

Annual Billing By Partner

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# import necessary libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

# Load in data as dataframe objects
df_2022 = pd.read_excel(
    'C:/Users/njlei/OneDrive/Desktop/Wank & Liptzin/Annual Billing By Partner.xlsx',
    sheet_name = '2022',
    header = 4
).dropna()
df_2023 = pd.read_excel(
    'C:/Users/njlei/OneDrive/Desktop/Wank & Liptzin/Annual Billing By Partner.xlsx',
    sheet_name = '2023',
    header = 4
).dropna()
df_2024 = pd.read_excel(
    'C:/Users/njlei/OneDrive/Desktop/Wank & Liptzin/Annual Billing By Partner.xlsx',
    sheet_name = '2024',
    header = 4
).dropna()
df_2025 = pd.read_excel(
    'C:/Users/njlei/OneDrive/Desktop/Wank & Liptzin/Annual Billing By Partner.xlsx',
    sheet_name = '2025 (2)',
    header = 6
).dropna()
df_2025_billing = df_2025.iloc[:3]
df_2025_collections = df_2025.iloc[3:]

# Bar graph demonstrating total billed and paid by each partner for 2022, 2023, and 2024

partners = df_2022['Partner']
x = np.arange(len(partners))
bar_width = 0.1

fig, ax = plt.subplots(figsize=(8, 4))

# Billed bars
ax.bar(x - 1.5*bar_width, df_2022['Total Billed'], bar_width, label = '2022 Billed', color = 'skyblue')
ax.bar(x + 0.5*bar_width, df_2023['Total Billed'], bar_width, label = '2023 Billed', color = 'orange')
ax.bar(x + 2.5*bar_width, df_2024['Total Billed'], bar_width, label = '2024 Billed', color = 'green')

# Paid bars
ax.bar(x - 0.5*bar_width, df_2022['Total Paid'], bar_width, label = '2022 Paid',
       facecolor = 'none', edgecolor = 'skyblue', hatch = '//')
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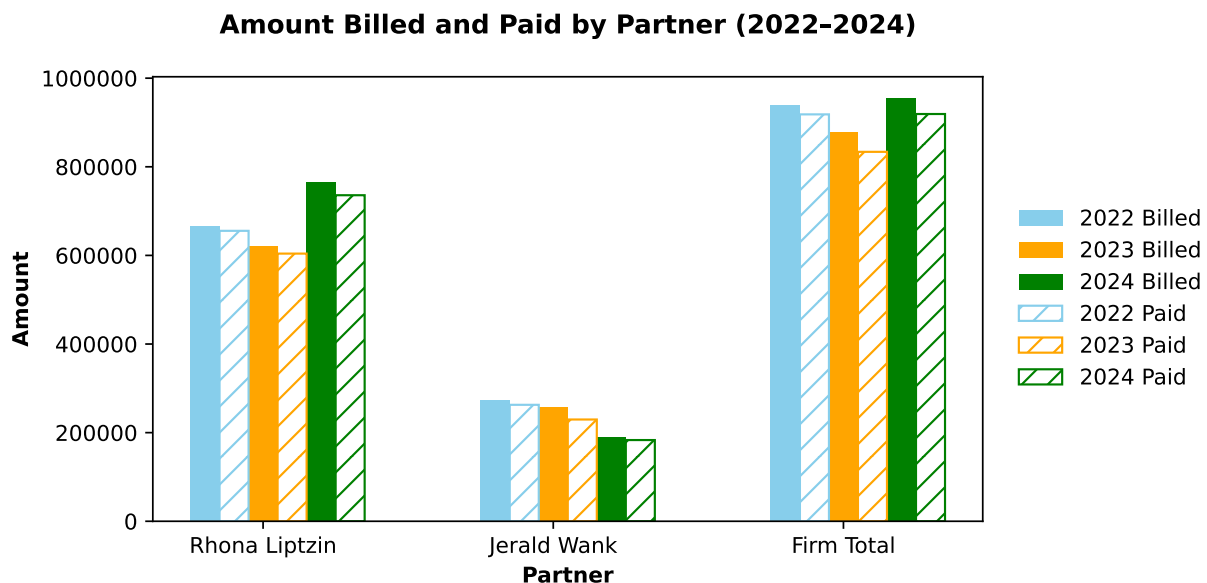
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ax.bar(x + 1.5*bar_width, df_2023['Total Paid'], bar_width, label = '2023 Paid',
      facecolor = 'none', edgecolor = 'orange', hatch = '//')
ax.bar(x + 3.5*bar_width, df_2024['Total Paid'], bar_width, label = '2024 Paid',
      facecolor = 'none', edgecolor = 'green', hatch = '//')

# Axis labels, ticks, and legend position
ax.set_xlabel('Partner', fontweight = 'bold')
ax.set_ylabel('Amount', fontweight = 'bold')
ax.set_title('Amount Billed and Paid by Partner (2022-2024)', pad=20, fontweight = 'bold')
ax.set_xticks(x + bar_width / 2)
ax.set_xticklabels(partners)
ax.ticklabel_format(style = 'plain', axis = 'y')
ax.legend(loc = 'center left', bbox_to_anchor = (1.02, 0.5), ncol = 1, frameon = False)

plt.tight_layout()
plt.show()

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# Bar graph demonstrating total billed and collected each month by partner for 2025

# Melt to long format
billing_long = df_2025_billing.melt(id_vars='Partner', var_name='Month', value_name='Billing')
collections_long = df_2025_collections.melt(id_vars='Partner', var_name='Month', value_name='Collection')

# Merge billing and collections
merged = pd.merge(billing_long, collections_long, on=['Partner', 'Month'])

# Ensure correct month order
month_order = ['January', 'February', 'March', 'April', 'May', 'June', 'Total']
merged['Month'] = pd.Categorical(merged['Month'], categories=month_order, ordered=True)
merged = merged.sort_values(['Month', 'Partner'])
merged = merged[merged['Partner'] != 'Firm Total']

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# Plotting setup
partners = merged['Partner'].unique()
months = month_order
x = np.arange(len(months)) # x-axis positions for months
width = 0.1 # width of each bar

fig, ax = plt.subplots(figsize=(8, 4))
colors = plt.cm.Set1.colors

# Track handles and labels for custom legend
handles = []
labels = []

for i, partner in enumerate(partners):
    partner_data = merged[merged['Partner'] == partner]
    color = colors[i % len(colors)]

    # Billing (solid)
    billing_bar = ax.bar(
        x + i * 2 * width,
        partner_data['Billing'].values,
        width,
        label = f'{partner}\nBilling',
        color = color
    )
    handles.append(billing_bar[0])
    labels.append(f'{partner}\nBilling')

    # Collections (hatched with border)
    collections_bar = ax.bar(
        x + (i * 2 + 1) * width,
        partner_data['Collections'].values,
        width,
        hatch = '//',
        edgecolor = color,
        facecolor = 'none',
        linewidth = 1.5,
        label = f'{partner}\nCollections'
    )
    handles.append(collections_bar[0])
    labels.append(f'{partner}\nCollections')

# Labels and formatting
ax.set_xlabel('Month', fontweight = 'bold')
ax.set_ylabel('Amount', fontweight = 'bold')
ax.set_title('Monthly Billing and Collections by Partner', pad=20, fontweight = 'bold')
ax.set_xticks(x + bar_width / 4)
ax.set_xticklabels(months)

# Tick labels
ax.set_xticks(x + width * len(partners))
ax.set_xticklabels(months)

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# Legend and layout
ax.ticklabel_format(style = 'plain', axis = 'y')
ax.legend(loc = 'center left', bbox_to_anchor = (1.02, 0.5), ncol = 1, frameon = False)
plt.subplots_adjust(right = 0.78)
plt.show()
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