Team: JAAR
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Individual: Data Visualization

Question: What proportion of customers who activate their accounts end up following through into product purchases? How many customers does Fingerhut lose to no purchases?

Motivation: Answering this question gives us an introductory insight into whether or not account activation could be an important factor in customer retention or success rate of the FreshStart product.

Journey flow of customers with account activation (230 sample customers)
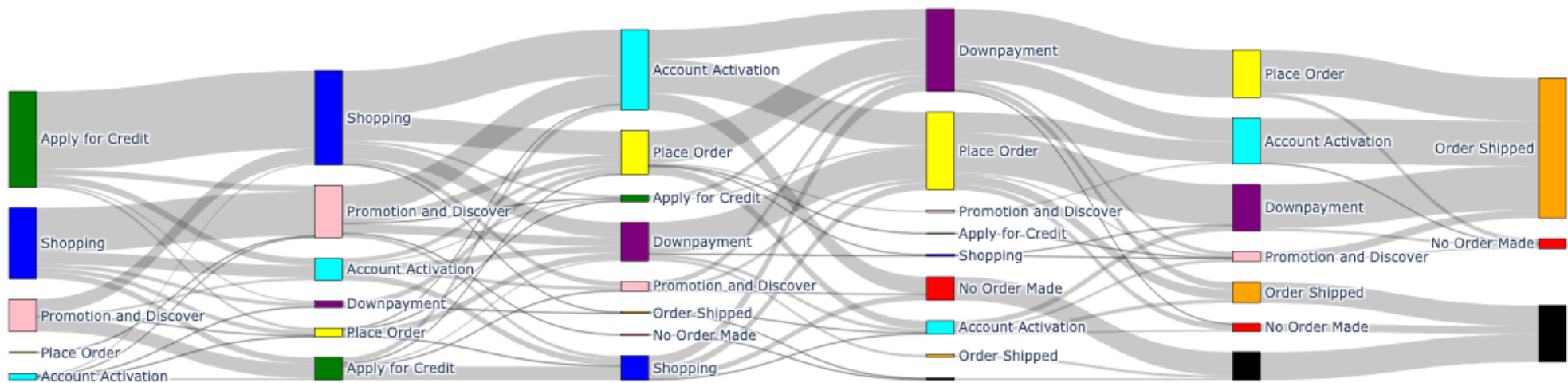
About the data:

The Sankey diagram above was created based on the first 230 customers who activated their accounts at a certain point in their journey. Each customer's journey step was simplified based on the following categorizations:

```
event_dict = {
  'Apply for Credit': [15, 17, 12, 14, 3, 19],
  'Account Activation': [29],
  'Fraud Review': [37],
  'Promotion and Discover': [1, 2, 9, 10, 22, 23, 20, 21, 24],
  'Downpayment': [27, 26, 8, 25],
  'Shopping': [11, 6, 4, 5],
  'Place Order': [18, 7],
  'Order Shipped': [28]
}
```

The numbers in the list match to the 'ed_id' column. Before matching to the dictionary above, a filter only kept groups that had at least one instance of ed_id == 29 (account_activation) and does not have any instance of ed_id == 16 (application_phone_declined) or ed_id == 13 (application_web_declined).

After dictionary matching was performed, if the last event_type is not 'Order Shipped', then a new row with event_type 'No Order Made' was added for such customers.

Key findings:
- The **second** and **third** layers provide the most clear displays of the customer flow from promotion and discovery stages.
- A large proportion of customers exposed to the promotion and discover stage move onto: Apply for Credit, Account Activation, Downpayment
    - **Promotion and Discover at layer 2**
        - Incoming flow:
            - 58

- Outgoing flow:
  - 32 (Account Activation)
  - 10 (Place Order)
  - 10 (Downpayment)
  - 4 (Shopping)
  - 1 (Apply for Credit)
  - 1 (No Order Made)
- The **third** and **fourth** layers provide the most clear displays of the customer flow from account activation.
- A large proportion of customers move onto Downpayment or Place Order after Account Activation, which may indicate that Account Activation is a significant factor to the customer's decision to purchase. This will require further investigation and hypothesis testing. If it holds to be true then we can focus more on increasing Account Activation rate than other stages.
  - **Account Activation at layer 3**
    - Incoming flow:
      - 90
    - Outgoing flow:
      - 33 (Downpayment)
      - 38 (Place Order)
      - 19 (No Order Made)
- The Sankey diagram is created with Plotly, which enables interaction features to hover over each connection to see values. This diagram can be scaled to more customers (with different journey characteristics. e.g. no account activation)