

An analysis prepared as part of

THE Vivid Picture PROJECT

Food Access in California Today

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Background and Summary

Access to healthy food for all Californians is a defining characteristic of healthy communities and healthy eaters in 2030. To help set a course for universal food access for all California eaters by 2030, this study provides a picture of food access in California today. Specifically, we measure the distance between eaters and the nearest full-service grocery store as a way to gauge the ability of every California eater to access healthy food.

Today, 16.98 million Californians, nearly 50% of the 2000 population, live within one half mile of a full-service grocery store. More than three fourths of the population, 26.6 million people, live within one mile of a full-service grocery store. But there are important segments of the population for which access to fresh food is compromised. More than 1 million Californians do not have access to a vehicle and 30% of that group live further than one half mile from a grocery store, compromising their access to food. One in every five California's must travel more than one mile to access a full-service grocery store.

These data are a portion of the first stage results of a food access measurement for the entire state of California. The following paper offers a discussion of all first stage findings and describes the analysis used to create this unique picture of access. Within this discussion, we examine our capacity to measure universal access in California and pinpoint current barriers to equitable food access. We conclude this paper by suggesting practical applications for this data and offering recommendations for action.

Background

In recent years, food access has become a powerful lens through which to view nutrition and equity in a food system. The strength of an access-based view of a food system is that "food access" encompasses three basic criteria for healthy eating: 1) that an eater has physical access to food; 2) that this food be nutritious food; and 3) that the food is affordable to purchase or grow.

Food access is not a measure of hunger, nor do we show a direct correlation between food access and the health of California eaters. But both hunger and poor nutrition have been clearly linked to limited physical access to fresh, affordable food.¹ Measuring food access is the first step to identifying points of action to address hunger and poor nutrition in California and to set a course for universal access to fresh, affordable food.

In California, limited access has impacted the health and well-being of diverse populations. Studies in Los Angeles and San Francisco have identified large pockets of California eaters who do not have access to nutritious food because no full-service food retailers are located near their homes and/or limits in public or personal transportation make it difficult to access nutritious food.² One of Los Angeles County shows that in 2002 there was 1 grocery store per 18,649 people. In a low-income neighborhood of LA County, one grocery store served 27,986 eaters.³ Access is a critical factor in rural California as well. County-level food security assessments have shown that limited fresh options in food retail locations, sparse retail food options, and transportation problems create significant barriers for eaters obtaining healthy food.⁴

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Defining Access

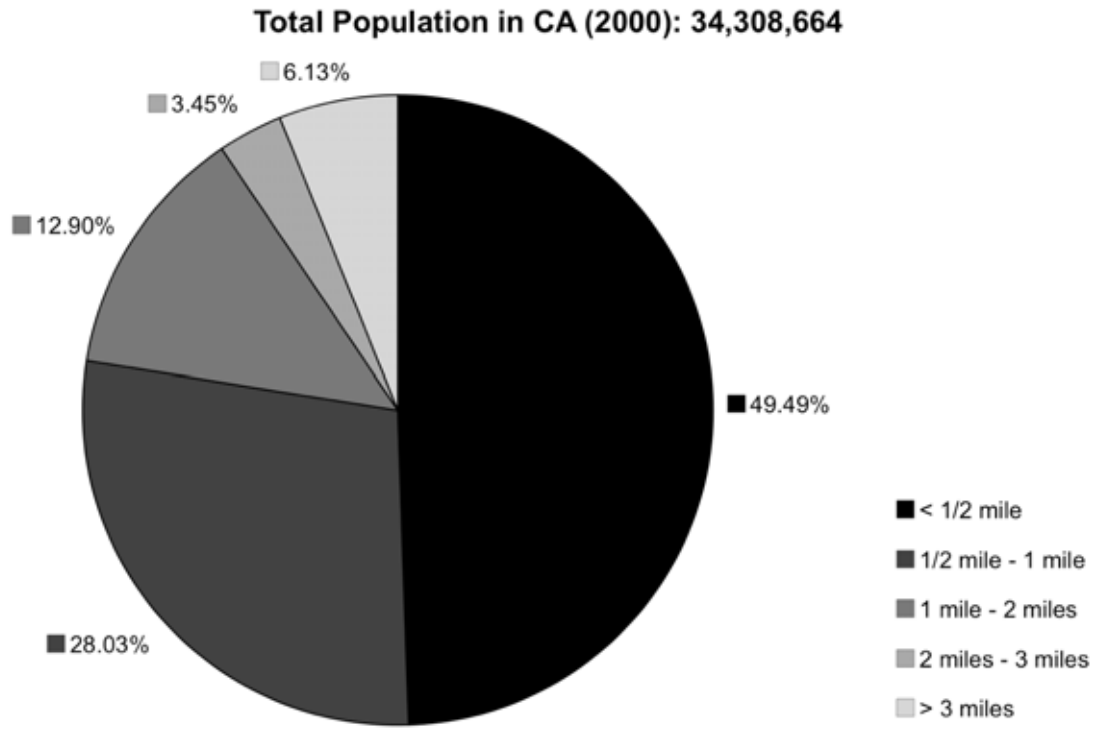
This analysis defines food access as an eater's access to a full-service grocery store. A full-service grocery store is a retail food outlet that offers fresh produce and perishable (fresh) grocery items, such as meat and dairy products. For the purposes of this analysis, we measure access to fresh food to identify the opportunity for eaters to buy nutritious items. Smaller scale studies have used more intensive methods, such as using directories and phone surveys to identify those markets with fresh food or conducting on-the-ground surveys of store provisions⁵ and "market basket" price comparisons. While these on-the-ground methods are most accurate for accessing the nutritional quality of food available, they were not practical for a study of this scope.

The designation of a full-service grocery store is also useful as a starting point for including affordability in a measure of food access. Studies throughout food access literature echo a 1997 USDA study which finds grocery store prices to be on average 10% lower than convenience stores and small, independent stores.⁶ For a study of this scope, cost data are expensive and hard to access without cooperation of food retailers. However, community-level cost comparisons have been shown to be effective and relatively inexpensive. For example, a team in Trinity County, California, recorded prices for a standardized "basket" of groceries in all the grocery stores in the county, highlighting price differences based on outlet size and location.⁷⁸

Full-service grocery stores are not the only outlets for fresh, nutritious food in California. Farm stands, farmers markets and community gardens are outlets for healthful foods in urban and rural settings. And many Californian's also access nutritious foods from emergency food resources such as food pantries and soup kitchens. This study selects full-service grocery stores to set a goal for a complete spectrum of perishable goods — produce, dairy, meats, poultry.

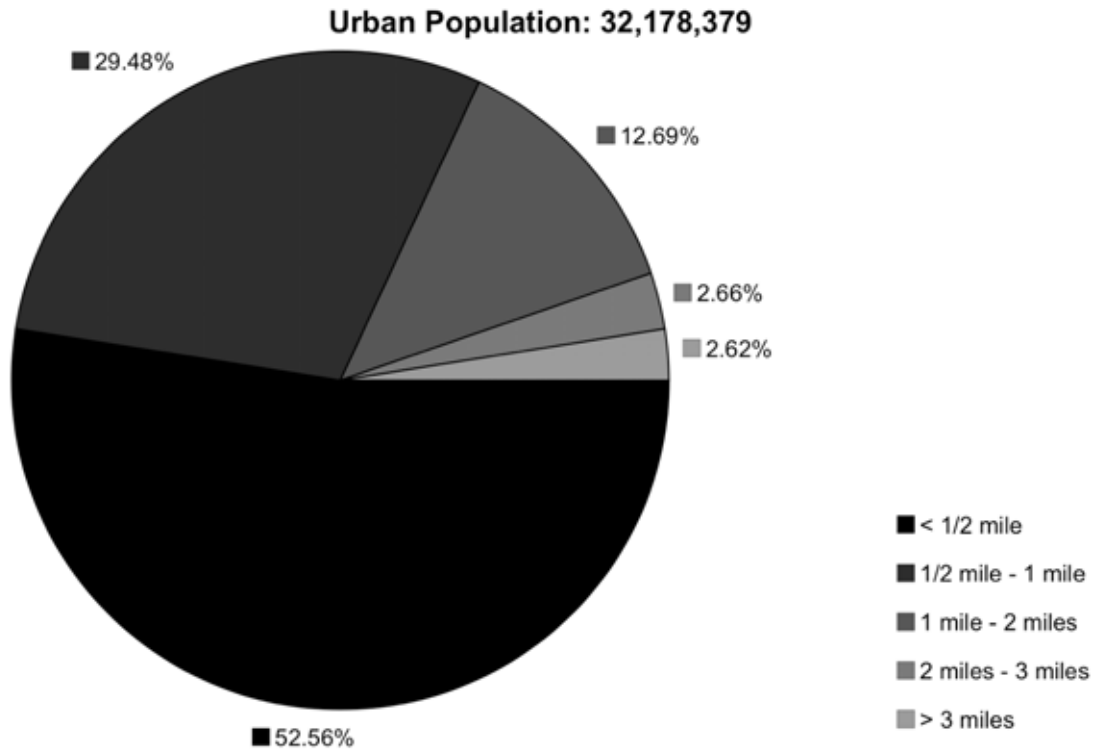
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Findings



Of the more than 34 million eaters in California in 2000, 77.54% live within one mile of a full-service grocery store with 49.49% of the population within 1/2 mile. 22.5% of California eaters live more than one mile from a grocery store that provides a measure of fresh groceries and produce. This is promising data that indicates that a foundation is in place upon which equitable retail growth and affordable, fresh food availability can be built.

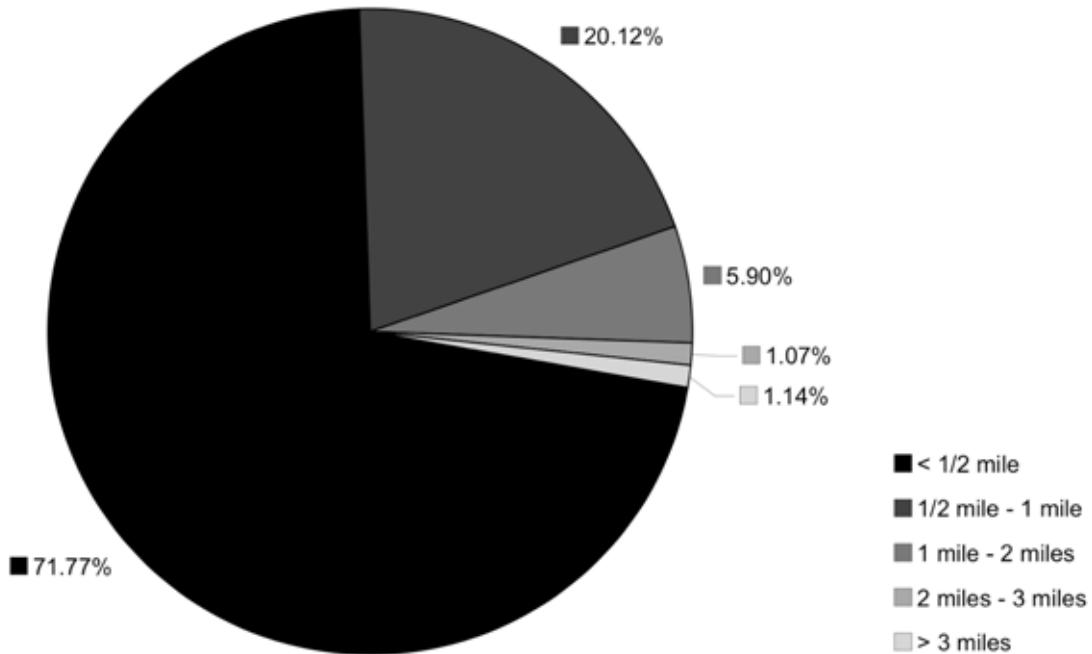
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The percentage of urban eaters in California who live within a half-mile of a full-service grocery store — 52.56% — is only slightly greater than the statewide access percentage. An additional 29.48% of the urban population lives between 1/2 and 1 mile from a grocery store. 17.97% urban California's eaters live more than one mile from full-service grocery store. These findings echo early studies of food access in urban areas which exploded the notion that urban population has bountiful access to food choices and exposed "food deserts", or areas where people do not have easy access to healthy, fresh foods.⁹ In West Oakland, for example, one grocery store serves 25,000 people but in the same area, there are 36 convenience and liquor stores offering minimal to no fresh food.¹⁰

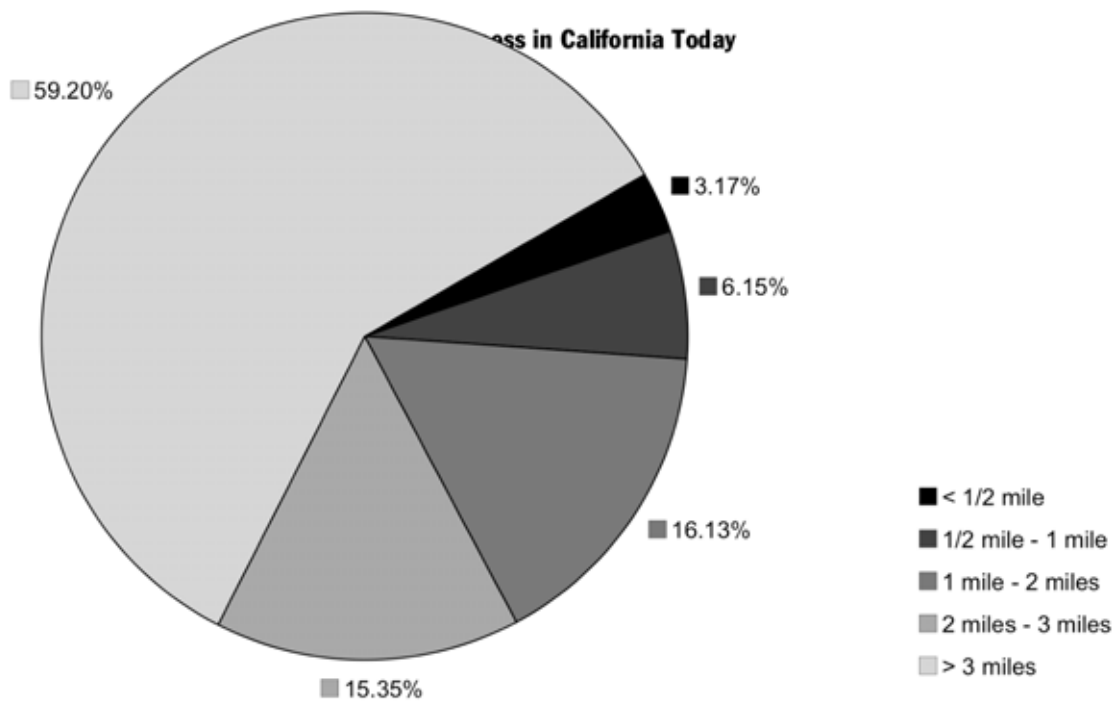
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Urban Population Without Cars: 1,063,341



Transportation is an important consideration for all urban eaters. Having access to a vehicle is a baseline measure of mobility, and therefore access. More than one million urban eaters are without cars. Of this group, 28.23% live more than 1/2 mile from a full-service grocery store. For these eaters, transportation is a major barrier to access, even if they live relatively near a full-service grocery store. Elderly eaters, parents with small children and people with disabilities are among those for whom a half-mile may be too far to transport groceries on foot.¹¹ Currently, there are few examples of public transportation programs that have been designed to provide connections between eaters and food outlets in California.¹²

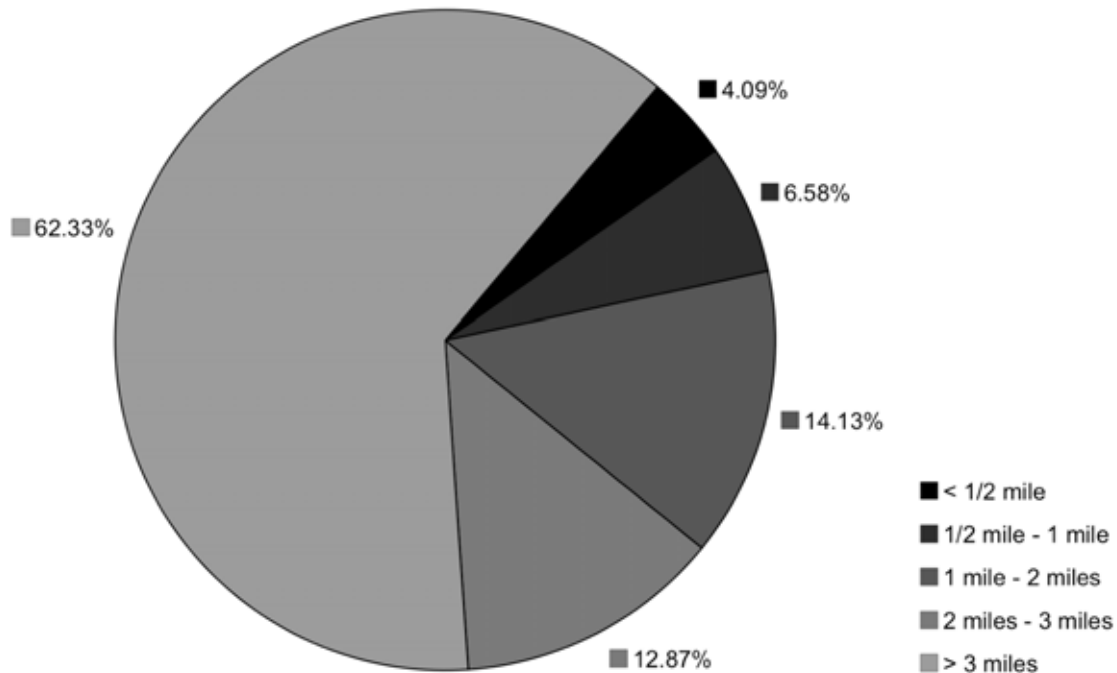
Rural Population: 2,130,280



Rural areas of California are ripe for innovations in access. Nearly 60% of the 2.13 million California eaters who live in rural areas are 3 more miles from a full-service grocery store. Only 9.32% of rural eaters live within one mile of a full-service grocery store. This data highlights access issues that were masked in a previous study that determined that no non-metro in California was a "food desert".¹³

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Rural Population Without Cars: 28,507



Access to transportation is critical to rural eaters. About 28,500 rural eaters are without cars and 62.33% of these people live more than 3 miles from a full-service grocery store. In a notable food security assessment of Trinity County, California, lack of transportation options was a critical feature of food insecurity. At the time of the report, only one shuttle and one senior transportation service served the 3,206 square mile county.¹⁴

Taken together, these data show uneven food access across the state of California. Even before considerations of income, the location of full-service grocery stores has a significant impact on ability of eaters to obtain fresh, affordable food. Today, nearly half of California's eaters live within one half mile of a full-service grocery store. But across the state, 22.48% of the population lives further than one mile from a full-service grocery store. This distance represents a significant barrier to obtaining fresh, affordable food, particularly for the more than 1 million Californians who do not have access to a vehicle. These first stage results, and the statewide data that was compiled for this project, are tools for further investigation. Next steps for analysis, such as mapping analysis to pinpoint small-scale areas of poor access, will generate information at a community level and serve as platforms for action.

Methodology

This study measures the distance, by roads, between eaters and full-service grocery stores to provide a measure of California eaters' access to fresh, nutrition food. Data for this analysis was selected on project-wide criteria including public accessibility,

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credibility, appropriate scale, and ability to be updated easily. The distance data was created using GIS analysis in raster grid data format. This technique, which is unique among existing food access studies, allows for accurate measures of a statewide scale and holds the potential to generate detailed, localized maps and data for communities across California.

Data

Data layers were compiled from different sources and analyzed. For the purposes of this project, we used population data from the United States 2000 Census database. In order to determine populations that did not own a vehicle, we compiled 2000 Census data from Summary Table 3 at the Block Group level (the smallest geographic unit that the Census collects such data). From this base geographic unit, we then calculated road distance from each Block Group, to the nearest full-service store. This analysis was done using a raster environment in order to allow the models parameters to be adjusted and the various results of the analysis could thus be compared.

Population data for this analysis is drawn from the 2000 US Census. Block group data has a common measure of between 600 and 3,000 people¹⁵ and is used to measure and locate populations. In order to determine populations that did not own a vehicle, we compiled 2000 Census data from Summary Table 3 at the Block Group level (the smallest geographic unit that the Census collects such data).

The road data is from 2002 US Census and was made available through the California Spatial Information Library.¹⁶ The road data layer used is from U.S. Tiger data, and is at a 24,000 scale.

The California Nutrition Network (CNN) supported this research by providing food outlet data from their GIS Map Viewer project¹⁷ so that we could create our full-service grocery store measure. The CNN Map Viewer data is comprised of over 80,000 food sources, including restaurants, fast food restaurants, convenience stores, delis, produce stands, and grocery stores. From this large data set, three data groups were selected:

- grocery stores with more than 10 store locations (large chain)
- grocery stores with 5 – 9 locations (small chain)
- grocery stores with 1 – 5 locations

The later category included all other grocery stores otherwise unclassified. Each of the data points in this group were reviewed and independent convenience stores and liquor stores were excluded from the final data set.¹⁸ The resulting data included 7,214 grocery store outlets.¹⁹ Once selected, the full-service grocery store data was geocoded and located on roadways.

All data for this project was selected according to the following criteria, which are common to each study in the Vivid Picture project. These criteria specify data that are:

- Credible - Data should come from known agencies, or organizations with proven reliability. When possible the data should be certified by academics.

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- **Statewide Coverage** - The extent of the data should be comprehensive. This means that the data should cover the entire state of California whenever possible. In certain cases the data was not complete in its coverage, due to uncompleted surveys. However, whenever possible the data was compiled so that it was consistent across regions.
- **Appropriate Scale** - It was important to choose a scale that would yield accurate results in acres without burdening the model with unreasonable processing time. All data used in this project are on a scale not greater than 1:250,000 and no more precise than 1:24,000.
- **Current** - To ensure that the projected results are as up to date as possible more recent data sets were preferred. When new versions of a data set became available they were substituted for the older one.
- **Publicly accessible** - An effort was made to use widely available information so that work in Vivid Picture can be replicated and verified by other groups.
- **Regularly updated** - The data set should be managed in an on going so that the Vivid Picture analysis can be calibrated and replicated in the future by us and other groups.

Our goal was to use existing data from credible sources whenever possible following the below criteria, and from them create meaning that was appropriate for this study of food access.

Data Transformation

Because the data layers that were collected were created on different projections, the first step of the analysis was to put them into a common projection and extent. All data layers were re-projected to California Teale Projection and clipped only to include information within the California State borders.

Once all of the information was in a common format it was converted to grid and resampled into the raster format. The cell size of the grid was 100 meters in Rural areas, and 10 meters in Urban areas. This means that each cell on the map represented 100 or 10 square meters on the ground. Cell size plays a significant role in the amount of detail that one can analyze. Urban road networks are much more dense than their Rural counterpart, thus a 10 meter cell size was more appropriate for analyzing distance. Due to the larger spatial extent of Block Groups and the more sparse road network typical of Rural settings, we found that a 100 meter cell size was sufficient for analyzing Rural distances. It is possible to create grids with a smaller cell size which would provide more detailed information. But these cell sizes were chosen because the goal of Vivid Picture is to provide a large-scale picture of general trends for the entire state. The information found in this report is not intended to provide detailed information within localized areas.

Analysis

The final step of the analysis was to overlay population, road and grocery store grids to determine eaters' proximity to full-service grocery stores. Distances to full-service

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grocery store groups were then calculated; measuring the distance via roadway between each population cell to the nearest full-service grocery store. This analysis was repeated for Urban, Rural, and populations with and without cars, in order to calculate the various aspects of these specific demographics. The resulting population access data was then analyzed by grouping distances, via roadways in 5 expanding distance categories: < ½ mile; ½ mile to 1 mile; 1 mile to 2 miles; 2 miles to 3 miles; and greater than 3 miles.

Limitations

While this analysis offers insight on the question of food access for Californians, it is meant to provide a generalized answer to a very specific question. While these numbers are telling and can serve as a general guide as to where further action may need to be taken in order to ensure equitable food access for all Californians, the scale of this analysis necessitates that these numbers are an approximation of the overall population. In other words, pinpointing the exact distance that each person travels and how that particular person chooses to travel (i.e. car, public transportation, cab) is beyond the scale of this analysis. However, the scale is sufficient for determining general locations where access is a concern. From that point more ground work will need to be conducted in order to determine what the particular access issue is for that location so that creative solutions for solving that issue can be pursued by the local community and aiding organizations.

Conclusions and Recommendations

In 25 years, this analysis of Californian's access to fresh food will serve as a reminder of the distance the state has traveled to provide access for all eaters to healthy, affordable food. The analysis detailed above is the first brush stroke of a valuable analytical tool. With additional time and community involvement, the methodological approach of this analysis and resulting data can be used to pinpoint specific areas of poor access and areas whose current equitable access may provide clues to future action. Californians are in a unique position to create and execute a plan for universal access by 2030. Recognizing this common goal, developing unique partnerships to create more outlets for fresh, affordable food, and designing a planning process which supports universal access are key factors to the success of this project.

Access—Recognizing a Common Goal

For better or worse, poor access to fresh, affordable food is a feature that cuts across California's diverse landscapes and populations. This study finds compromised access in both urban and rural California. The connections between food access and health are also tied to income and race. Chain full-service grocery stores are four times more likely to be located in predominately white neighborhoods than in predominately black neighborhoods and three times more likely to be located in high-median income neighborhoods than low-median income neighborhoods.²⁰ Next steps towards improving food access in California include putting data in the hands of communities to identify on-the-ground pockets of poor access. This work is platform for collaboration between diverse communities with common goal of access to fresh, affordable food.

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Partnership Opportunities

The lack of full-service grocery stores within close geographic proximity to many California eaters presents opportunities for satisfying partnerships between communities, businesses and government. Each eater in California would like to eat around \$45 in groceries every week. For the eaters who are currently underserved represent an opportunity for grocery companies to expand markets and for creative, community endeavors to flourish.²¹ In urban areas alone, more than 15 million people live more than .5 miles from a grocery store. With compatible planning, this number becomes not an access issue but a critical market opportunity to expand California's food economy.

Planning for Access

Food policy provides the necessary frame within which partnerships for successful access can form.²² For such partnerships to occur in California, effective zoning, transportation, business and health planning must support community and business efforts to improve access to fresh, healthy food. As Gottlieb and Fisher argue, "Recent efforts to establish food planning initiatives at the state and local level... are perhaps the most promising forms of government related activities to address food access needs."²³ Today across the state of California there is uneven access to full-service grocery stores. But with the strength of the food economy here and the potential for connections and partnerships, California is in a unique position to set a course for access to fresh, affordable food for all eaters by 2030.

Endnotes

¹ See K. Morland, S. Wing, A.D. Roux and C. Poole. "Neighborhood characteristics associated with the location of food stores and food service places." *American Journal of Preventative Medicine* 22 (1): 23 – 9. 2002 for discussion of nutrition and food access. Studies of hunger, nutrition and access include Neil Wrigley, Daniel Warm and Barrie Margetts. "Deprivation, Diet and Food Retail Access: Findings from the Leeds 'Food Desert' Study. *Environment and Planning A* 34. 2002.

²Los Angeles studies include: Linda Ashmen et al. Seeds of Change: Strategies for food security for the inner city. UCLA Department of Urban Planning. 1993.; Amanda Shaffer. The Persistence of L.A.'s Grocery Gap: The need for a new food policy and approach to market development. Center for Food and Justice, Occidental College, Los Angeles. 2002. A study of San Francisco's Bayview Hunters Point neighborhood summarized in Kami Pothukuchi, Hugh Joseph, Hannah Burton and Andy Fisher, "What's Cooking in Your Food System: A guide to community food security assessment" Venice, CA. Community Food Security Coalition. www.foodsecurity.org/CFAGuide-whatscookin.pdf

³ Shaffer, 11.

⁴ Trinity County Food Security Assessment, for example

⁵ Chanjin Chung and Samuel Myers, Jr. "Do the Poor Pay More for Food? An analysis of grocery store availability and food price disparities." *Journal of Consumer Affairs* 33 (2):276 – 96 use the USDA Thrifty Food Plan market basket to evaluate the level of available fresh food. Also see S. Furey, C. Strugnell and H. McIlveen "An investigation of the potential existence of 'food deserts' in rural and urban areas of Northern Ireland." *Agriculture and Human Values* 18: 447 – 57. 2001.

⁶ Phillip Kaufman, James MacDonald, Steve Lutz and David Smallwood. "Do the Poor Pay More for Food?: Item selection and price differences affect low-income household food costs." USDA ERS. AER n. 759. 1997.

⁷ Trinity County Frontier Nutrition Project Food Assessment 2001
www.foodsecurity.org/cfa/trinity_cty_food_assessment.pdf.

⁹ S. Furey, C. Strugnell and H. McIlveen. 2001. "An investigation of the potential existence of 'food deserts' in rural and urban areas of Northern Ireland." *Agriculture and Human Values* 18: 447 – 57.

¹⁰ People's Grocery at <http://peoplesgrocery.org/main.html>

¹¹Andy Fisher, Robert Gottlieb et al *Homeward Bound: Food-related transportation Strategies for Low Income and Transit Dependent Communities*. UC Transportation Center. 1996. P. 14.

¹² *Homeward Bound*, 15.

¹³ In Blanchard and Lyson's "Rural Concentration, Food Deserts, and Food Disadvantaged Communities in Rural America", a county was designated a "food desert" the zip code's percentage of population living outside a 10 mile radius of a 50+ employee grocery store was higher than the regional median percentage population outside of a 10-mile radius area.

¹⁴ Trinity County Frontier Nutrition Project Food Assessment 2001
www.foodsecurity.org/cfa/trinity_cty_food_assessment.pdf.

¹⁵ Information about US Census block group data available at
www.census.gov/geo/www/cob/bg_metadata.html

¹⁶ This data was made collected from the California Spatial Information Library and can be accessed at
<http://gis.ca.gov>

¹⁷ California Nutrition Network GIS Map Viewer and data information available at www.cnngis.org

¹⁸ Data was analyzed and cleaned based on company name. Outlets with "gas", "go", "liquor", "mart" were excluded from the data set. This screening reduced the number of outlets from 10,300 to 7,216.

¹⁹ This number is close to the reliable data on full-service grocery stores published in the 1997 US Economic Census which record 7,281 grocery stores in California.

²⁰ K. Morland, S. Wing, A.D. Roux and C. Poole. "Neighborhood characteristics associated with the location of food stores and food service places." *American Journal of Preventative Medicine* 22 (1): 23 – 9.

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²¹ For example, West Oakland's People's Grocery offers a "mobile market" which makes fresh foods available through the week at different locations throughout the city, literally creating new paths for access <http://peoplesgrocery.org/mm.html>.

²² In Wrigley, Neil, Daniel Warm and Barrie Margetts. "Deprivation, Diet and Food Retail Access: Findings from the Leeds 'Food Desert' Study. *Environment and Planning A* 34. 2002, the authors measured a positive correlation between improved access and improved diet after government incentives allowed for the construction of a national discount grocery store outlet near a low-income housing development.

²³ *Homeward Bound*, 21.