

Change in Formulation of Comprehensive National Security Concept

Author: Kaidi Zhu, University of Oxford

- Function: Measure the dynamics in formulation (提法, Tifa) in Comprehensive National Security Concept
- Input: df_pd_tifa.csv
- Output: PD_Tifa_Stacked.png

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Note: Part of the replication package for PIIE Working Paper: **China's Economic Security Growth Model and Implications for the US-China Security Dilemma**

Visualization

```
In [1]: import pandas as pd

df_pd_tifa = pd.read_csv("/Users/zhukaidi/Desktop/Project - Policy Writing/1. PIIE - Economic Security Growth Model/Replication/P
```

```
In [2]: import numpy as np

df = df_pd_tifa.copy()

# =====
# 1. Old tifa cleaning
# =====

# 0 → NaN
df["old_tifa_count"] = df["old_tifa_count"].replace(0, np.nan)

# Drop old tifa rows before 2014
df.loc[df["year"] < 2014, "old_tifa_count"] = np.nan

# =====
# 2. New tifa cleaning
# =====

# Only 2018 should have a 0 (first year used)
df.loc[df["year"] == 2018, "new_tifa_count"] = df.loc[df["year"] == 2018, "new_tifa_count"].fillna(0)

# All years < 2018 set to NaN
df.loc[df["year"] < 2018, "new_tifa_count"] = np.nan

# If any later years had 0, convert them to NaN (only 2018 allowed to be 0)
df.loc[(df["year"] > 2018) & (df["new_tifa_count"] == 0), "new_tifa_count"] = np.nan

# =====
# 3. Drop rows where both are NaN (avoid empty years)
# =====
df_clean = df.dropna(subset=["old_tifa_count", "new_tifa_count"], how="all")
```

In [3]:

```

import matplotlib.pyplot as plt
import numpy as np

df_plot = df_clean.copy()

# Fill NaN with 0 for stackplot rendering
old_series = df_plot["old_tifa_count"].fillna(0)
new_series = df_plot["new_tifa_count"].fillna(0)

years = df_plot["year"]

# === Colors ===
color_old = "#FFB74D" # orange yellow
color_new = "#E57373" # red
vline_color = "#5C4033" # brown

# =====
# 1. Create Figure
# =====
fig, ax = plt.subplots(figsize=(11, 6))

# =====
# 2. Stacked Area Plot
# =====
ax.stackplot(
    years,
    old_series,
    new_series,
    labels=["Old Phrasing (No Tech)", "New Phrasing (With Tech)"],
    colors=[color_old, color_new],
    alpha=0.6
)

ax.set_xlabel("Year", fontsize=12)
ax.set_ylabel("Occurrences in People's Daily", fontsize=12)
ax.set_ylim(bottom=0)

# =====
# 3. Vertical Policy Lines
# =====
# 2018 - US-China Tech Tension
ax.axvline(2018, color=vline_color, linestyle="--", linewidth=2, alpha=0.7)
ax.text(
    2018 + 0.1,
    ax.get_ylim()[1] * 0.85,
    "US-China Tech Tension",
    fontsize=10,
    color=vline_color,
    rotation=0,
    va="bottom"
)

# =====
# 4. Legend, Title, Layout
# =====
plt.legend(loc="upper left", fontsize=11)
plt.title("People's Daily: Dynamics of Comprehensive Security Concept Phrasing", fontsize=15)

plt.tight_layout()

# Save figure
# plt.savefig(
#     "/Users/zhukaidi/Desktop/Project - Policy Writing/6. 科技和经济安全/2. Output/PD_Tifa_Stacked.png",
#     dpi=600,
#     bbox_inches="tight"
# )

plt.show()

```

