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Data Science Programming

Travel Data Analysis Summary

**Tools Used:**

* **Software**: Jupyter Notebook (Python)
* **Libraries**: pandas for data handling, seaborn and matplotlib for visualizations, NumPy for numerical operations.

**Questions Asked:**

* How do trip duration and number of cities visited vary by booker country?
* During which months is multi-city travel most and least popular?
* How do spontaneous booking rates differ by device class, and are mobile users more likely to make last-minute travel decisions?
* Which destination combinations are most frequently booked together?
* Are there regional differences in trip characteristics (duration, complexity, planning behavior) that might suggest varying planning behaviors?
* Which booking countries have the longest average stay durations?
* Which referral channels drive the highest-value bookings in terms of stay duration?

**Key Insights**

* **Booker Countries**: Travelers from The Devilfire Empire average the most cities per trip, while Tcherkistan travelers prefer the longest trips for about 11.5 days.
* Multi-city trips peak in summer months and decline sharply in winter.
* **Devices**: Mobile users show significantly higher rates of last-minute bookings than desktop users, indicating spontaneous decision-making.
* **Destinations**: Certain city-pairs consistently appear together, suggesting popular corridor routes and comfortability.
* **Regional Behavior**: Some countries lean toward short, simple trips, while others prefer extended stays.
* **Referral Channels**: Some affiliates drive longer stays and higher-value trips, making them more strategic for partnerships.

**Recommendations for Travel Platforms:**

* Multi-city packages can be marketed to countries with complex itineraries. For example, countries like Elbonia and Devilfire Empire.
* Extended stay deals can be promoted to regions like Tcherkistan.
* Invest in mobile last-minute offers, since mobile users tend to book spontaneously.
* Strengthen partnerships with affiliates producing high-value bookings.
* Highlight popular destination pairs with bundled offers and suggested itineraries.

**Future Work:**

* Perform predictive modeling to forecast spontaneous bookings based on device and time of year.
* Explore pricing dynamics and how discounts influence trip complexity.
* Create a basic recommendation tool to suggest travel plans using the insights from the data.