USC University of Southern California

USC Dornsife
Dana and David Dornsife College of Letters, Arts and Sciences
Spatial Sciences Institute

Food Base L.A Dashboard Urban Agriculture

Kevin Sohn

Introduction

USC's Food Base L.A. is an interactive online dashboard intended to inform and address food and nutrition insecurity in Los Angeles County. The dashboard was developed in collaboration with the Los Angeles County Office of Food Systems and other County partners. Currently, the dashboard features over 200 data layers, including points of interest and key demographic and health information.

Urban agriculture has been considered by many municipalities as a possible source of urban food for decades. Community and school gardening programs have already taken large strides in improving access to nutritious food in many communities. Gardens and urban farms can be highly effective tools for both combating food deserts and placemaking in historically underserved communities. Therefore, to support our new partnership with the new L.A. County Office of Food Systems, we chose to incorporate layers relating to urban agriculture into the Food Base L.A. dashboard.

Data Additions

This addition included 11 new data layers alongside updated versions of our Parks, Elementary Schools, Middle Schools, and High Schools layers. These new layers included libraries, places of worship, schools, and agricultural land. In order to quickly identify these locations, we utilized publicly available parcel data from the L.A. County Assessor's Office. This parcel data included over 2 million data entries, with information on site occupancy, use, and structures. From this, we filtered parcels based on their land use codes, which are standardized 4-digit numbers utilized by the County Assessor. These selected parcels were then converted to points in ArcGIS Pro and served to the dashboard's web map on ArcGIS Online.

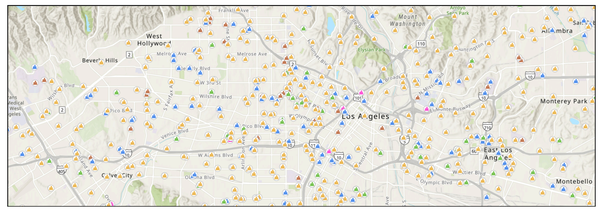

Figure 1. Screenshot of Food Base L.A. showcasing school locations by school type

The two most complex additions were the Los Angeles Unified School District's (LAUSD) internal school greening study and the Los Angeles Community Garden Council's (LACGC) tracking of community gardens, school gardens, and urban farms. The LAUSD Greening Index measured greening need based on local park access and by share of green space to impermeable land across 670 school campuses. The original table lacked location data, and so we used another spatial layer of all LAUSD facilities to associate locations with the greening index. Due to a lack of common columns between the two tables, we could not utilize a standard join in ArcGIS Pro. Instead, we applied Microsoft PowerQuery to perform a fuzzy join between tables and checked values to confirm that the join made correct matches. These new points were then mapped and served to the dashboard (see *Figure 3*).

The community gardens data set was an extensive data set collected over the course of a decade. It was the only data set we were able to find that comprehensively tracked school gardens across all of L.A. County. However, due to its age, it was incomplete and unverified in many sections. We embarked on an extensive verification effort by manually checking every listed entry using satellite imagery through Google Maps and compiling addresses. For those gardens that we could not verify through these means, we contacted school and garden sites via email and phone. After this cleaning process, we geocoded the verified gardens, mapped, and served them to the dashboard. Food Base L.A. now maintains the most complete dataset of school and community gardens for Los Angeles County (see *Figure 4*).

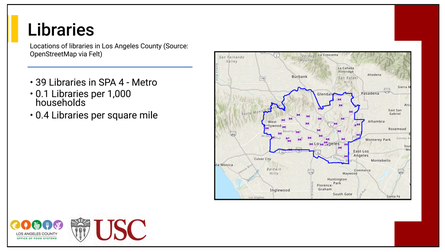

Figure 2. Example of dashboard report generated for libraries within Service Planning Area 4 - Metro

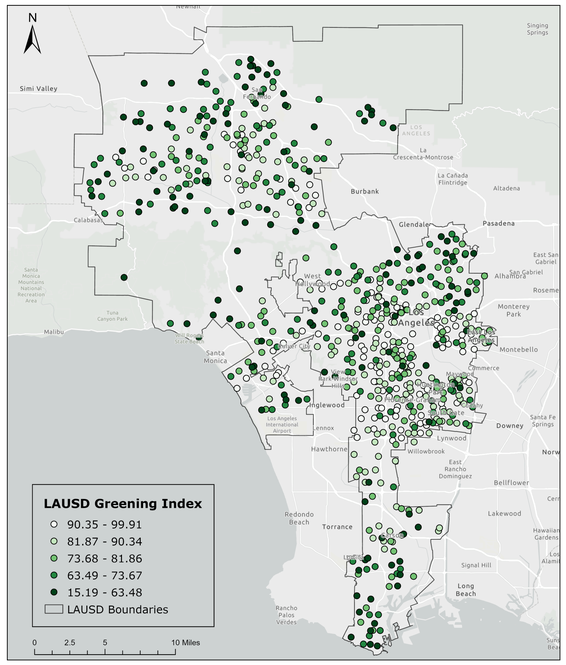

Figure 3. Map displaying spatialized LAUSD greening index

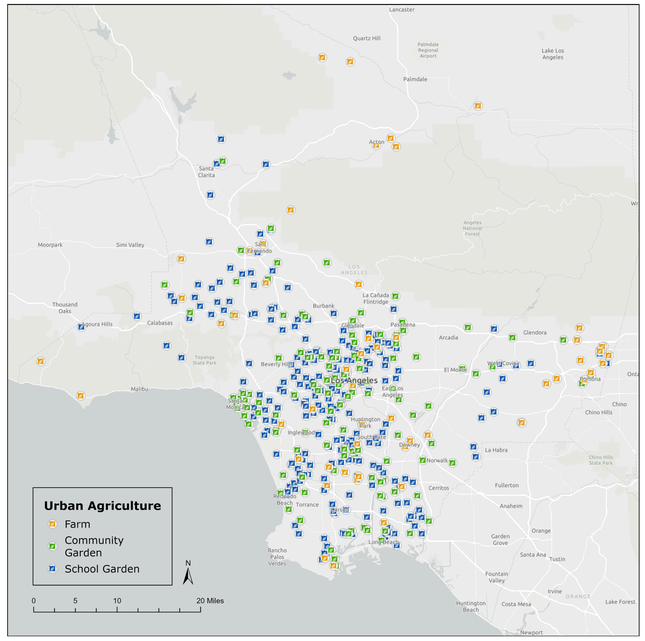

Figure 4. Map displaying the verified LACGC gardens data set

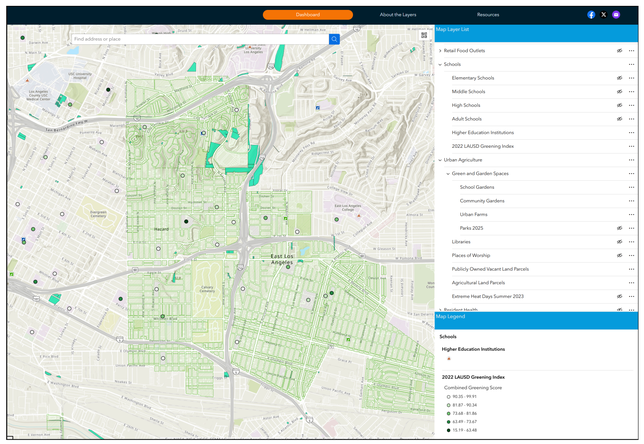

Figure 5. Screenshot of Food Base L.A. showcasing selected urban agriculture layers

SPA	LABEL	SPA_NAME	SUMPct_Food_Insecure_23	SUMPct_Food_Insecure_22	SUMPct_Food_Insecure_21	SUMPct_Food_Insecure_20
1	SPA 1	Antelope Valley	14.68	13.77	10.21	10.24
2	SPA 2	San Fernando	14.53	13.57	10.22	9.58
3	SPA 3	San Gabriel	12.89	11.96	8.43	7.81
4	SPA 4	Metro	17.73	16.3	13.35	12.92
5	SPA 5	West	9.82	9.85	8.14	8.12
6	SPA 6	South	18.90	16.84	12.18	12.18
7	SPA 7	East	14.21	13.2	8.55	7.66
8	SPA 8	South Bay	13.70	12.25	9.21	8.84

Figure 6. Example of compiled statistics for food insecurity rates by SPA

Statistics Calculation

The Food Base L.A. dashboard will also feature a series of pre-generated PDF reports (see *Figure 2*). These reports allow users to see up-to-date data layers by supervisorial district and service planning area alongside descriptions and statistical information. These statistics agglomerate census tract-level data into values that represent these larger boundary regions. Prior to this stage of development, the reports' statistics were calculated using tables in ArcGIS Pro with little automation. However, with the addition of urban agriculture, we deemed an update to calculating statistics highly necessary.

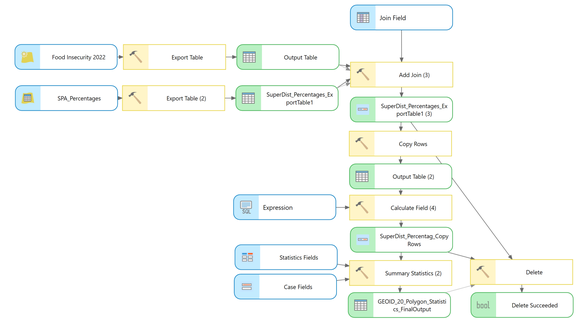

Figure 7. Statistics calculator set to calculate food insecurity percentages by SPA

We utilized ArcGIS ModelBuilder to create a streamlined version of our manual workflow for polygon statistics. This allows for statistics to be calculated significantly faster, with each set of boundaries. In its current form, data layers and boundaries can be swapped freely to calculate new statistics. This version was used to calculate statistics for updated American Community Survey (ACS) and CDC health data. Due to limitations in ModelBuilder, we are also now actively converting this calculator into a Python script to calculate statistics for several data layers across several boundary types at once.

Conclusion

Food Base L.A. is now more advanced than ever with its urban agriculture component and custom statistics calculator. The food systems of a metropolis like Los Angeles are difficult to unravel, but this project paves the way for researchers, local government, private organizations, and community groups to shape their own policy with real data. Future updates and additions will be made significantly easier with our statistics calculator, and urban agriculture provides an entirely new angle of information.

Acknowledgements

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