

ROSITA FU

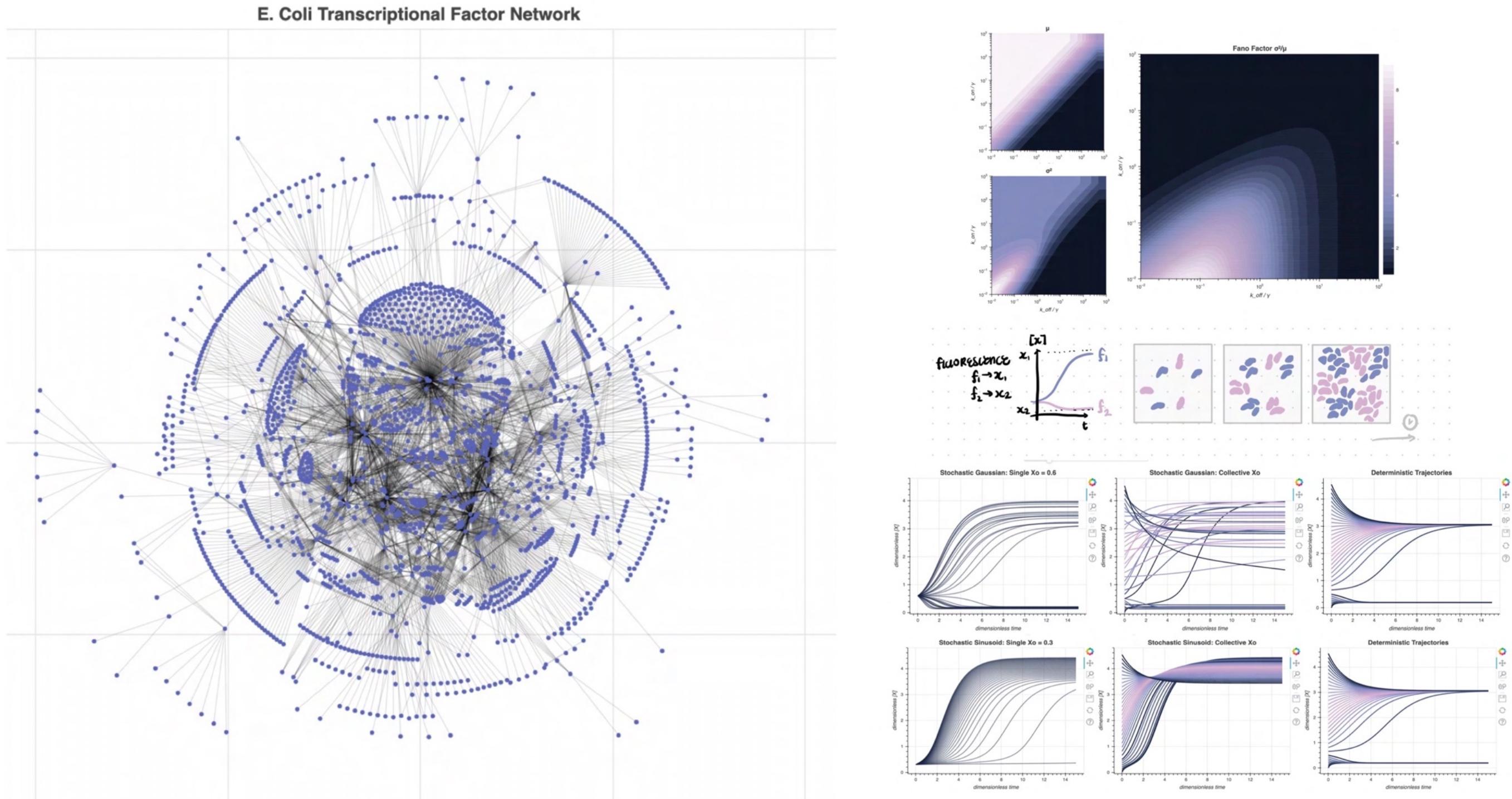
DESIGNS

 rosita.fu@outlook.com

PORTFOLIO

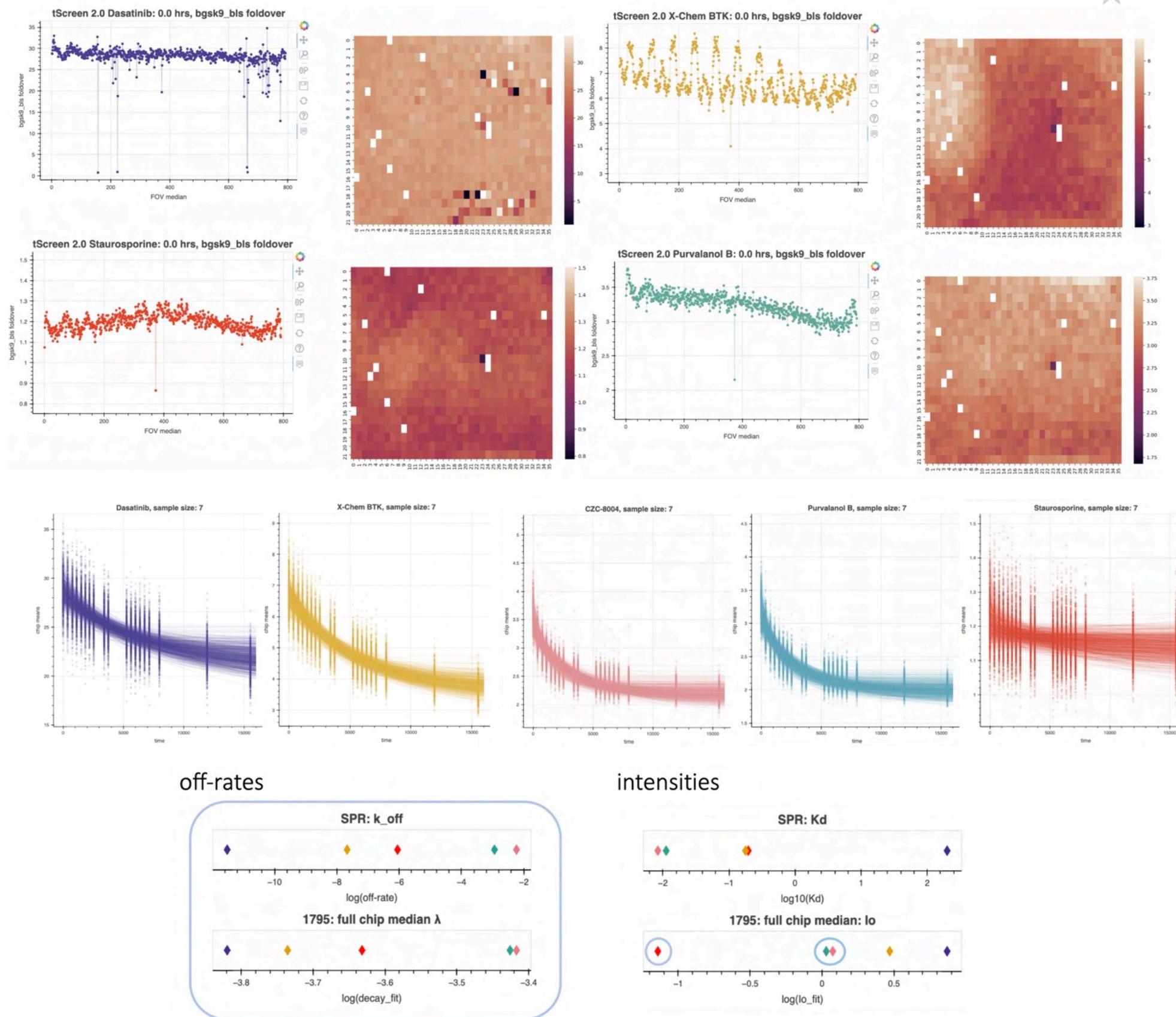


DATA VISUALIZATION



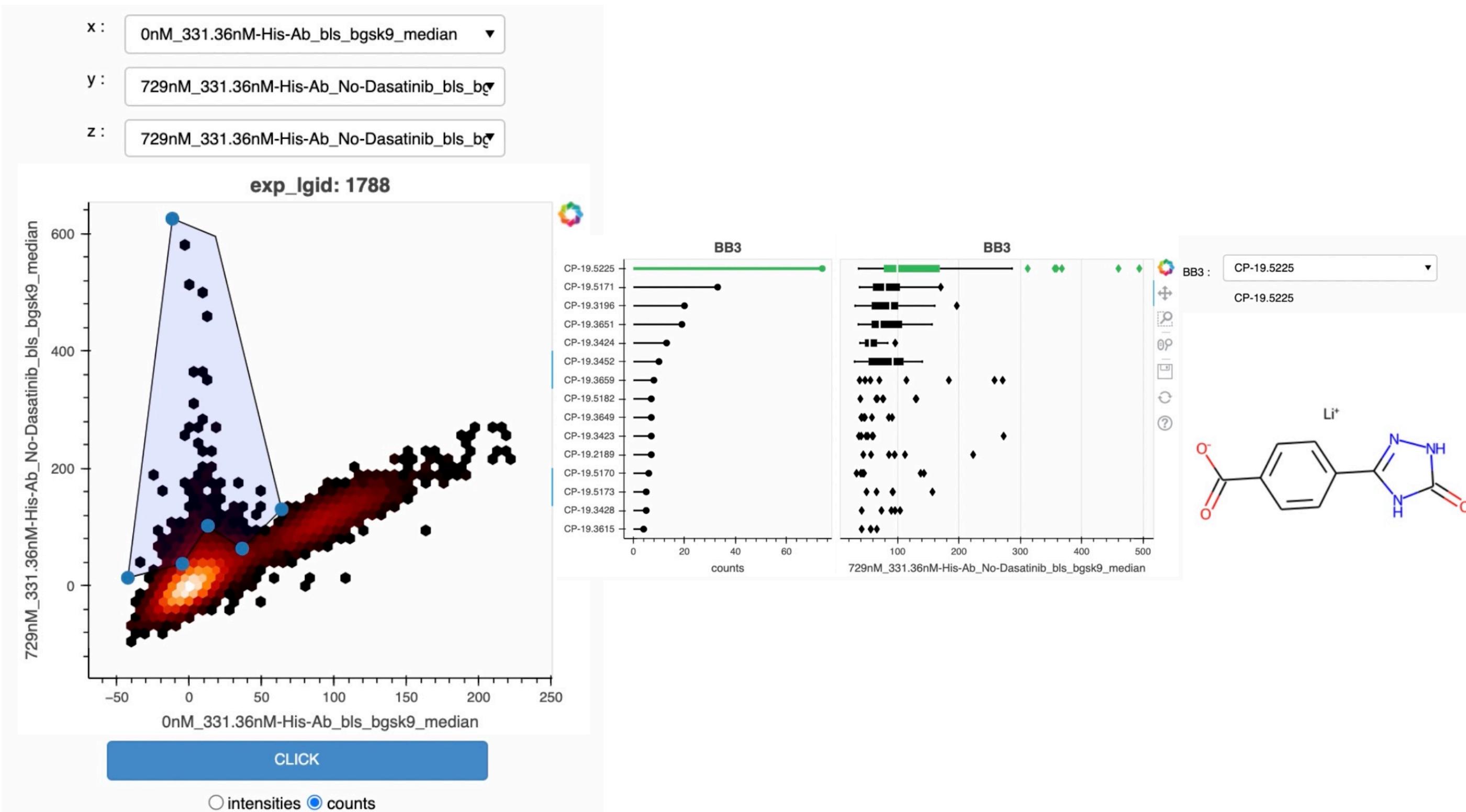
Biological Networks and
Biological Circuits

Left: Graph of the E. Coli transcription factor network.
Right: Analysis of biological circuits - Stochastic and deterministic trajectories show how initial concentrations and simulated noise in numerical ODEs can affect final steady states.



Fluorescence Microscopy in Evaluating Chemical Off-Rates

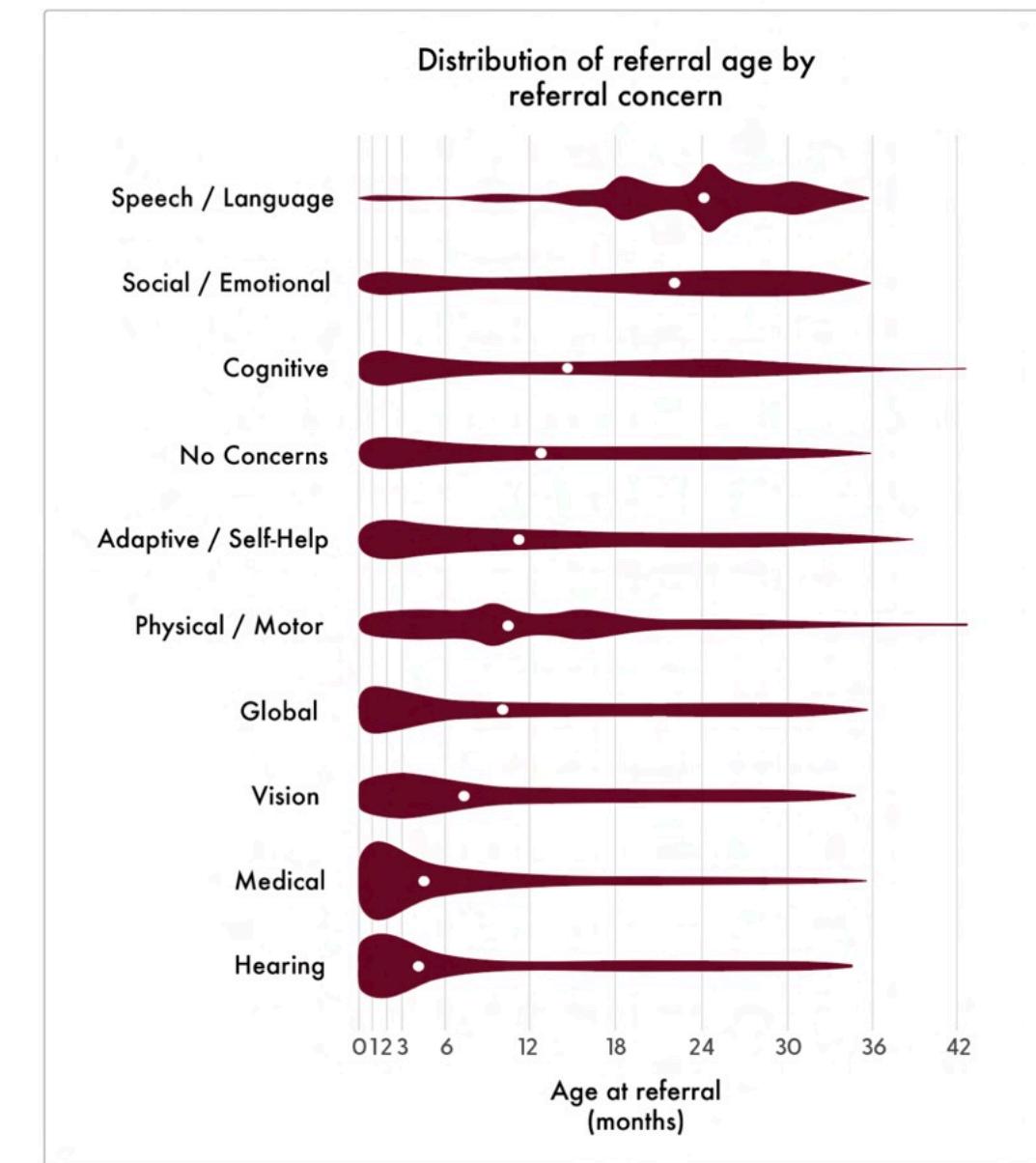
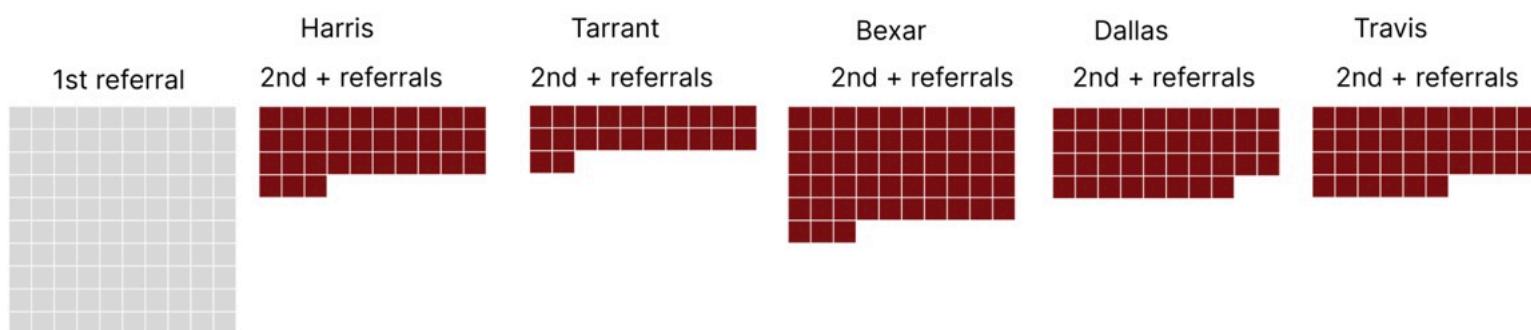
These graphs evaluate whether fluorescence microscopy can discern chemical off-rates, in comparison with traditional, yet more expensive, Surface Plasmon Resonance (SPR) results. This work involved image processing of several microscopy time series datasets.



Molecular Viewer Dashboard for Tarry Therapeutics

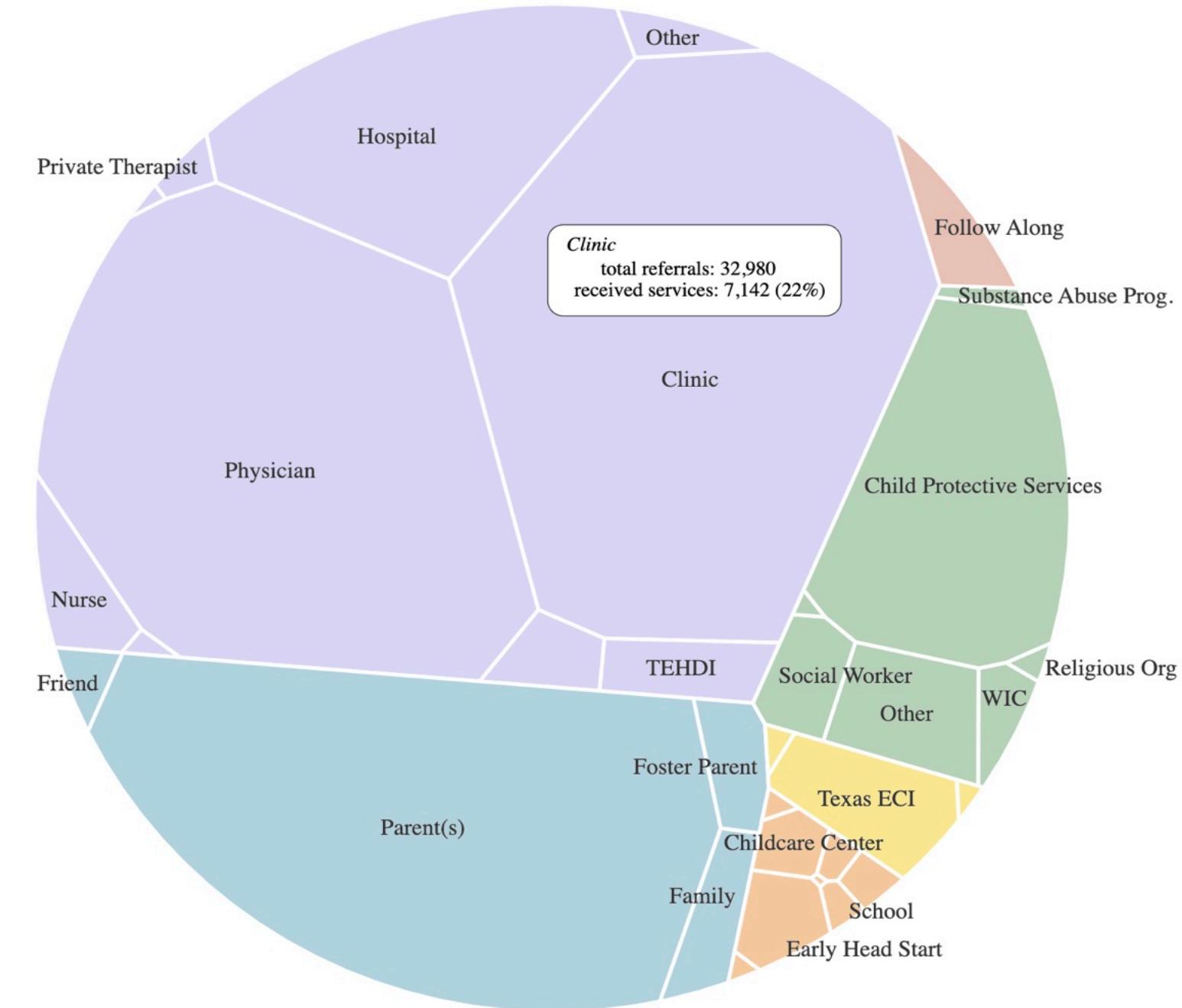
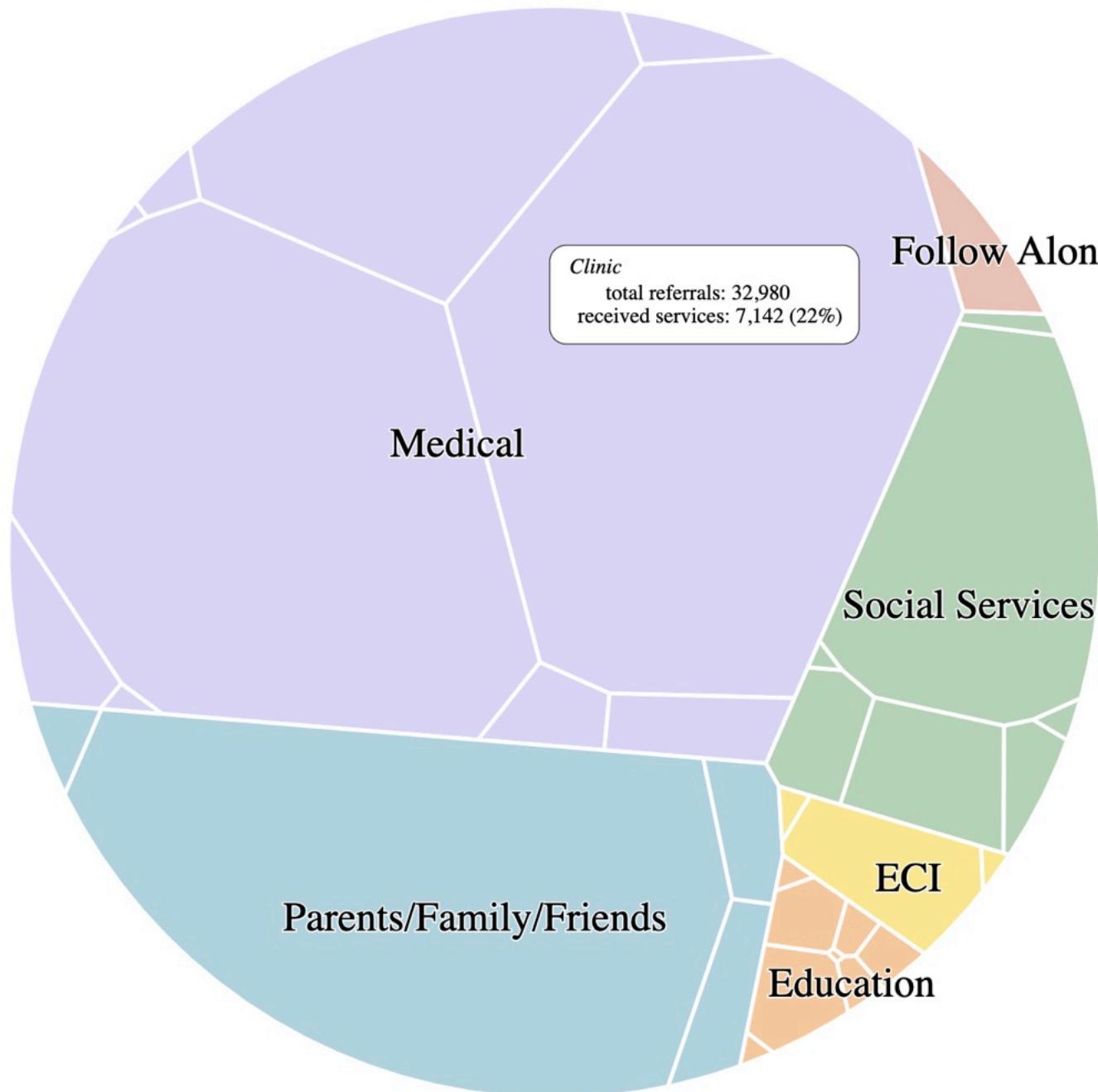
This interactive dashboard enables lab scientists to choose from various fluorescence experiments and select specific regions of scatter plots. This facilitates analysis across multiple fluorescence channels to assess the biological binding activity of various compounds, accelerating the iterative process of drug discovery.

Referral Concern	N				
Speech/Language	154,038	69% evaluated	51% eligible	30% served	
Physical/Motor	66,006	68% evaluated	49% eligible	25% served	
Global	63,355	60% evaluated	43% eligible	24% served	
Medical	29,612	70% evaluated	56% eligible	30% served	
Social Emotional	20,864	68% evaluated	45% eligible	23% served	
Hearing	8,979	47% evaluated	36% eligible	20% served	
Adaptive/Self-Help	8,936	69% evaluated	52% eligible	27% served	
Cognitive	5,418	64% evaluated	50% eligible	28% served	
Vision	2,448	60% evaluated	45% eligible	25% served	
No Concerns	11,512	43% evaluated	22% eligible	11% served	



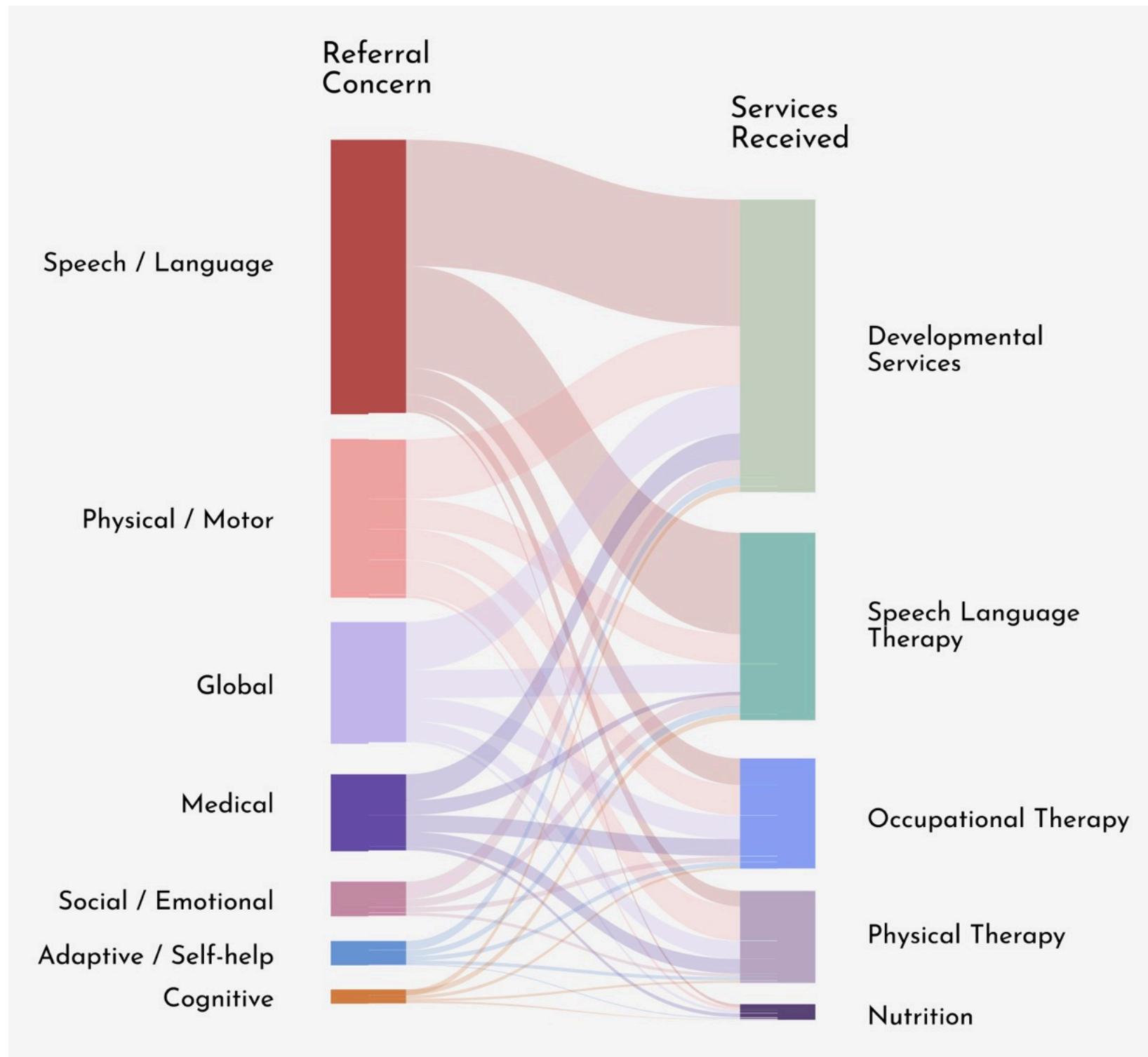
Simple Summary Graphics

These graphics were presented to local and state government agencies, and served as the basis for identifying points of intervention to maximize the impact of federally funded programs. These visuals demonstrate various ways of showing distributions, progressive percentages, and comparisons across multiple groups.



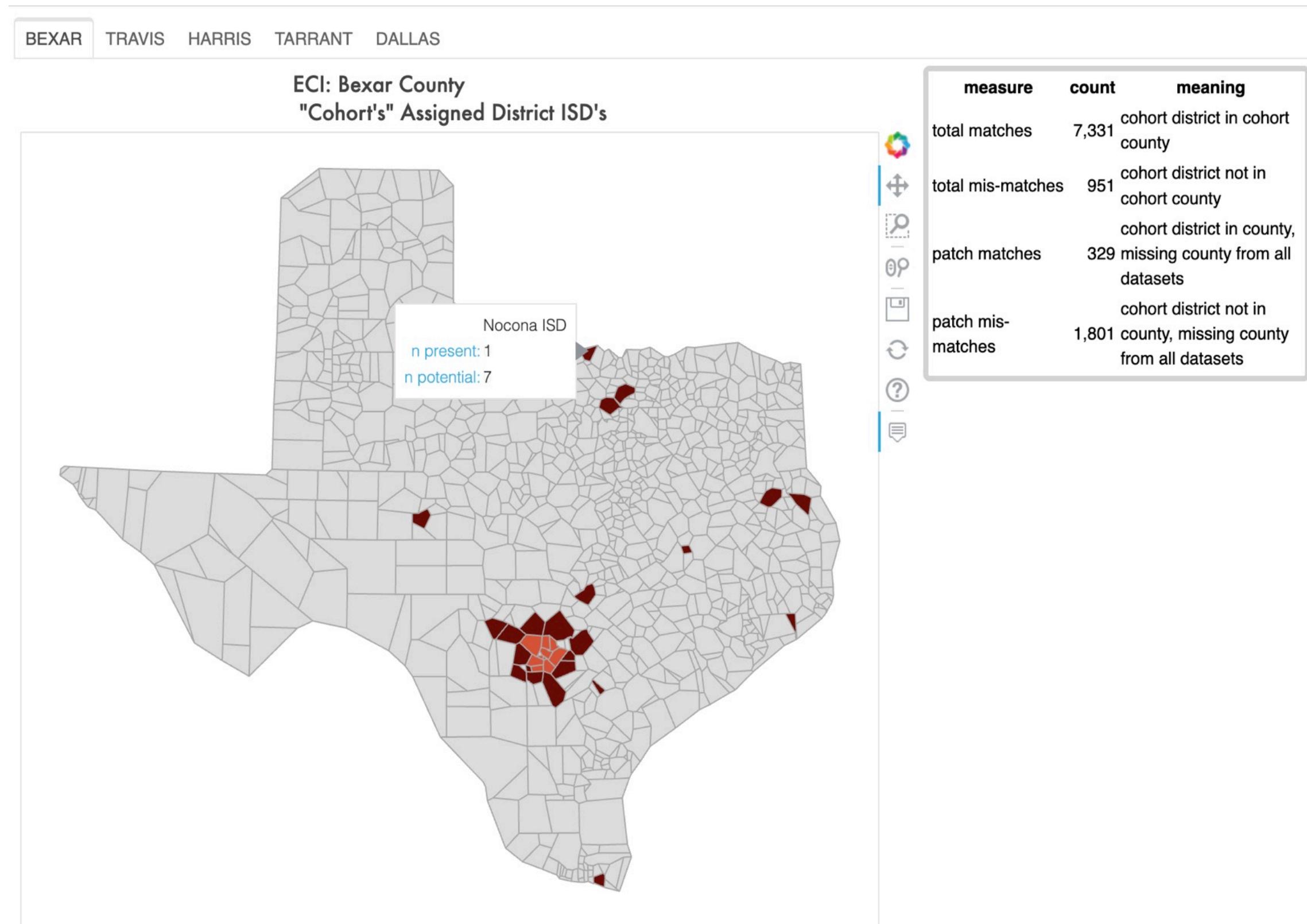
Circular Voronoi Map Composition by Sub-category

This visual shows the contribution of referrals to the federal program Early Childhood Intervention from 2015-2019 in the entire state of Texas. A toggle allows for visualizing broader categories and finer subdivisions, and can easily be adaptable to any dataset with multiple levels of categorical data.



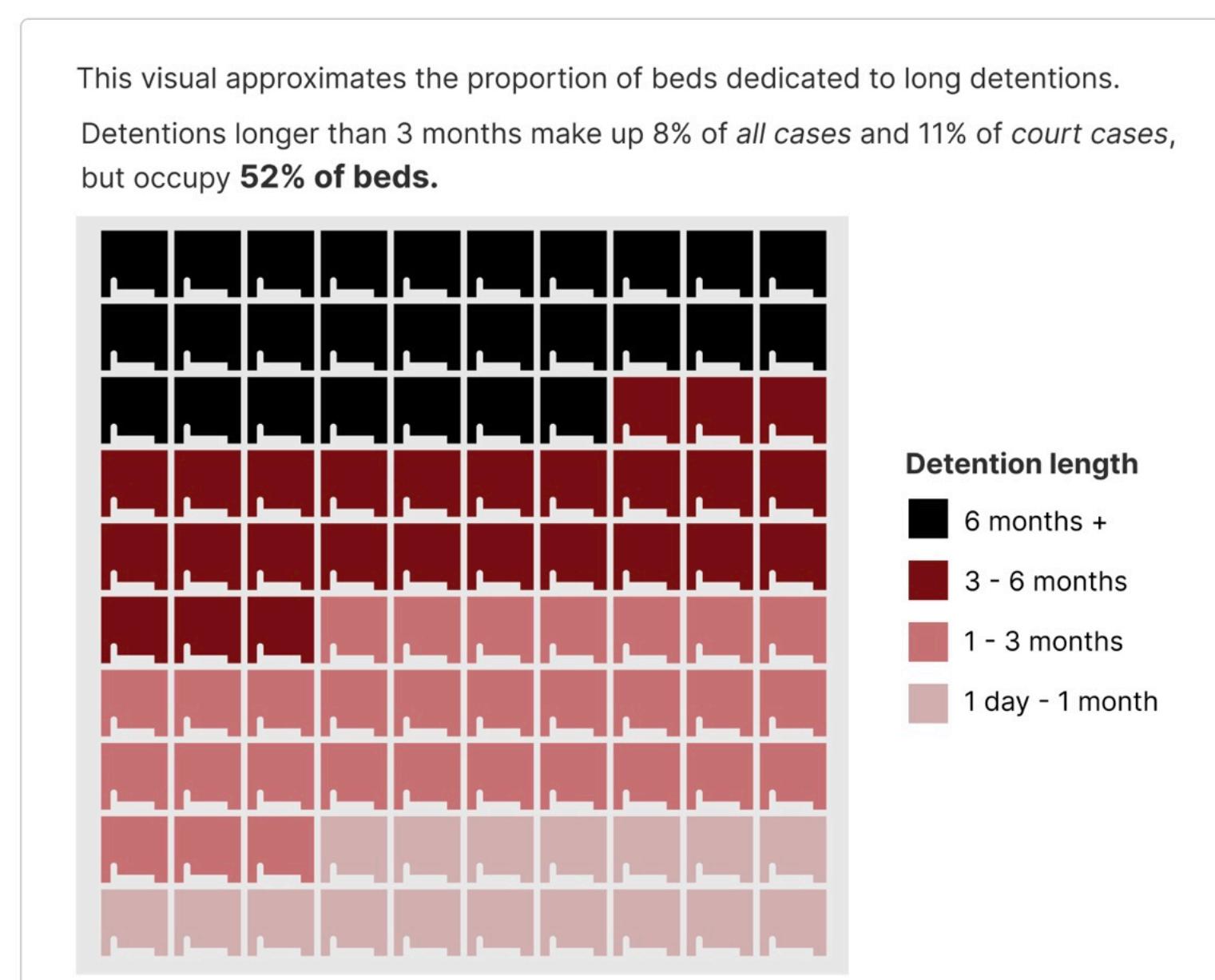
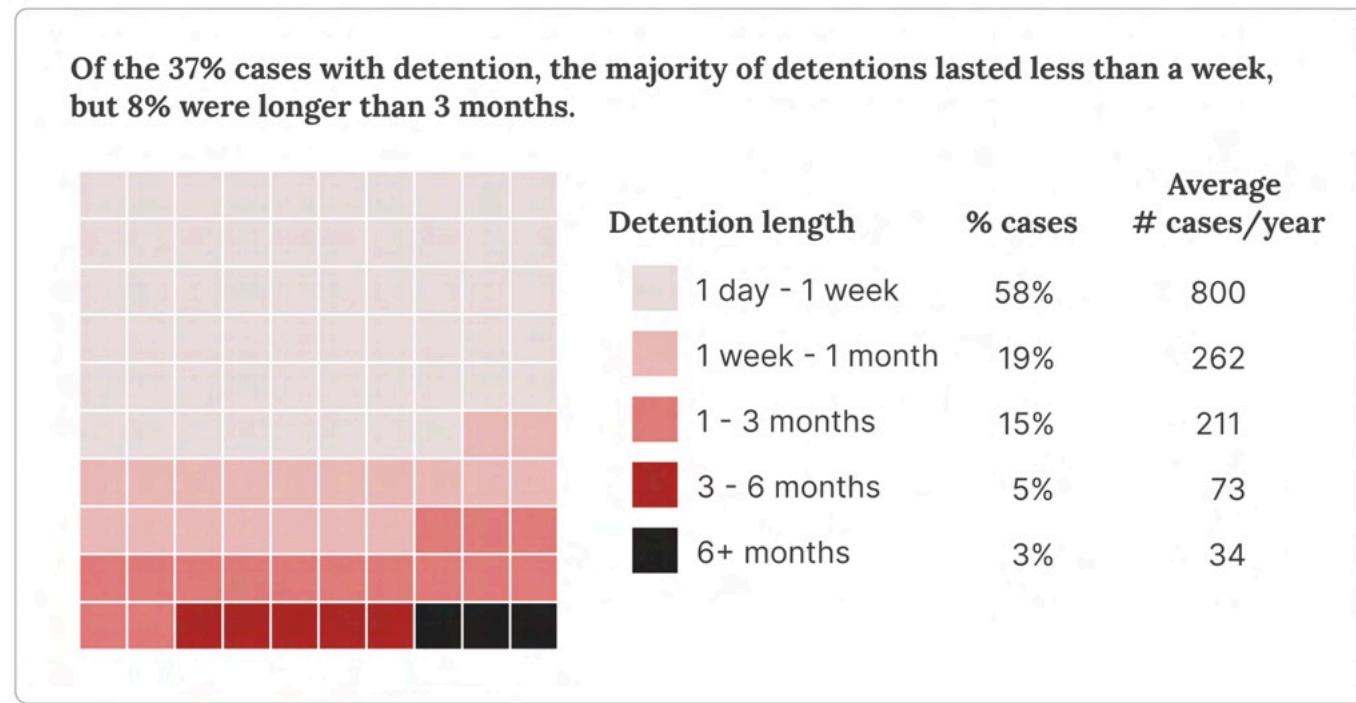
Sankey Diagrams

This sankey diagram highlights the multifaceted pairings of government services children received given the initial referral concern from either a parent or schoolteacher. Additionally, this helps estimate how service demands may change given a separate population and distribution of referral concerns.



Interactive Map of
5 Largest Counties in Texas

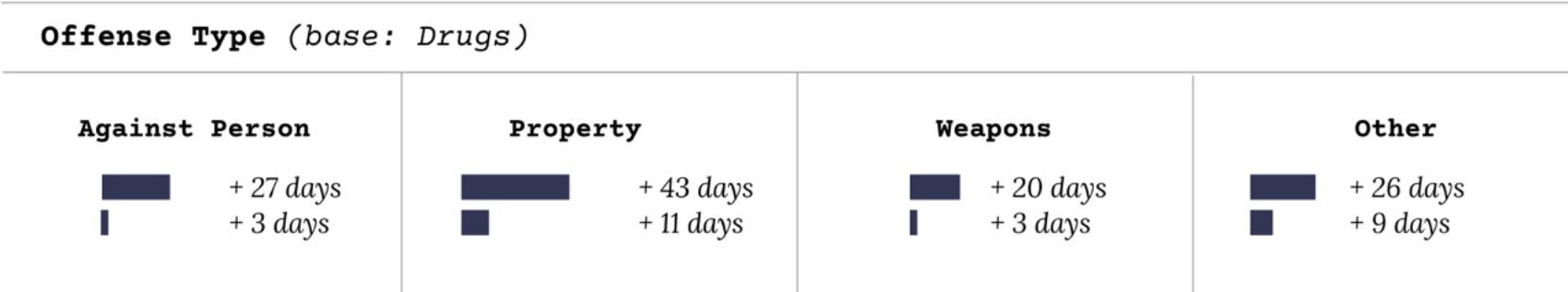
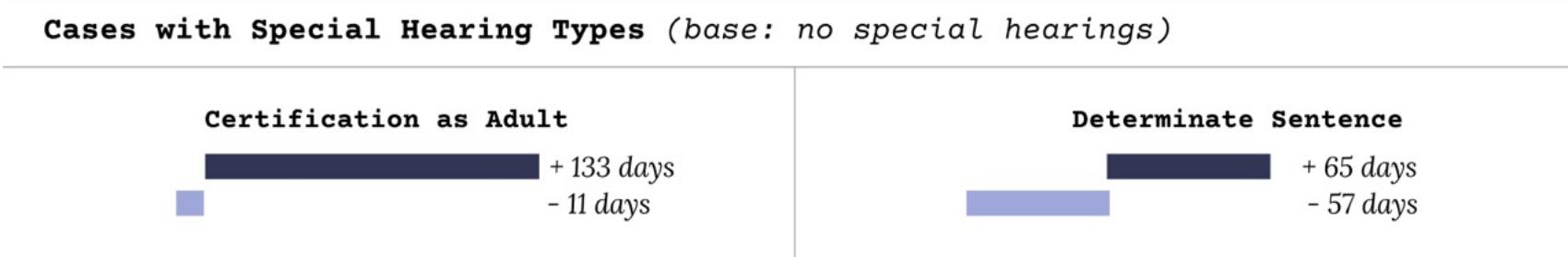
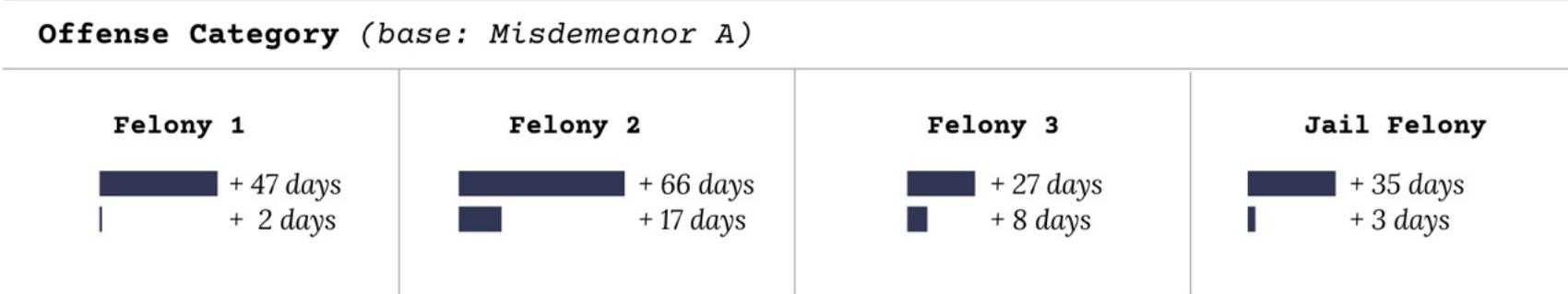
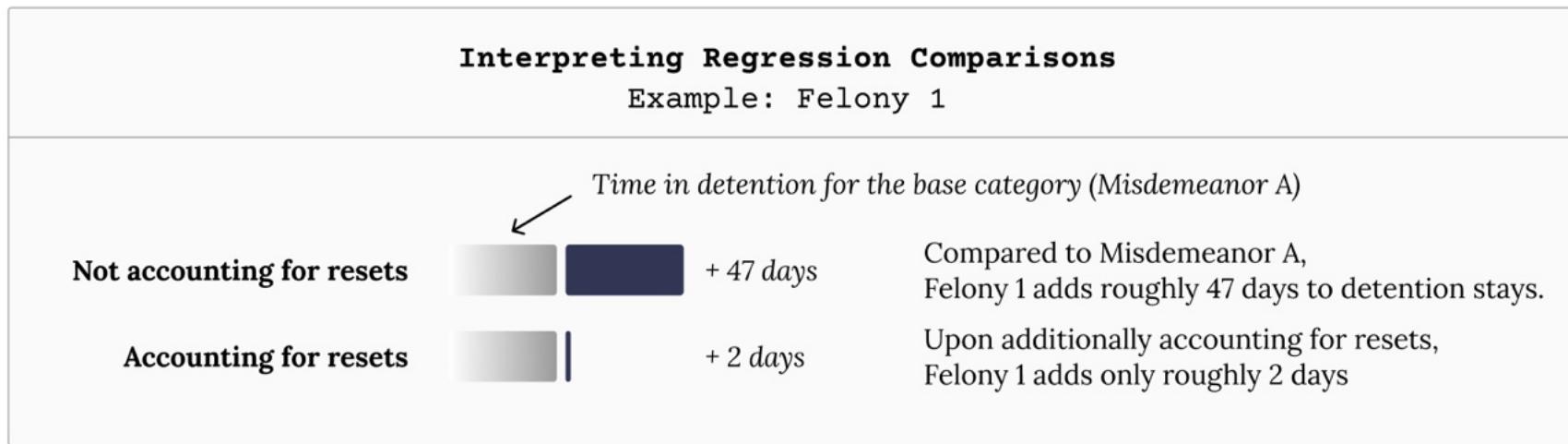
This visual quantified the discrepancy in data entry of neighboring counties, and shows how post-processing data cleaning can address this issue. Locations very far are families that have most likely moved over the years.



From Jan 2019 - Dec 2022, a total of 4,275 youths were detained for a total of 148,825 days. 77,902 of those days (52%) were building up to long detentions. This means that 52% of beds at any given moment were occupied by youths who ended up detained for more than 3 months.

Waffle Charts and Gini Coefficients

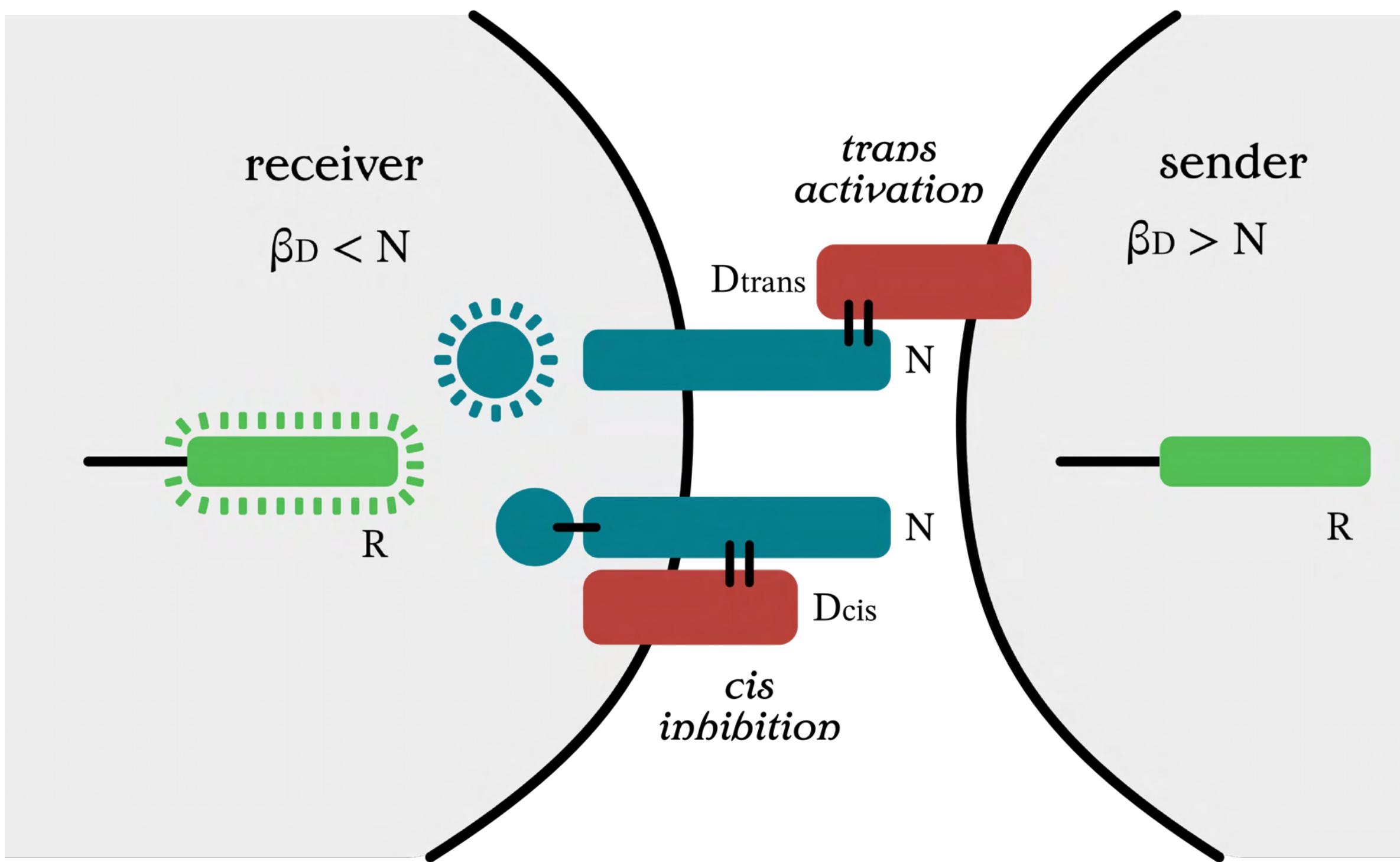
These graphics demonstrate the Gini coefficient in units of time. Both graphs are created from the same dataset, which consists of how long individual youth spent in detention. Each graph has different units: squares on the left represent youths in a population, whereas squares on the right represent the volume of nights/beds occupied by youths. This effectively creates a "volume of time" measurement.



Regression Coefficients Visualization

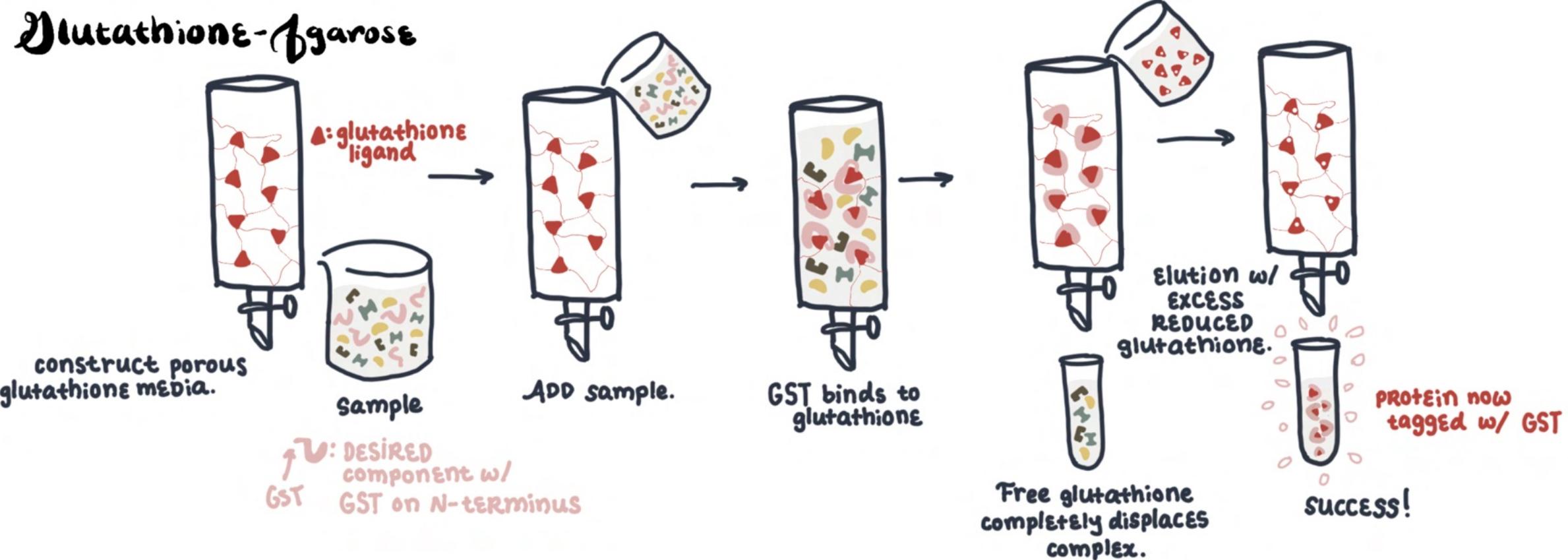
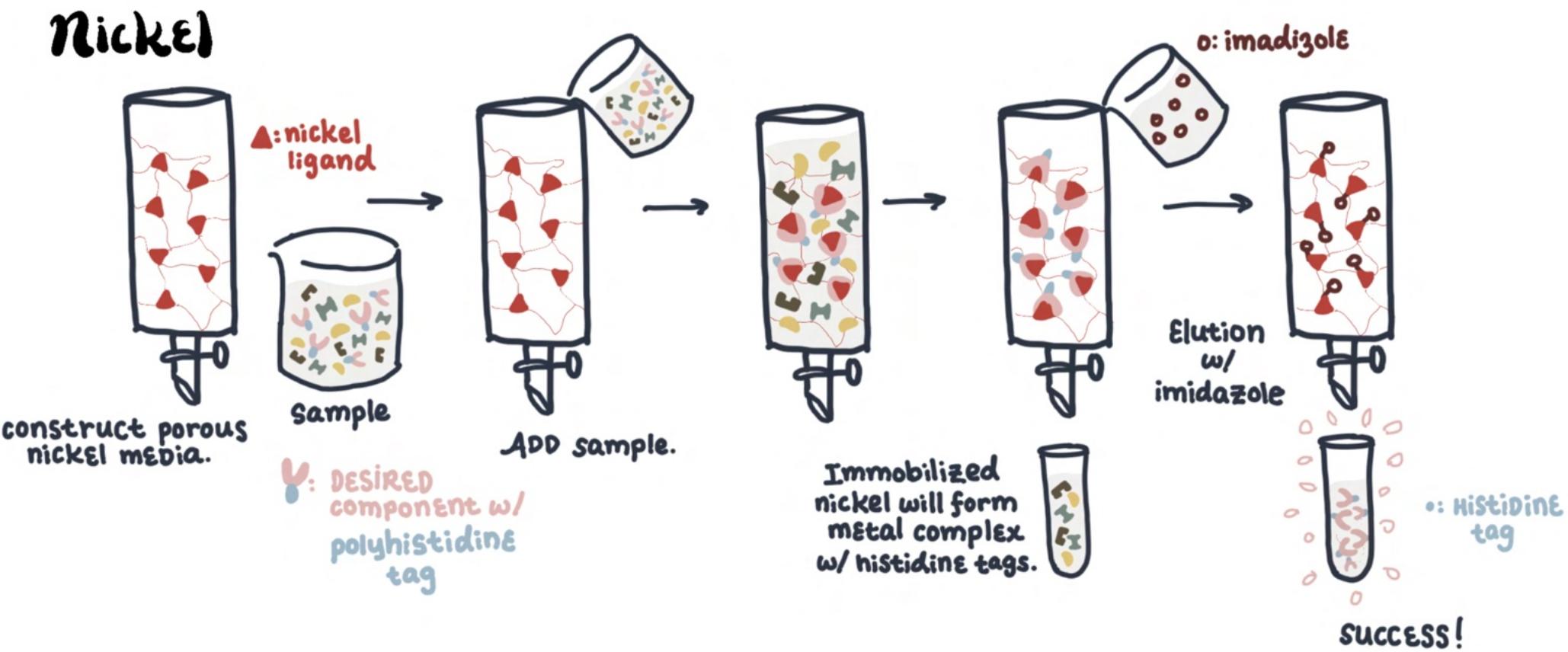
This visual was created to make the traditional table of regression coefficients easier to interpret. This shows the multivariate factors before and after a separate pivotal variable was accounted for.

SCIENTIFIC ILLUSTRATION



Delta - Notch Signaling

Schematic for trans-activation and cis-inhibition schemes of adjacent cells.
Used in biological circuits course BE150 at Caltech.



Chromatography Diagrams

Schematic for nickel chromatography and glutathione-agarose chromatography.
Used in biochemistry course, Bi/Ch110 at Caltech.





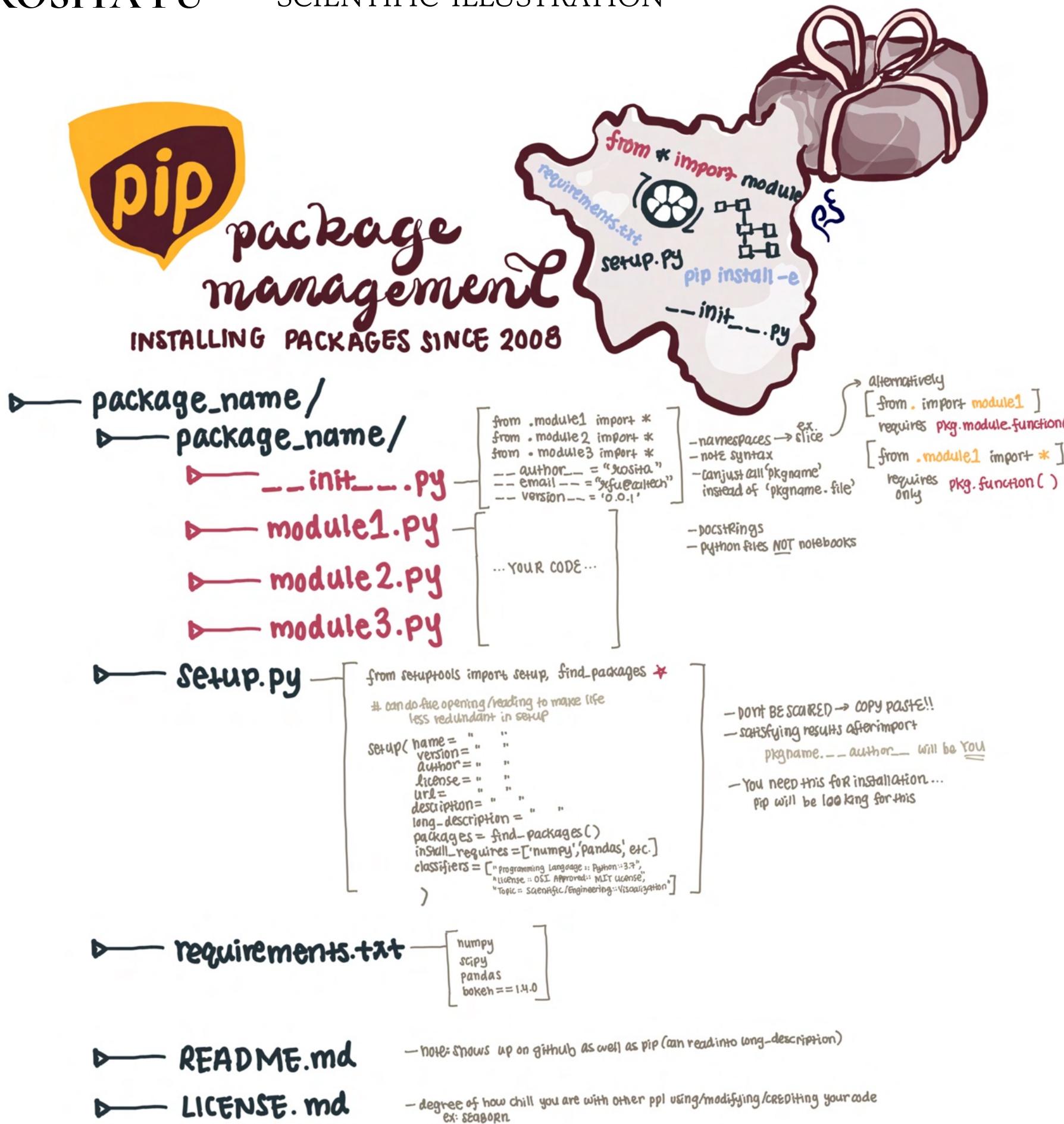
**Medicinal Florals Series:
*Alstonia Scholaris***

Placard for medicinal plants studies.



Medicinal Florals Series:
Rauvoflavia tetraphylla

Placard for medicinal plants studies.



Coding Graphic

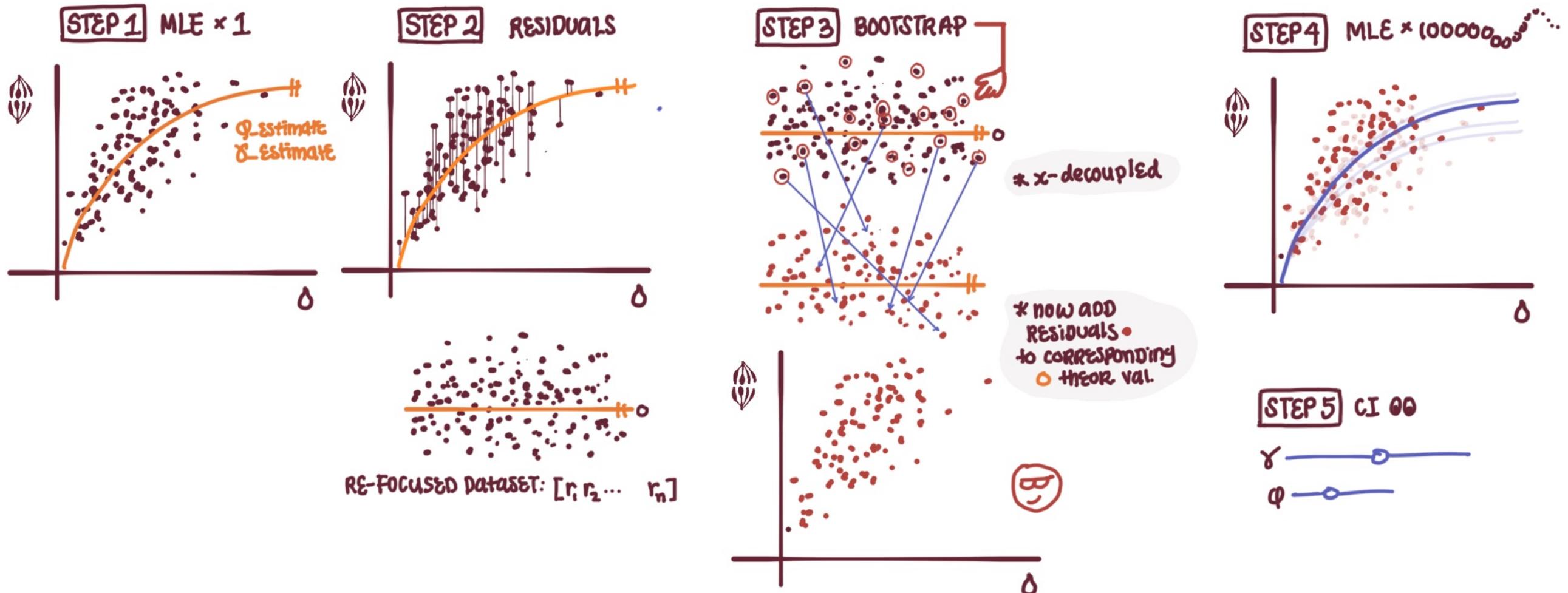
Outline for creating a Python package.
 Designed for teaching an introductory coding course BE/Bi103 at Caltech.

Bootstrap Residuals

1. FIRST PERFORM MLE on original dataset once. GRAB initial ϕ -estimate $\rightarrow l_{\text{THEOR}}$
2. COMPUTE RESIDUALS $r_i = l_i(d_i) - l_{\text{THEOR}}(d_i)$
3. BOOTSTRAP OUT OF $[r_1 \dots r_n]$... ADD 'EM BACKIN! This is our bootstrapped sample
4. PERFORM MLE's on bootstrapped samples $\circlearrowleft \circlearrowleft \circlearrowleft$ lots of ϕ 's &
5. RETRIEVE CI's

these are intermediates, give us
 γ -estimate $\rightarrow l_{\text{THEOR}}$

* what are we assuming about how our error behaves ???



GRAPHIC ILLUSTRATION



Portrait of Asima Chatterjee

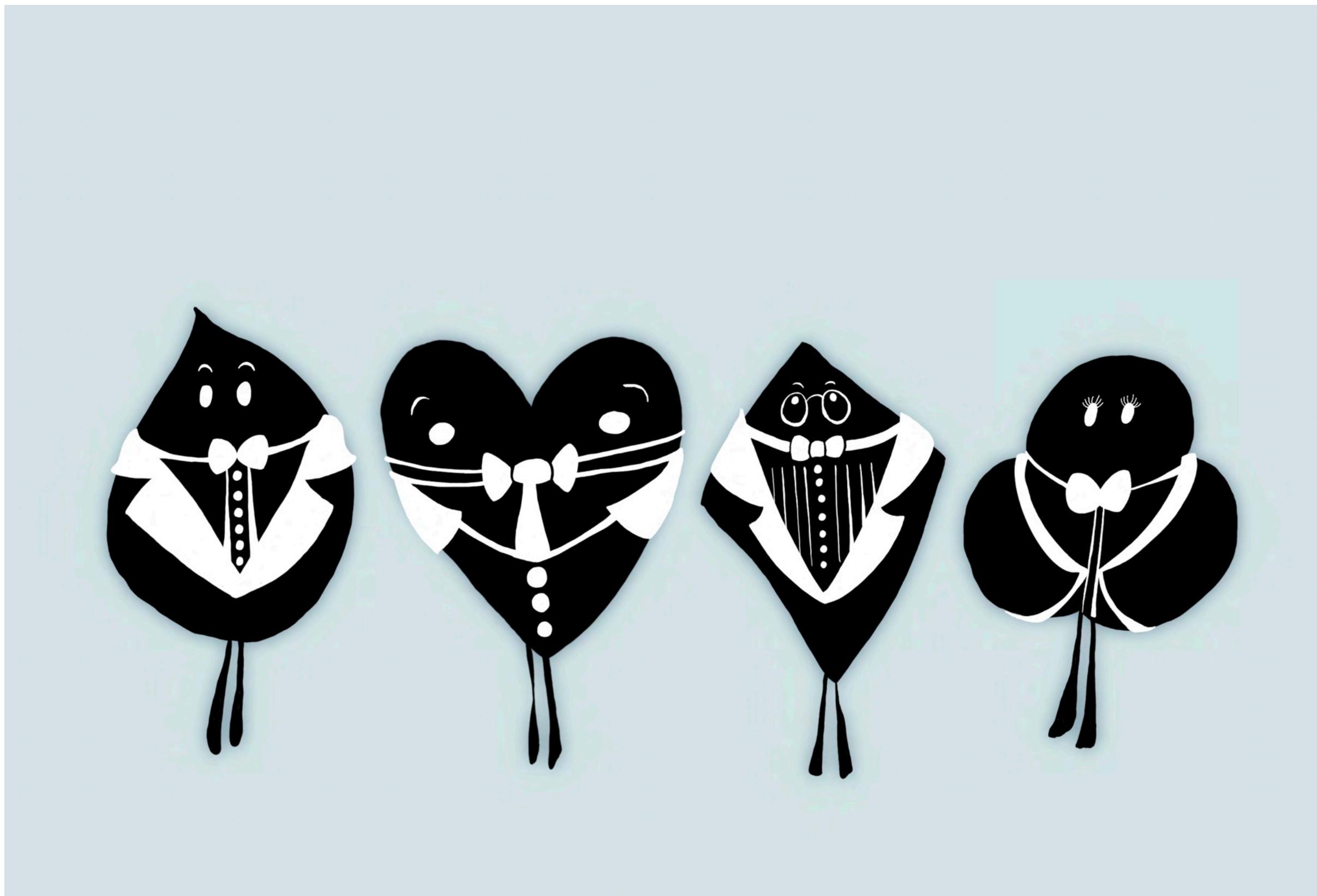
Groundbreaking scientist Asima Chatterjee is an Indian organic chemist whose research in medicinal plant products aided in the development of anti-malarial drugs.



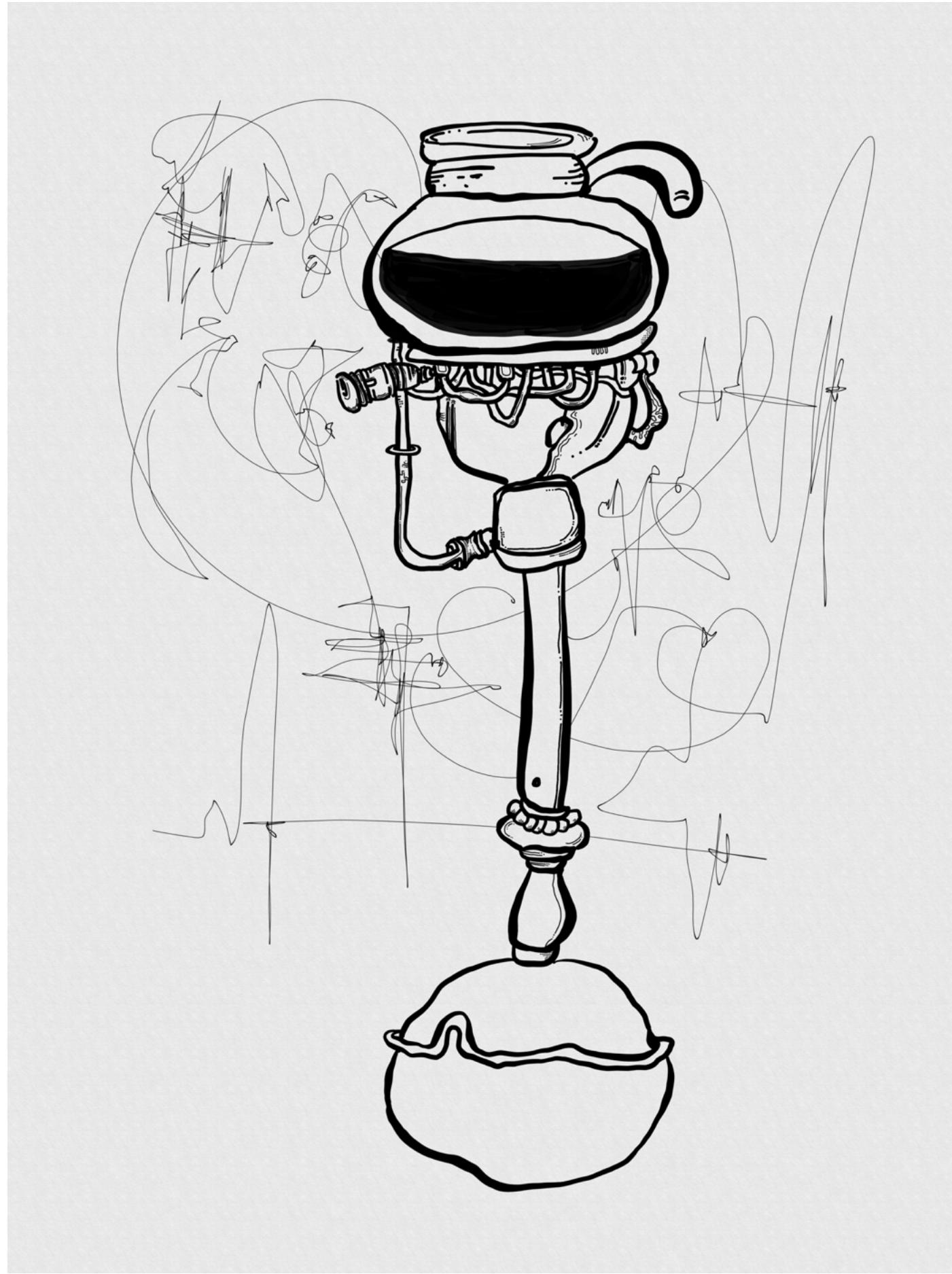
Poet Portraits

These digital portraits served as the opening slides at a poetry reading of Gwendolyn Brooks (left) and Joy Harjo (right), both renowned American Poet Laureates.



**Suites in Suits**

This design celebrates the card game bridge submitted to the College Bridge Organization CBO.



Signature Coffee

Linework practice.