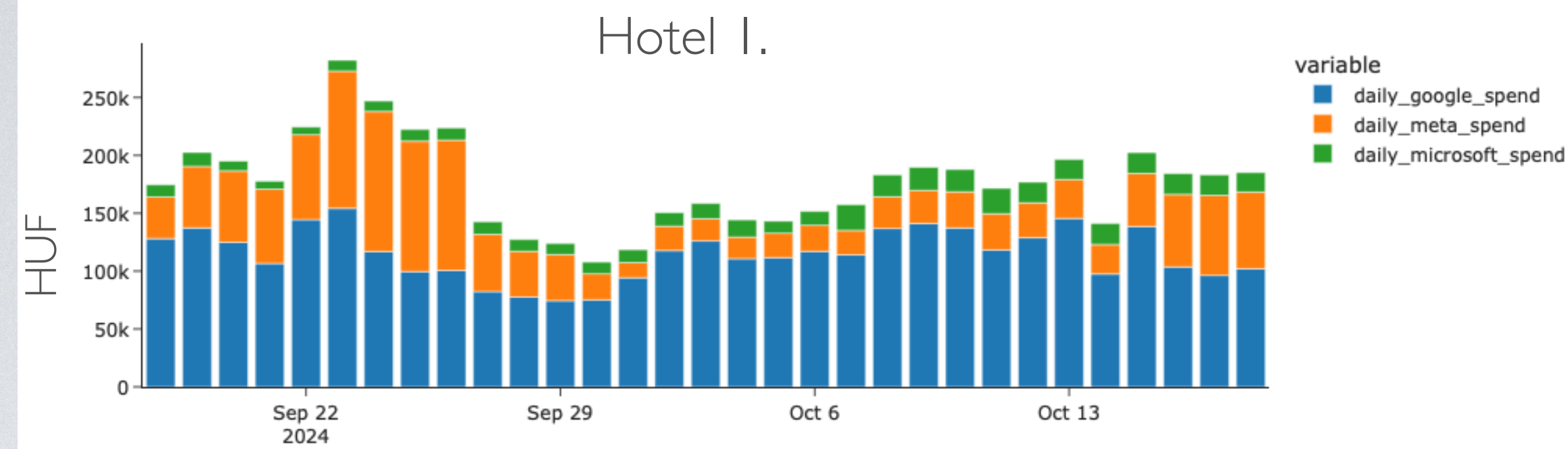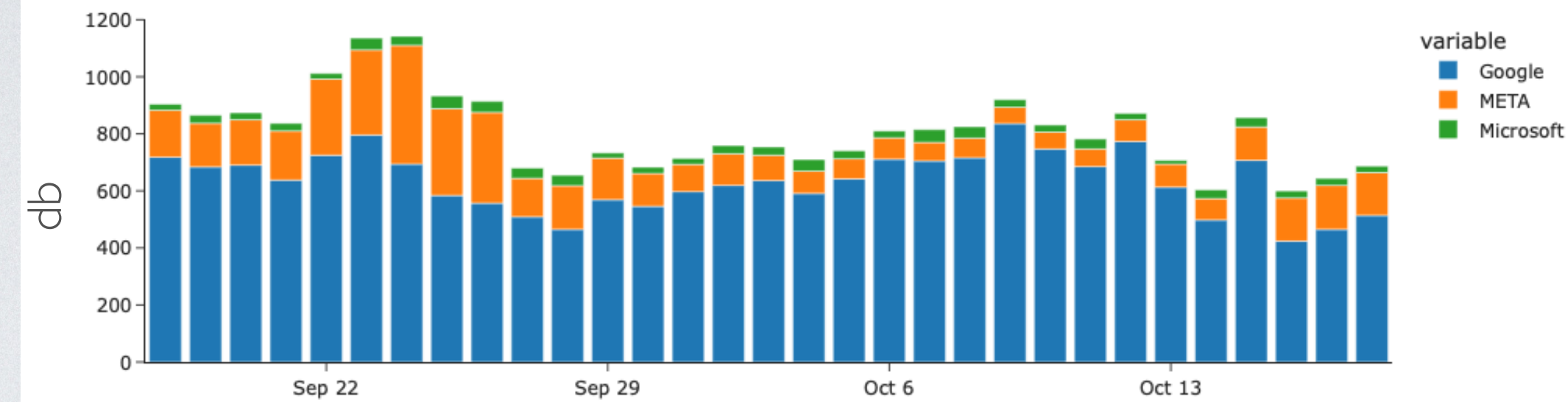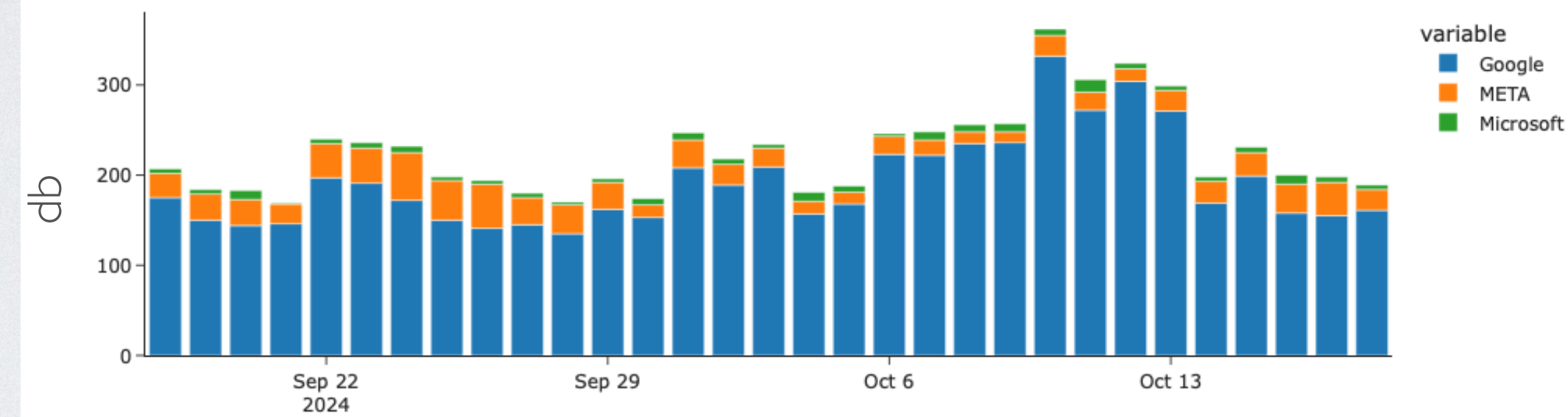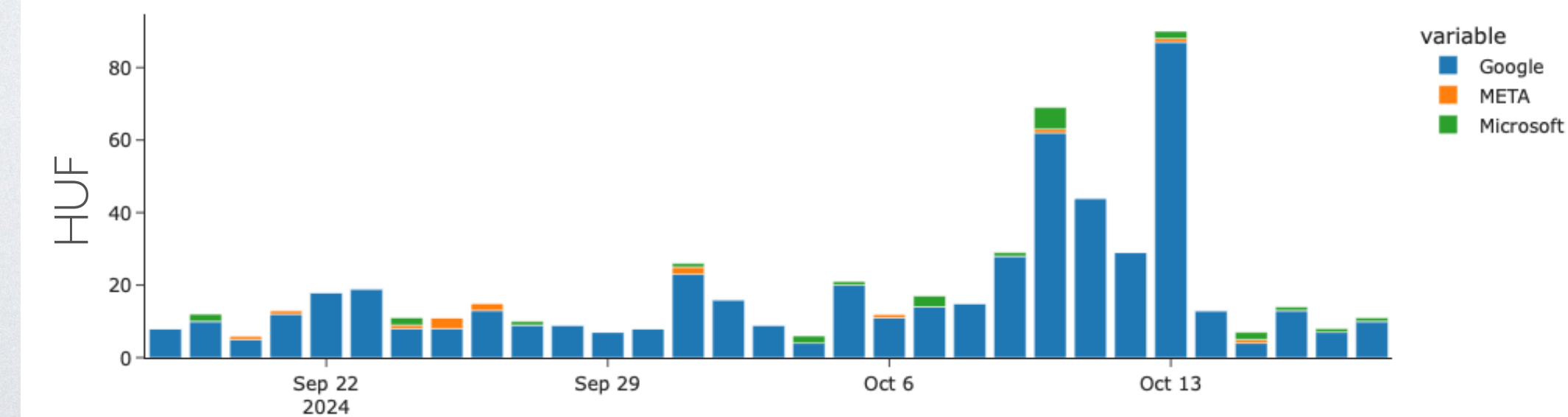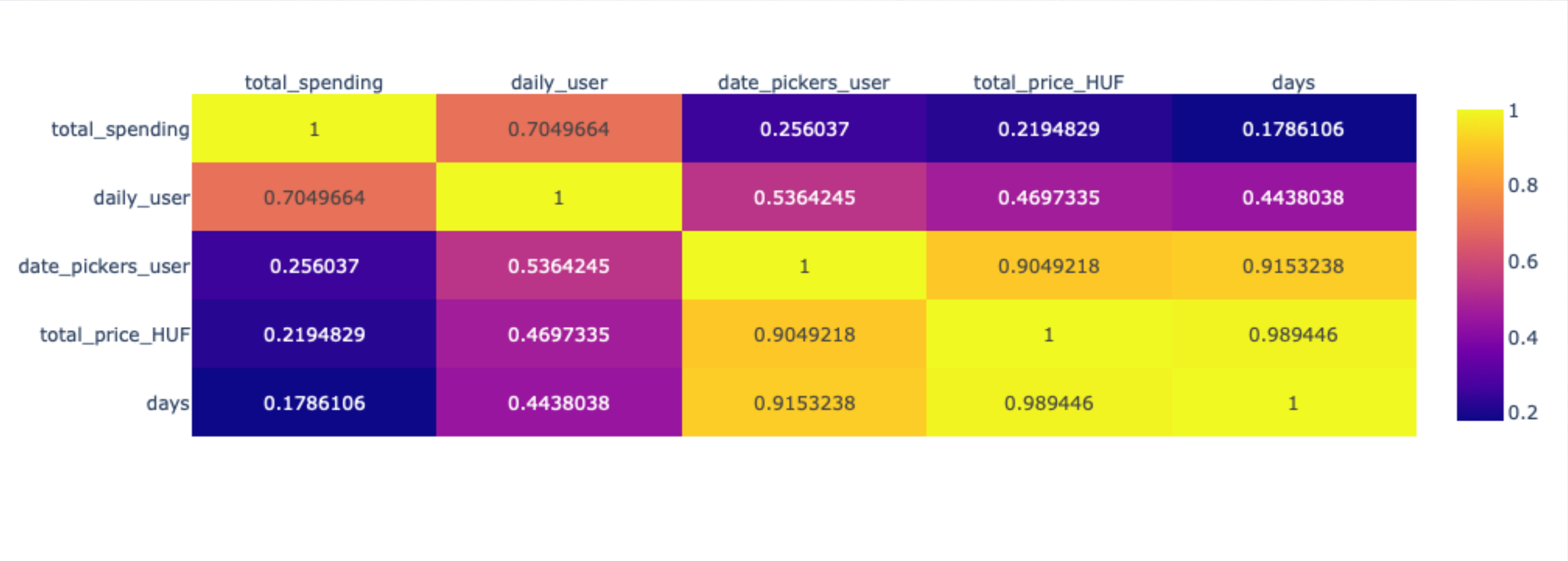|	daily_google_spend	user_Google	picker_Google	revenue_Google	count_Google
daily_google_spend	1	0.7878569	0.5532274	0.4194264	0.4156971
user_Google	0.7878569	1	0.5862561	0.2470535	0.2541207
picker_Google	0.5532274	0.5862561	1	0.7115738	0.750654
revenue_Google	0.4194264	0.2470535	0.7115738	1	0.984174
count_Google	0.4156971	0.2541207	0.750654	0.984174	1

Google

	daily_microsoft_spend	user_Microsoft	picker_Microsoft	revenue_Microsoft	count_Microsoft
daily_microsoft_spend	1	0.1130615	0.5180739	0.4685355	0.4188029
user_Microsoft	0.1130615	1	0.1597454	0.07701313	0.005564859
picker_Microsoft	0.5180739	0.1597454	1	0.2727075	0.2192435
revenue_Microsoft	0.4685355	0.07701313	0.2727075	1	0.9609187
count_Microsoft	0.4188029	0.005564859	0.2192435	0.9609187	1

Microsoft

	daily_meta_spend	user_META	picker_META	revenue_META	count_META
daily_meta_spend	1	0.9297017	0.8446867	0.38756	0.4063267
user_META	0.9297017	1	0.8918418	0.416621	0.3960903
picker_META	0.8446867	0.8918418	1	0.4713925	0.4794498
revenue_META	0.38756	0.416621	0.4713925	1	0.8753509
count_META	0.4063267	0.3960903	0.4794498	0.8753509	1

META

marketing spend

Paid visitor

Paid date selector

Campaign revenue

MARKETING FUNNEL - HOTEL_I.
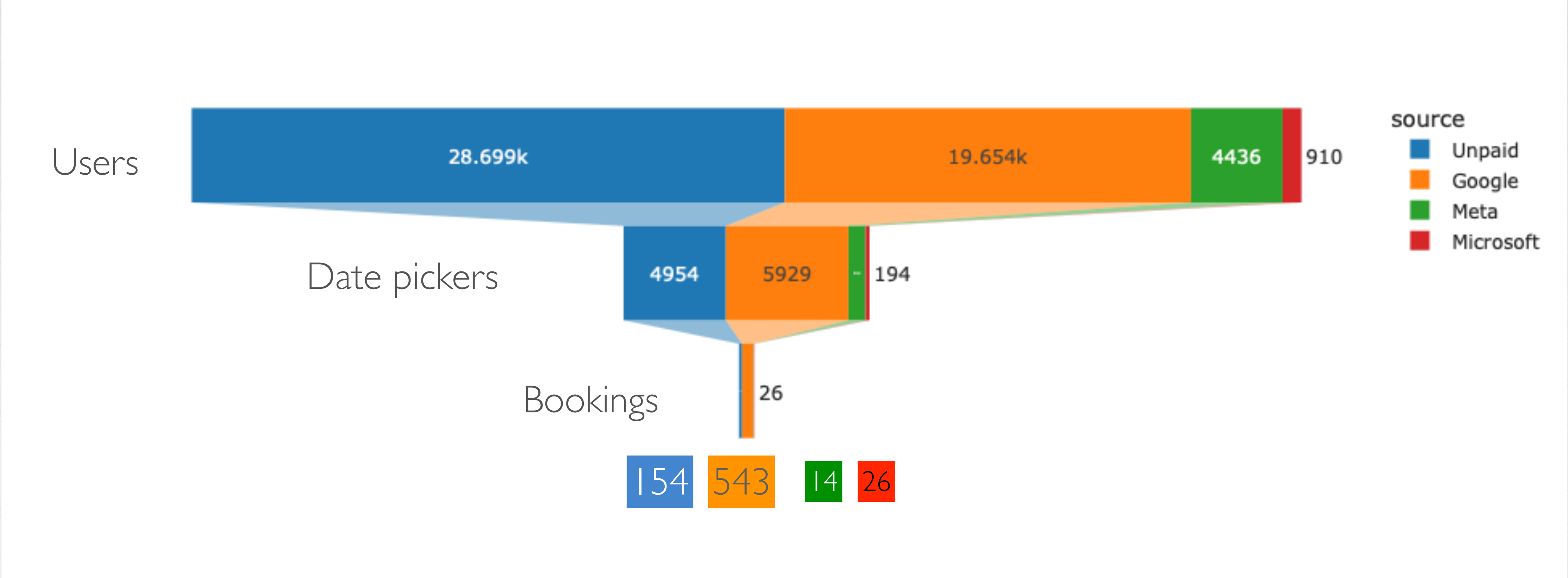
CHANGE IN MARKETING COST - HOTEL I.
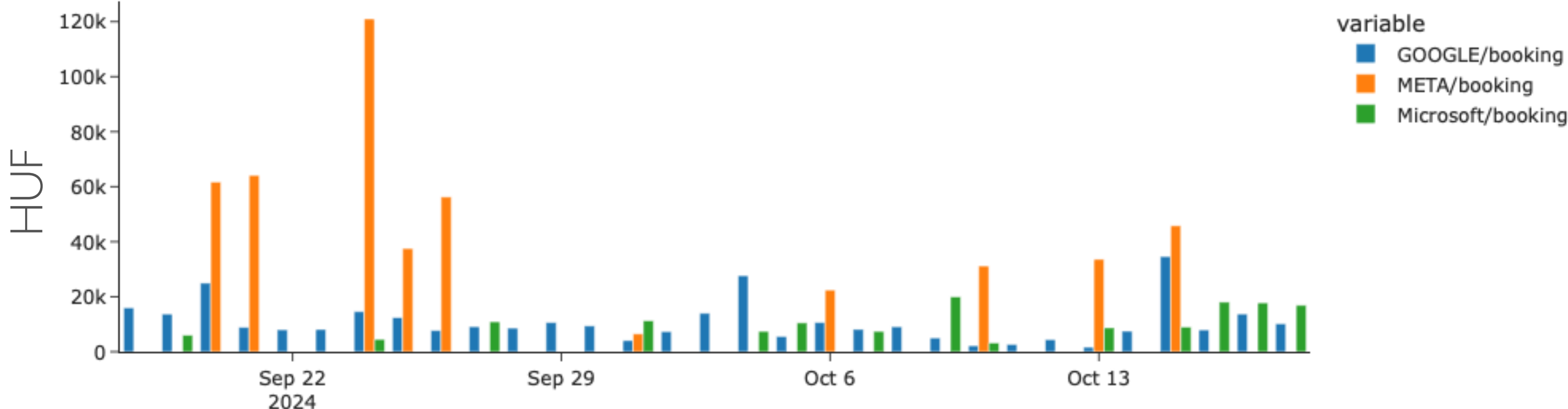
Marketing budget per booking: 9395 HUF

Hotel I.

Marketing budget percentage rate: 4,62%

The campaign from the META source performed much worse, both in absolute terms and percentage-wise, compared to the other two.

Google: 6554 HUF - 3,2 %
Microsoft: 16.373 HUF - 8,1 %
META: 106.580 HUF - 52,0 %

CAMPAIGN ANALYSIS - HOTEL I.

Changes in the distribution of users coming from Hotel I's key campaigns during the analyzed period.

EVALUATION OF ANALYSES - HOTEL I.

Searches and bookings are mainly concentrated around holiday periods (school autumn break and Christmas/New Year) and weekends.
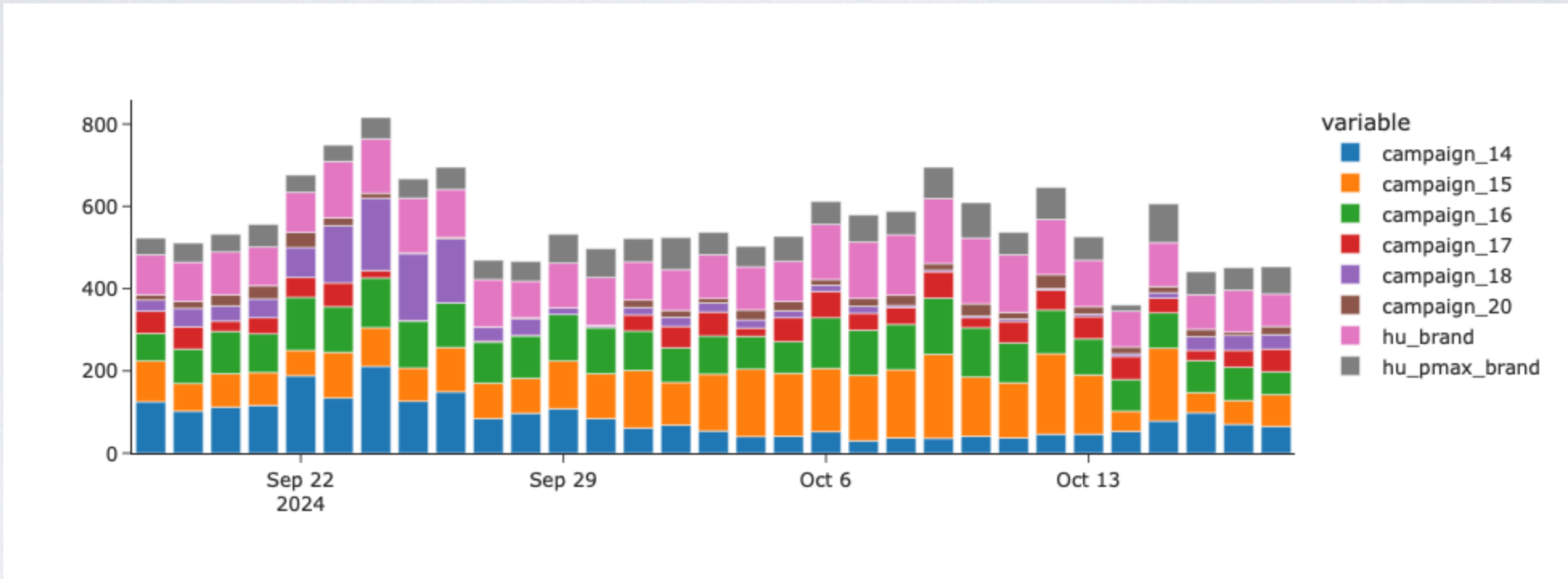
Booking window: Bookings for popular periods start arriving 3–4 months in advance. The lead time shows two peaks: one 2–3 days before the booking and another 96–97 days prior — for this hotel during this period.

Conversion rate: 2–9% of searches for a given day result in bookings.

Planning behavior: Families with children and Hungarian guests prefer to plan further ahead.

Average length of stay: 2.55 nights.

Stay patterns: Guests with children search for longer stays than they actually book.

Booking window vs. stay length: Longer stays generally correspond to a longer booking window, except for smaller groups of 5–9 guests without children.

Room types: Three room types (EE, FF, GG) are most popular overall, but families with children tend to book the other three types (AA, DD, CC).

Marketing performance: Among the channels analyzed (Google, Meta, Microsoft), Google had the most favorable cost performance, while Meta performed the worst.

Channel correlation: Correlation of channels with paid visitors is weakest for Microsoft (11%), while Google (79%) and Meta (92%) show strong correlation. For bookings, all channels show moderate correlation (38–46%).

Campaigns: Eight larger campaigns launched during this period drove the majority of paid visitors.

User behavior funnel on the website: Visitors ➝ searches ➝ bookings.

OPTIMIZATION RECOMMENDATION

- The advertising cost per booking should not exceed 5% and/or remain under 10,000 HUF per booking.

- If this limit is exceeded for several days (e.g., 3), intervention is required.

- Continuously measure conversion numbers weekly/monthly and aim to increase the proportion of website visitors who become accommodation searchers, and of searchers who become bookers.

- Focus on the platform that brings the most inquiries/customers at the lowest cost; for Hotel 1, this is Google ads.

- Encourage users who started but abandoned the booking process through remarketing.

- For the Hungarian audience, launch campaigns considering the booking window, possibly 3–4 months in advance, while for international guests, a shorter lead time is sufficient.

- For guests with children, consider campaigns that support longer stays.