Fernando Becerra

Data Analysis + Visualization

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Work Experience

Dataista SpA

Data Director — *Aug 2025 to date*

- Team lead for development of interactive tools using Svelte, d3.js and Mapbox.
- Team lead for data analysis and creation of in-depth research articles for www.dataista.cl

The ONE Campaign

Data Analysis and Visualization Consultant, Contractor — *Nov 2024 to Jul 2025*

- Designed and developed interactive dashboards using Observable notebooks (React) and d3.js.
- Developed models to predict future foreign aid based on socioeconomic factors.
- Created interactive app to create customizable models based on parameter selections.

Parabole Studio

Data Visualization Developer, Contractor — *Sep 2024 to Feb 2025*

- Coded interactive app (bar charts, world globe, tables) to see financial data for private client.
- Implemented interactive visualizations (bar charts, waffle, maps, scrollytelling circle packing) for Moloco
- Developed moving Sankey diagram to show official development assistance funding for ONE.org

STRATOS Technologies

Data Visualization Developer, Contractor — *Aug 2023 to Feb 2024*

- Created an interactive map tool using Mapbox and React to display key KPIs of companies.
- Implemented four different visualization maps: choropleth, bubble, dots, and extrusion.
- Added controls to select KPIs, visualization map, and other filters.

The New York Times

Data Engineer, Contractor — *Aug 2023 to Feb 2024*

- Inspecting and filtering databases using SQL in order to find leads for news stories.
- Run SQL queries in a 6TB database.
- Analyzed and visualized query results with Python and d3.js

The Baltimore Banner

Data Visualization Developer, Contractor — *Sep 2023 to Feb 2024*

- Created an interactive dashboard using d3.js to show gun deaths in the Baltimore area.
- Used Mapbox GL to create a map to show locations of shooting events.

Epic Institute

Data Scientist — *Nov 2021 to Dec 2023*

- Used Pandas library to analyze and process energy outputs dataset from different sources such as IEA.
- Used NumPy and SciPy to optimize calculations for emissions model and Natural Climate Solutions adoption rates.
- Used d3.js to create an interactive data explorer to display compiled dataset about energy demand and supply, emissions, GHG concentration and temperature, among others.

Urban Institute

Data Visualization Developer, Contractor — *Oct 2021 to Sep 2023*

- Created interactive visualization to show access to experienced teachers, Advanced Placement classes, and school counselors for students from different racial and ethnic backgrounds.
- Used d3.js to visualize donations to charitable organizations and beyond, going from tax-exempt non-profits to include crowd-funding, impact investing, and political contributions.
- Created interactive map to display gap between AP class enrollment and AP test taking for each racial or ethnic group and each district in Florida.
- Developed a d3 interactive tool to explore how additional metrics in a high-quality accountability system for colleges affect how these institutions perform.
- Plotted quantities such as payments, repayment timelines, and debt balances for different scenarios in an income-driven re-payment plan designs for student loan debt.

USAFacts

Data Visualization Engineer, Contractor — *Apr 2022 - Jun 2023*

- Created interactive weighted Voronoi treemap to show how inflation affects American of different ages.
- Compiled and processed air pollution, wages, housing, and school enrollment data for 2022 midterm elections tool.
- Helped implementing style and rolling average for work absences due to childcare reasons.
- Compiled and processed home prices and wages data at the County level for an article comparing how both of them are rising at different rates.
- Processed data from ACS regarding housing costs for renters and owners and created visualizations to explore the results.

Planet Labs

Data Visualization Developer, Contractor — *Sep 2021 - Jun 2022*

- Used Planet's Explorer to find and download satellite imagery to fulfill client's and internal requests.
- Color-correct satellite imagery using Adobe Photoshop, Python, and GDAL.
- Create publication-ready images for clients and internal use.

Swayable

Data Visualization Developer, Contractor — *Feb 2022 - May 2022*

- Processed and manipulated a dataset of more than a million survey responses to create quantities that allowed them to be positioned in the x-y-z plane using Jupyter notebooks.
- Used three.js to create a prototype of an interactive 3d cube that shows this data and reveals the relationship between all data points.

Pontifical Catholic University of Chile

Data Scientist, Contractor — *Sep 2020 - Oct 2021*

- Processed and analyzed a cohort database that follows a group of Chilean people from their birth date until their 18th birthday.
- Used Python libraries such as Pandas, NumPy and SciPy to calculate averages and standard deviation of variables throughout time for several subgroups (male/female, control/disease).
- Calculated p-values and odds ratio and determine the risk of developing Non-Alcoholic Fatty Liver Disease and Non-Alcoholic Fatty Pancreas Disease based on fat and fat-free mass for each subject using SciPy and statsmodels modules.
- Created Hattori plots using matplotlib to show the trajectory of fat and fat-free mass as a function of time for control group and group presenting the disease.

Research Rabbit

Data Visualization Developer, Contractor — *Feb 2021 - Aug 2021*

- Used d3.js implementation of a force-directed graph to make an interactive visualization of collaboration networks in Academia.
- Represented authors and papers using nodes and labels that allows interactions such as clicking and hovering to get more detailed information about one item.
- Showed collaboration between authors or citation metrics between papers using links between nodes.
- Developed two views of the paper visualization: network and timeline, in which the latter orders the papers by date of publication.

Golden Set Analytics

Data Scientist, Contractor — *Jun 2020 - Jun 2021*

- Used Pandas library to analyze and process a tennis matches database with more than 900,000 rows and 1,000 columns.
- Created and documented a Python module based on NumPy, SciPy, Matplotlib and seaborn that calculates players ratings, computes accuracy of models, evaluates performance of processes, and creates plots to represent the results.
- Used Machine Learning algorithms to run a hyperparameter optimization of models and evaluate their outcomes.
- Developed reports and presentations to communicate my findings to the rest of the team.

Emteq Labs

Data Visualization Developer, Contractor — *Mar 2021 - May 2021*

- Used d3.js to create an interactive plot that shows timeseries of measurements of user responses to immersive experiences in real time.
- Used javascript to get data from API and update the plot parameters in real time.
- Used HTML Canvas to optimize the performance of the plot by decreasing CPU requirements on the user end.

Copenhagen Atomics

Data Visualization Developer, Contractor — *Sep 2020 - May 2021*

- Used d3.js to create an interactive line plot to show temperature from different sensors from a nuclear reactor in real time.
- Updated time range shown in x-axis of the plot and time range selection tool based on data fed by the API.
- Added option to save and load current view including zoom level, time range, and variables shown.

LA County's Department of Public Health

Data Visualization Consultant — *May 2020 - Oct 2020*

- Replaced static graphics with interactive web visualizations that update itself once the dataset is updated.
- Used d3.js to create interactive plots that show COVID-19 statistics such as testing numbers and mortality rates for LA county.
- Added interactive tooltip that shows detailed information on demand.

Fathom Information Design — *Boston, MA, USA*

Data Visualization Developer — *Jun 2018 - Jun 2019*

- Used Python packages such as spaCy and nltk to perform Natural Language Processing techniques on large document sets.
- Implemented topic modeling to group and classify more than 100,000 documents using LDA, NMF, and t-SNE.
- Used Machine Learning libraries to extract and consolidate abstract, sections, and figures from academic papers.
- Scrapped all 403 transcripts from the show *The Joy of Painting* using the YouTube API and packages such as beautifulsoup.
- Developed front-end of the *The Joy of Parsing* app, back-end of *Myriscope* app, and back-end of *Laniakea* app

Harvard University, Department of Astronomy — *Cambridge, MA, USA*

Graduate Research Assistant — *Aug 2012 - May 2018*

- Lead group of collaborators to study the formation of stars and black holes in the early Universe.
- Implemented new modules for primordial chemistry and sink particles in C for the *arepo* code to model behavior of black holes.
- Developed tools to generate plots, images, and videos of simulation outputs: the Python analysis tool *pacha* using packages like NumPy, SciPy, and matplotlib; and the parallel C analysis tool *sator* using MPI.
- Published findings in astronomy journals like *Monthly Notices of the Royal Astronomical Society* and *The Astrophysical Journal*.

Teaching positions

Universidad del Desarrollo

Information Visualization Lecturer, Master of Data Science — *Jul 2022 to date*

Columbia University, Graduate School of Journalism

Teaching Assistant, Lede Program — *Jun 2023 - Aug 2023*

Pontificia Universidad Católica de Chile

Interactive Data Visualization with d3.js Guest Lecturer, Data Visualization postgraduate diploma — *Jun 2022*

Harvard University

Teaching Assistant, SPU19: The Energetic Universe and Ay17: Galactic and Extragalactic Astronomy — *Jan 2013 - Dec 2015*

Publications

1. Relation between Body Composition Trajectories from Childhood to Adolescence and Nonalcoholic Fatty Liver Disease Risk
Alberti, G., *et al.*, Nutrients, 2024, 16, 785

2. Galaxy Formation with BECDM – II. Cosmic Filaments and First Galaxies
Mocz, P., Fialkov, A., Vogelsberger, M., *Becerra, F.*, et al., MNRAS, 494, 2020

3. First Star-Forming Strcutures in Fuzzy Cosmic Filaments
Mocz, P., Fialkov, A., Vogelsberger, M., *Becerra, F.*, et al., 2019, PhRvL, 123, 141301

4. Assembly of Supermassive Black Hole Seeds
Becerra, F., Marinacci, F., Bromm, V., and Hernquist, L., 2018, MNRAS, 480, 5029

5. Schrodinger-Poisson-Vlasov-Poisson correspondence
Mocz, P., Lancaster, L., Fialkov, A., *Becerra, F.*, et al., 2018, PhRvD, 97, 083519

6. Opacity Limit For Supermassive Black Hole Seeds
Becerra, F., Marinacci, F., Inayoshi, K., Bromm, V., Hernquist, L., 2018, ApJ, 857, 138

7. Radiative effects during the assembly of direct collapse black holes
Smith, A., *Becerra, F.*, Bromm, V., Hernquist, L., 2017, MNRAS, 472, 205S

8. Unveiling the Role of Galactic Rotation on Star Formation
Utreras, J., *Becerra, F.*, Escala, A., ApJ, 833, 13

9. Formation of Massive Protostars in Atomic Cooling Haloes
Becerra, F., Greif T. H., Springel V., Hernquist, L., 2015, MNRAS, 446, 2380

10. The Interstellar Medium and Star Formation in Local Galaxies: Variations of the Star Formation Law in Simulations
Becerra, F., Escala, A., 2014, ApJ, 786, 56

11. Gravitational Fragmentation in Galaxy Mergers: A Stability Criterion
Escala, A., *Becerra, F.*, del Valle, L., Castillo, E., 2013, ApJ, 763, 39

Education

Harvard University — *Cambridge, MA*
Ph.D. in Astronomy & Astrophysics — *May 2018*

Harvard University — *Cambridge, MA*
A.M. in Astronomy & Astrophysics — *May 2014*

Universidad de Chile — *Santiago, Chile*
M.Sc. in Astronomy — *Aug 2012*

Universidad de Chile — *Santiago, Chile*
B.Sc. in Astronomy — *Dec 2009*