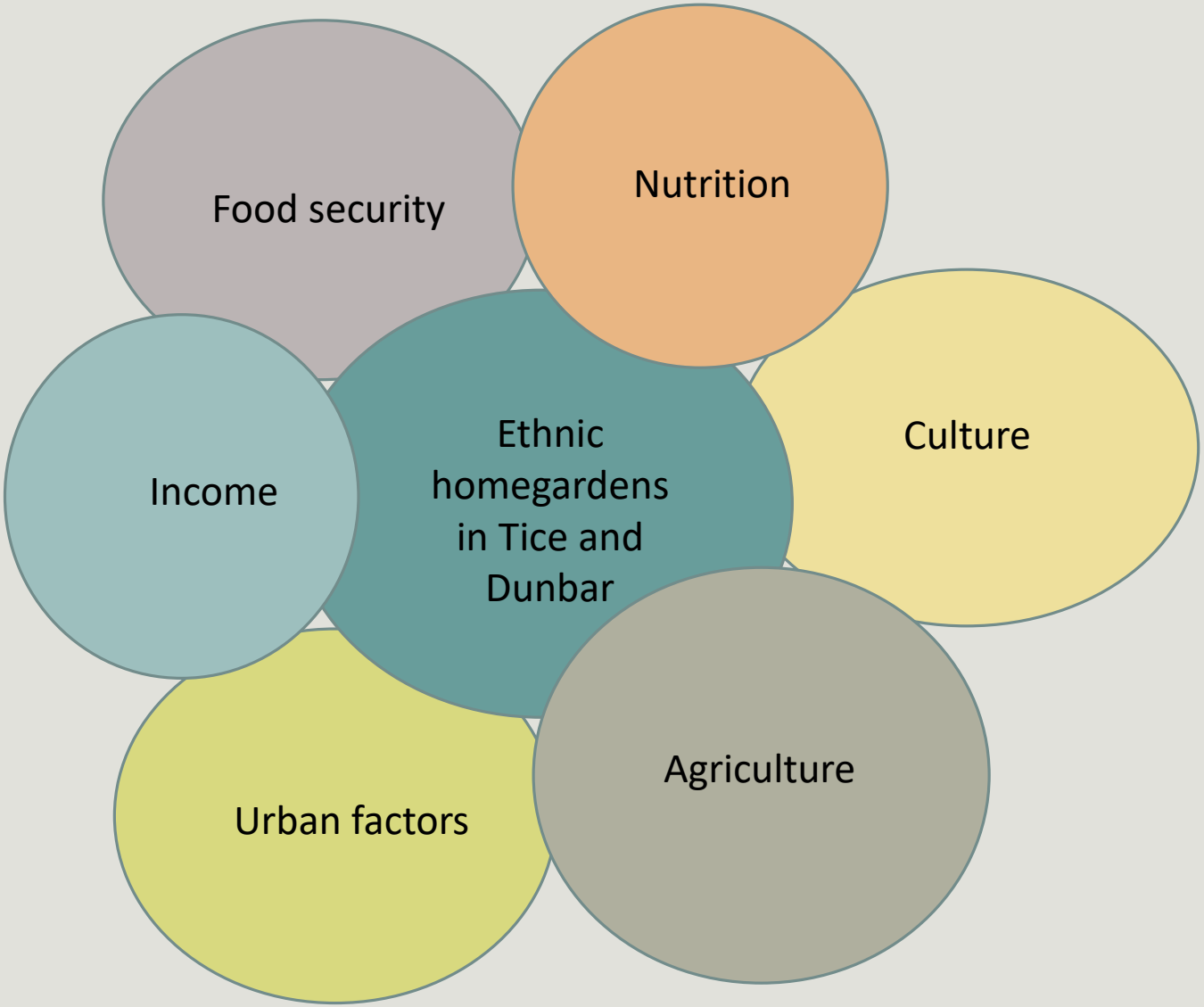
Urban Homegardens: A case study in Fort Myers, FL

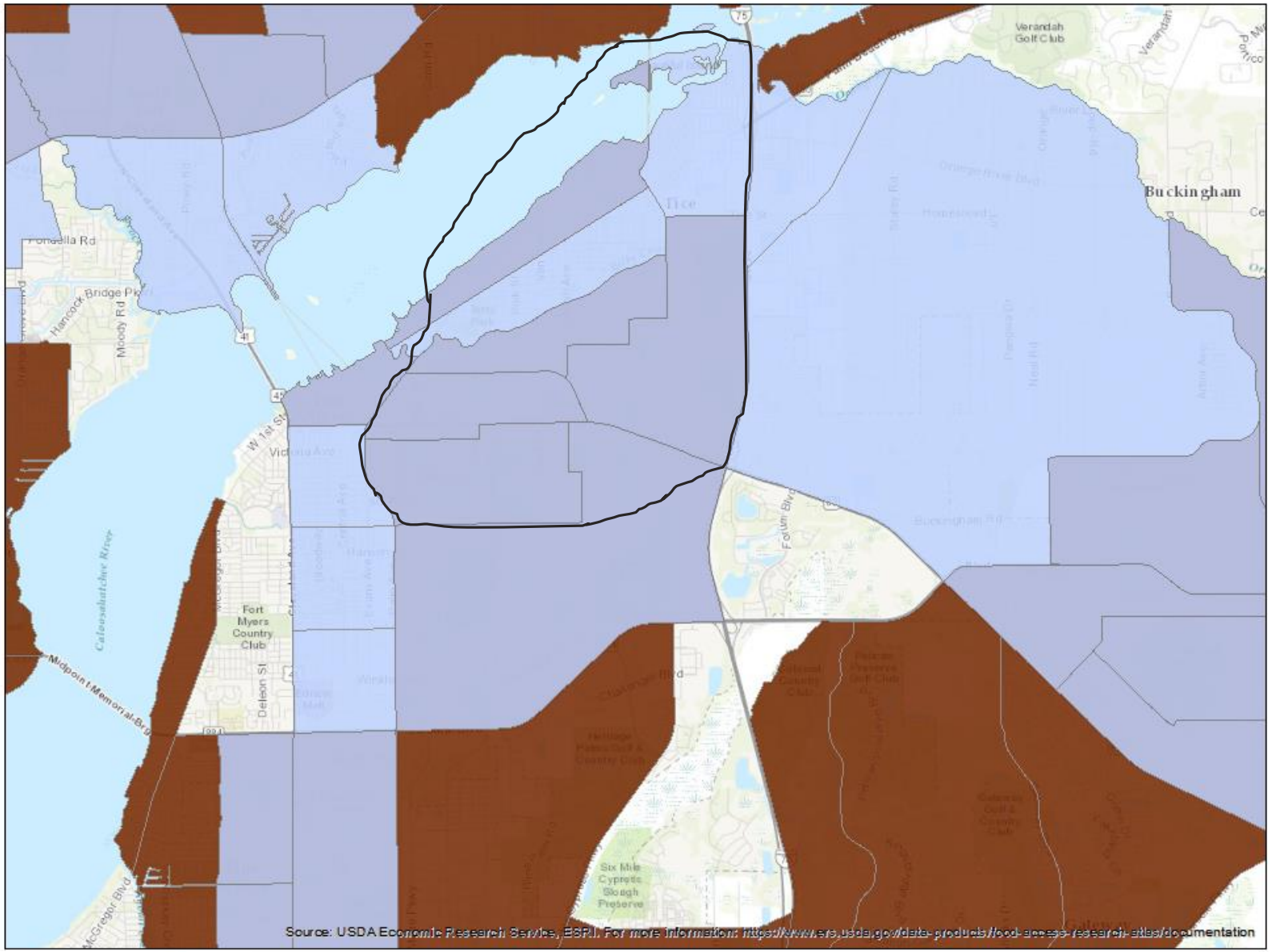
ECHO INTERNATIONAL AGRICULTURE CONFERENCE, 2017

MARCIE DALLMANN


Food security
Nutrition
Income
Ethnic homegardens in Tice and Dunbar
Culture
Urban factors
Agriculture

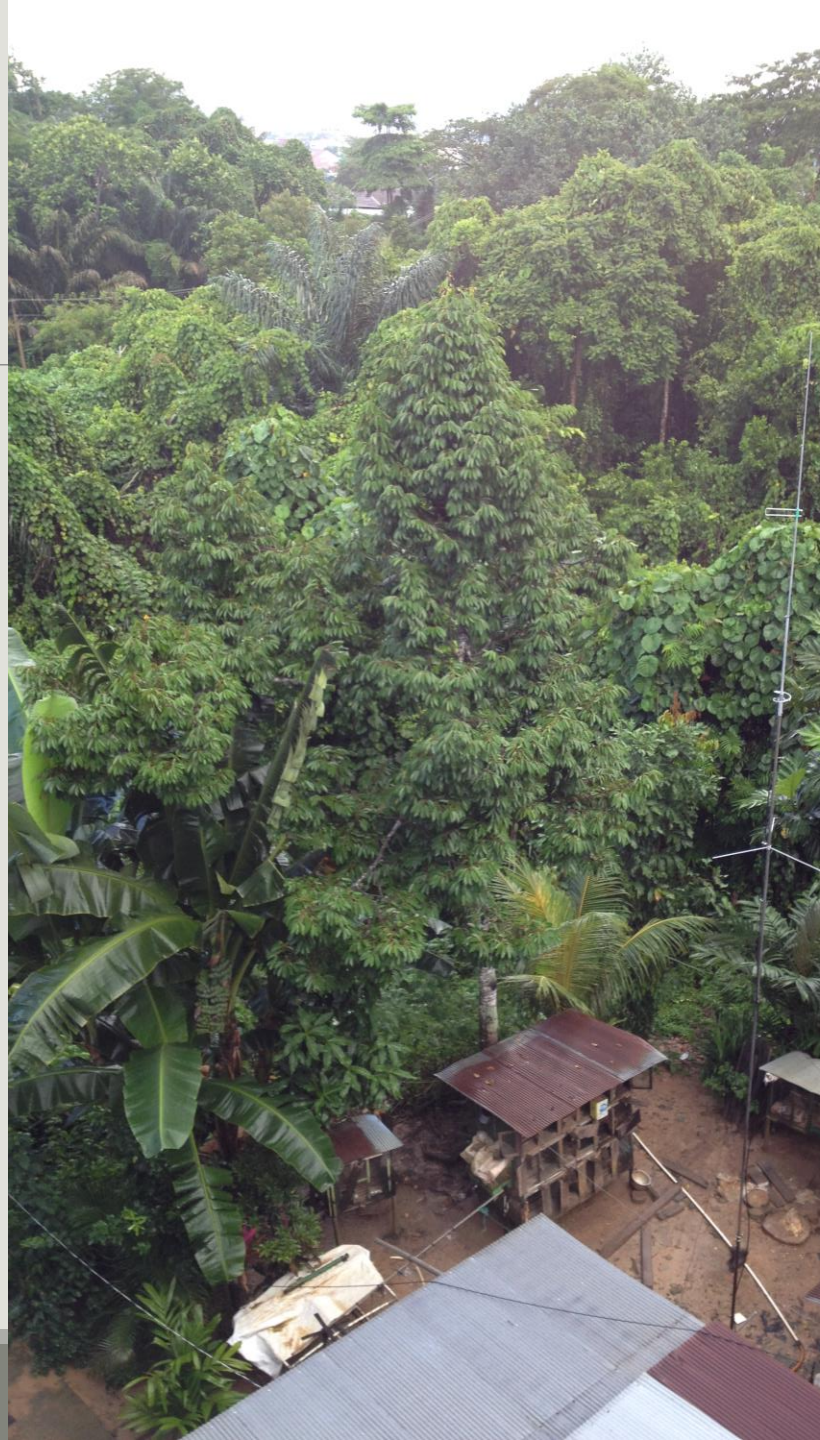
Food Security

- **Food security:** “people are considered food secure when they have availability and adequate access at all times to sufficient, safe, nutritious food to maintain a healthy and active life.” (World Food Programme, 2017).
- **Food desert:** an area “with limited access to affordable and nutritious food, particularly such an area composed of predominately lower income neighbourhoods and communities” (McClintock, 2011, citing USDA 2009).
- **Low food access**: “500 people, or 33% of the population lives farther than 1 mile from the nearest supermarket”. The Food Access Research Atlas (USDA, ERS, 2017)
- **Food availability:** the type of foods available in a given community
- **Food affordability:** the cost of food relative to the buying power of the household.
- **Food quality:** based on individual preferences of the food and the shopping experience (Carney et al., 2012).


Verandah Golf Club
Buckingham
Tice
Ponsella Rd
Hancock Bridge Pkwy
Moody Rd
W 1st St
Victoria Ave
Caloosahatchee River
Fort Myers Country Club
Midpoint Memorial Bridge
Delson St
Fortuna Blvd
Six Mile Cypress Slough Preserve
Source: USDA Economic Research Service, ESRI. For more information: https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation
Low Income tract 2015
Low Access 1 and 20 miles 2015

Homegardens

- One of the oldest and most universal forms of agriculture
- “Homegardens are agroforestry land-use systems with multipurpose trees and shrubs in intimate association with seasonal and perennial agricultural crops and livestock, within the compound of individual houses, and under the management of family labour”. (Torquebiau, 1992, quoting Fernandes and Nair, 1986).



Homegardens

Ecology

- Structure mimics a natural forest
- Nutrient cycling
  - A sink for food waste and grey water
- High plant diversity
  - Wild, domesticated and semi-domesticated plants

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A social space

- Produce is exchanged, cementing social ties

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Nutrition
- Often are supplementary crops, usually not crops for sale
- Micronutrients
  - According to Torquebiau (1992), a 35 m^2 homegarden can provide 100% of the vitamins A and C, 50% of iron and 18% of protein for a family of five

Urban Agriculture

- Practiced by 800 million people worldwide (FAO, 2017)
- As the world's population urbanizes, urban agriculture is growing in importance.
- Tends to be "an activity in which the poor are disproportionally represented, and that this occurs in all regions" (Zezza and Tasciotti, 2010).
- Movements of urban gardening often driven by economic hardship
- **But:**
  - Is unlikely to impact those who are the most food insecure, lack time and do not own their own land (Thibert, 2012).
  - Study in Portland found that many on the higher end of the income scale gardened for environmental reasons (McClintock et al., 2016)

Urban homegarden productivity

- Studies have found wide variation in production:
  - production potential: 6.03 kg/m^2 (Napawan and Burke 2016)
  - 0.3 kg/m^2 - 5.4kg/m^2 (Duchemin et al., 2008).
  - 0.08kg/m^2 - 5.18kg/m^2 , average = 1.43 kg/m^2 (CoDyre et al., 2015).
- Dependent on crop, climate and skill of the gardener
- Affected by soil conditions, land tenure and shade
- City ordinances and home owner associations can limit production
- Very difficult to study!

Is gardening economically advantageous?

- Pourias et al., 2016, found that over 50% of gardeners considered their garden to not be economically advantageous.
- In Guelph, Canada, CoDyre et al., (2015) found that gardeners were paying 39% more to grow their vegetables than to buy them.

Is homegardening economically advantageous?

- The household response to food price increase is often to adjust consumption away from more micronutrient rich foods in favour of a cheaper source of calories (Zezza and Tasciotti, 2010).
- “Many families live paycheck-to-paycheck and often prioritise paying rent, utilities and other bills over the purchase of fresh fruits and vegetables” (Gray et al., 2014).
- In Portland, Oregon, Carney et al., (2012) found that gardening produced a fourfold increase in vegetable consumption among adults and a threefold increase among children.
- “When people have more healthy food available, they eat it” (Gray et al., 2014).

Homegardening is not always about food production…

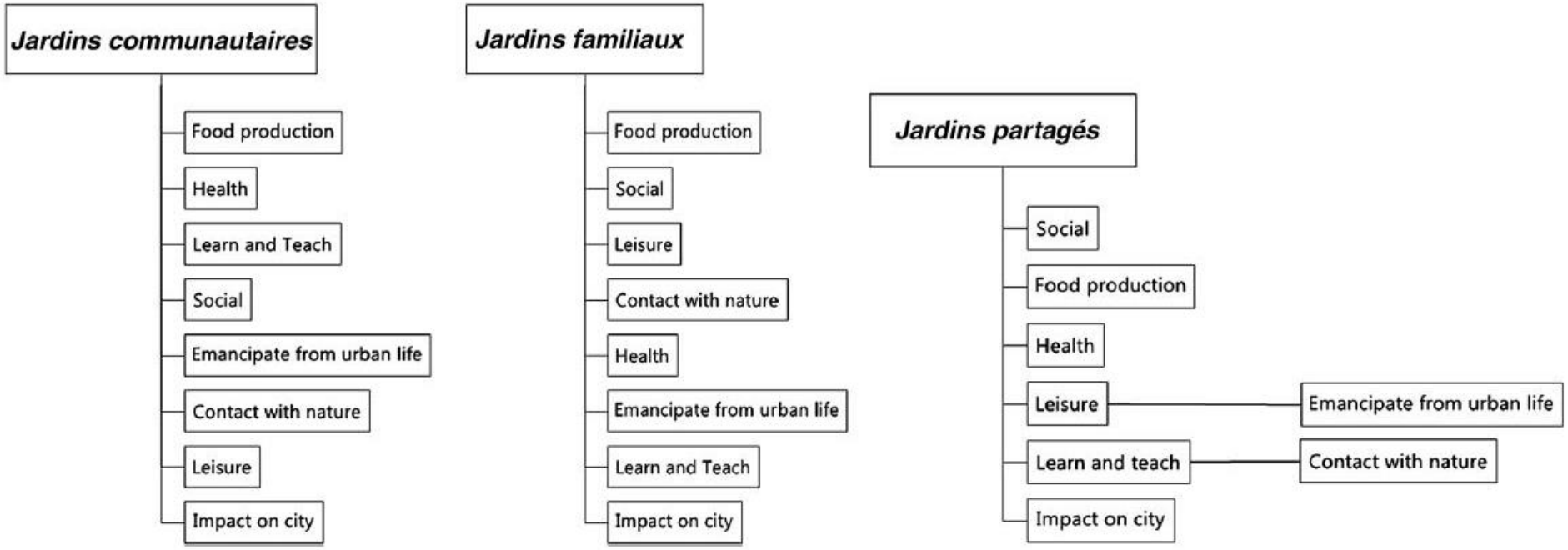


Fig. 2 The functions mentioned most by gardeners in each type of garden (number of gardeners who mention the function; decreasing order)

Immigrants and gardens

- The garden as a source of culturally appropriate food
- The garden as a way to remember a homeland and communicate it to the next generation
- The garden as a source of medicine and medicinal foods

Photo: Jiang, S. and C.L. Quave. (2013).

Figure 2 Mr. Edward Sun with okra plants (*Abelmoschus esculentus* (L.) Moench) in his home garden. Okra is a highly valued medicinal food commonly used in the management of blood sugar (anti-diabetes).

Immigrants and gardens

- “Our front yard is Americanized, but our back yard tells a different story…It reminds [us] of [Vietnam] where growing your own food is a very common thing” (Mazumdar and Mazumdar, 2012).
- “And every tradition from there we brought it here so that’s why we are making gardens and trying to produce chillies and tomatoes or something little, in a way to remind us of there, but somehow to have the taste from there brought here, and to continue the tradition of making produce and something from the soil” (Gore of Figtree) (Head et al., 2004)

Corlett, Dean, and Grivetti, 2003: Hmong Gardens in Sacramento, CA

TABLE 1. SPECIES DOCUMENTED IN SUMMER GARDENS ARRANGED BY THEIR FREQUENCY OF OCCURRENCE (RECORDED AS NUMBER OF PARTICIPANTS HAVING THE SPECIES IN THEIR GARDEN).

Scientific name	# of women	%	Younger women	Elderly women
Cucumis sativus	10	100%	5	5
Cucurbita sp.*	10	100%	5	5
Sorghum bicolor	10	100%	5	5
*Zea mays**	10	100%	5	5
Capsicum annuum	9	90%	5	4
Coriandrum sativum	9	90%	5	4
*Cymbopogon citratus**	9	90%	4	5
Eupatorium lindleyana	9	90%	4	5
Allium chinense	8	80%	4	4
Mentha spicata	8	80%	5	4
Phaseolus vulgaris	8	80%	5	3
Celosia argentea	7	70%	3	4
Momordica charantia	7	70%	5	2
Ocimum basilicum	7	70%	4	3
Polygonum odoratum	7	70%	4	3
Dendranthema indicum	6	60%	3	3
*Lycopersicum esculentum**	6	60%	3	3
Sechium edule	6	60%	3	3

"The thriving urban gardens in Sacramento, California...reveal how an uprooted people can begin to adapt to their new country, and in this process, America is enriched."

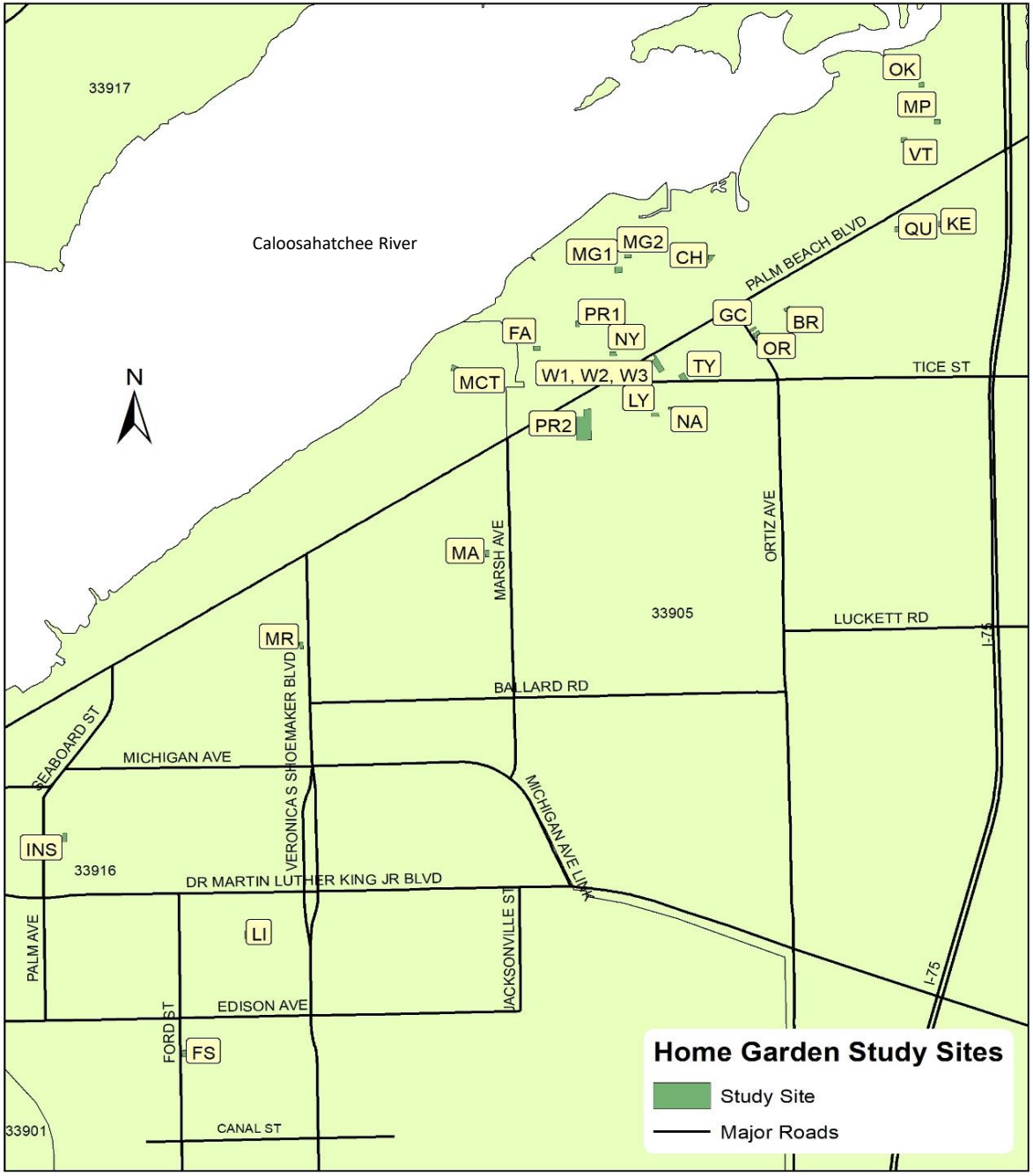
Airriess and Clawson, 1994: Vietnamese gardens in New Orleans

FIG. 2—Oblique westward view of levee gardens. Photograph was taken in July, and severe flooding explains the absence of a full crop cover. (Photograph by authors)

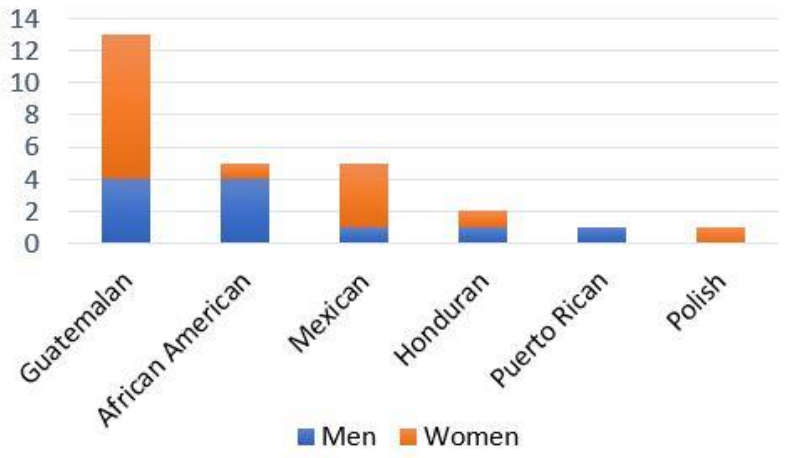
Taylor and Lovell, 2014. Chicago, IL

African American	Mexican-origin	Chinese-origin
Black-eyed pea (*Vigna unguiculata* subsp. *unguiculata*)	Amaranth, green (*Amaranthus* sp.)	Amaranth, green and red (*Amaranthus* sp.)
Collards (*Brassica oleracea* Acephala Group)	Chilies—10+ varieties (*Capsicum* sp.)	Bitter melon (*M. charantia*)
Kale (*Brassica oleracea* Acephala Group)	*Epazote* (*D. ambrosioides*)	Bunching onion (*Allium fistulosum*)
Mustard greens (*Brassica juncea* cvs)	'*Frailes*' (unidentified)	Chinese broccoli (*Brassica oleracea* Alboglabra Group)
Okra (*Abelmoschus esculentus*)	*Hierba buena* (*Mentha spicata* subsp. *spicata*)	Chinese cabbage (*Brassica rapa* subsp. *chinensis*)
Poke sallet (*P. americana*)	*Hoja santa* (*P. auritum*)	Chinese celery (*Apium graveolens*)
Sweet potato (root) (*Ipomoea batatas*)	Lambsquarters (*C. album*)	Chinese lettuce (*Lactuca sativa* cvs)
Turnip (top and root) (*Brassica rapa* subsp. *rapa*)	*Pápalo* (*P. ruderale*)	Chinese mustard (*Brassica juncea* cvs)
	Sugarcane (*Saccharum* sp.)	Chrysanthemum, edible (*Glebionis coronaria*)
	Tropical corn (*Zea mays* subsp. *mays*)	Mustard spinach (*Brassica rapa* var. *perviridis*)
		Garlic chives (*Allium tuberosum*)
		Lemongrass (*Cymbopogon* sp.)
		Malabar spinach (*Basella alba*)
		Perilla (*Perilla frutescens*)
		Pomegranate, dwarf (*Punica granatum* var. *nana*)
		Sweet potato (leaves) (*Ipomoea batatas*)
		Watercress (*Nasturtium officinale*)
		White and yellow cucumber (*Cucumis sativus* cvs)
		Winter/hairy melon (*B. hispida*)
		Yardlong bean (*Vigna unquiculata* subsp. *sesquipedalis*)
		Yu choy sum (*Brassica rapa* var. *parachinensis*)

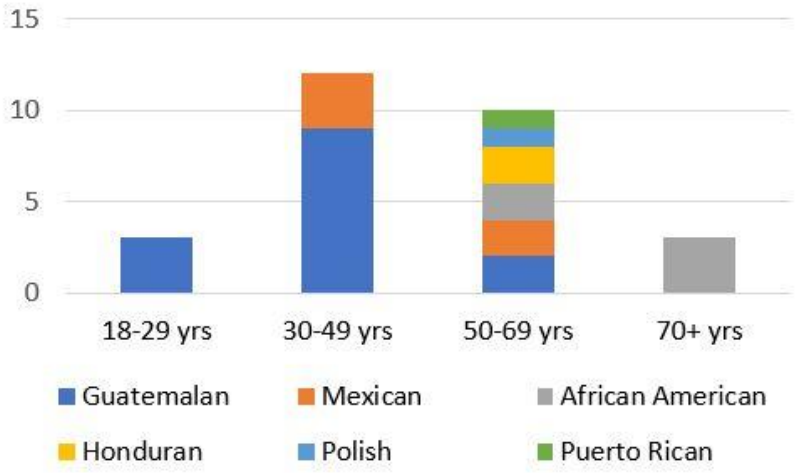
of the study are the Caloosahatchee River, I-75, Canal Street and Palm Avenue.



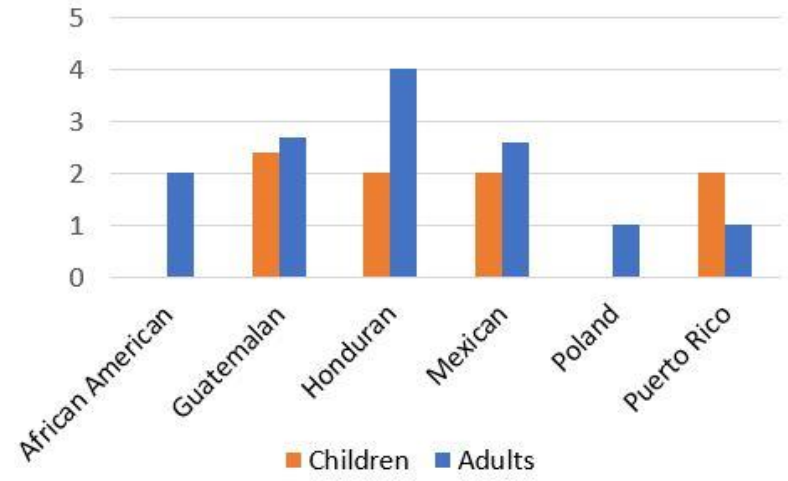
Gender Across Ethnicities



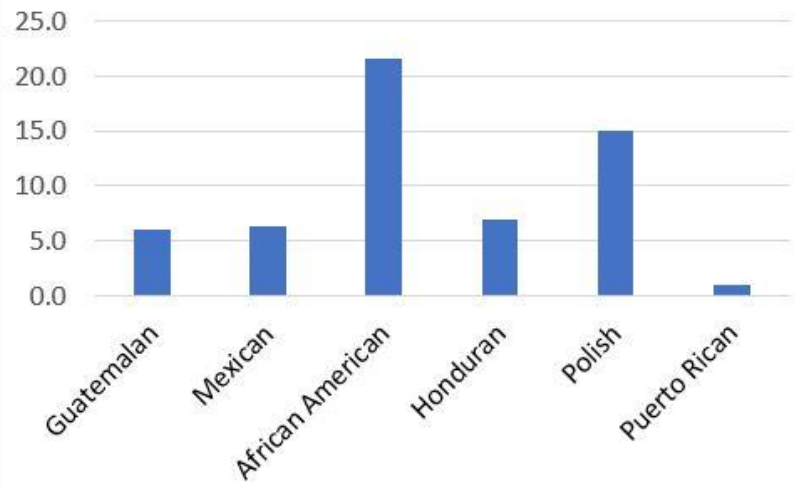
Respondent Age Structure

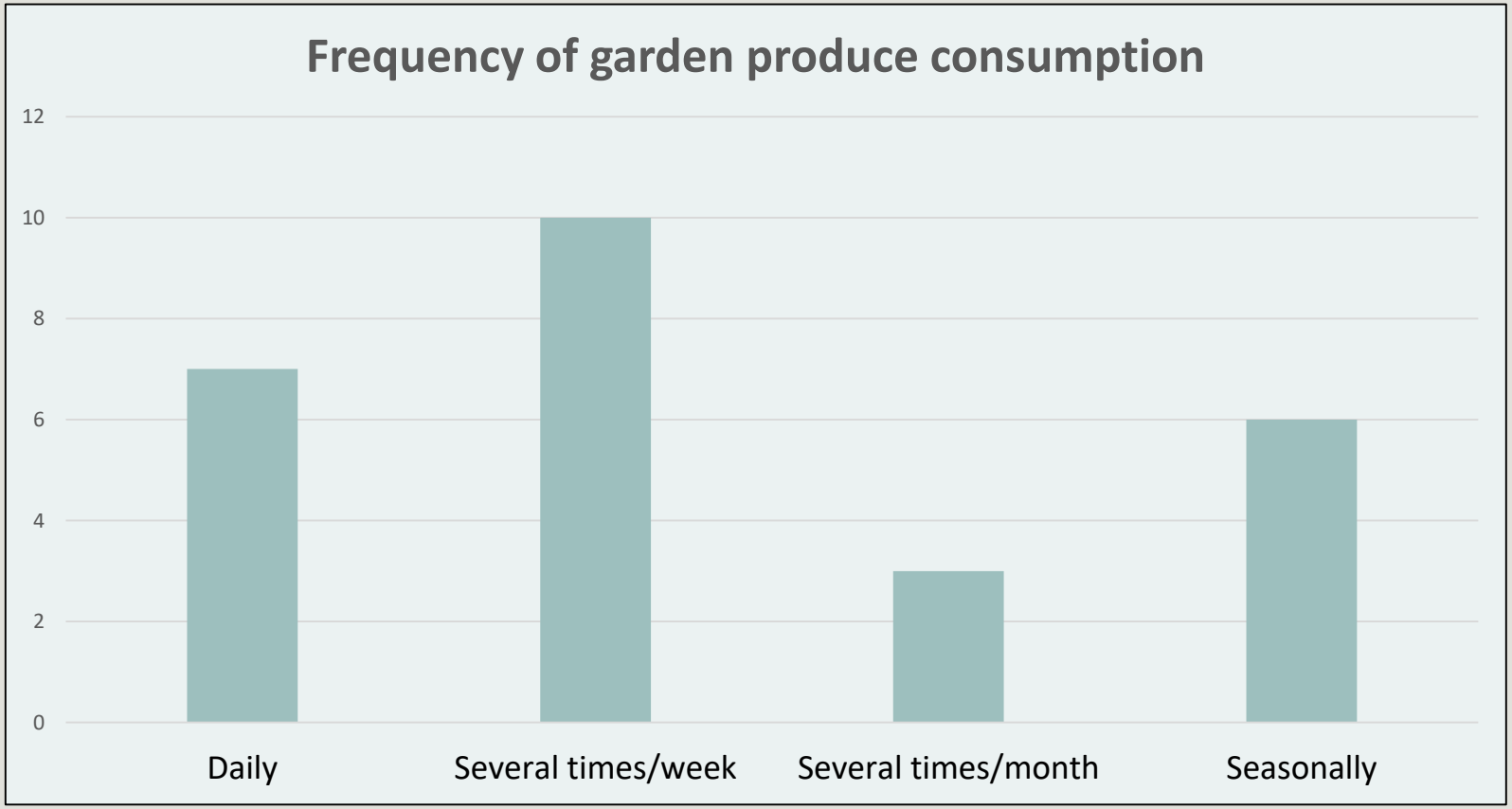


Average Household Size

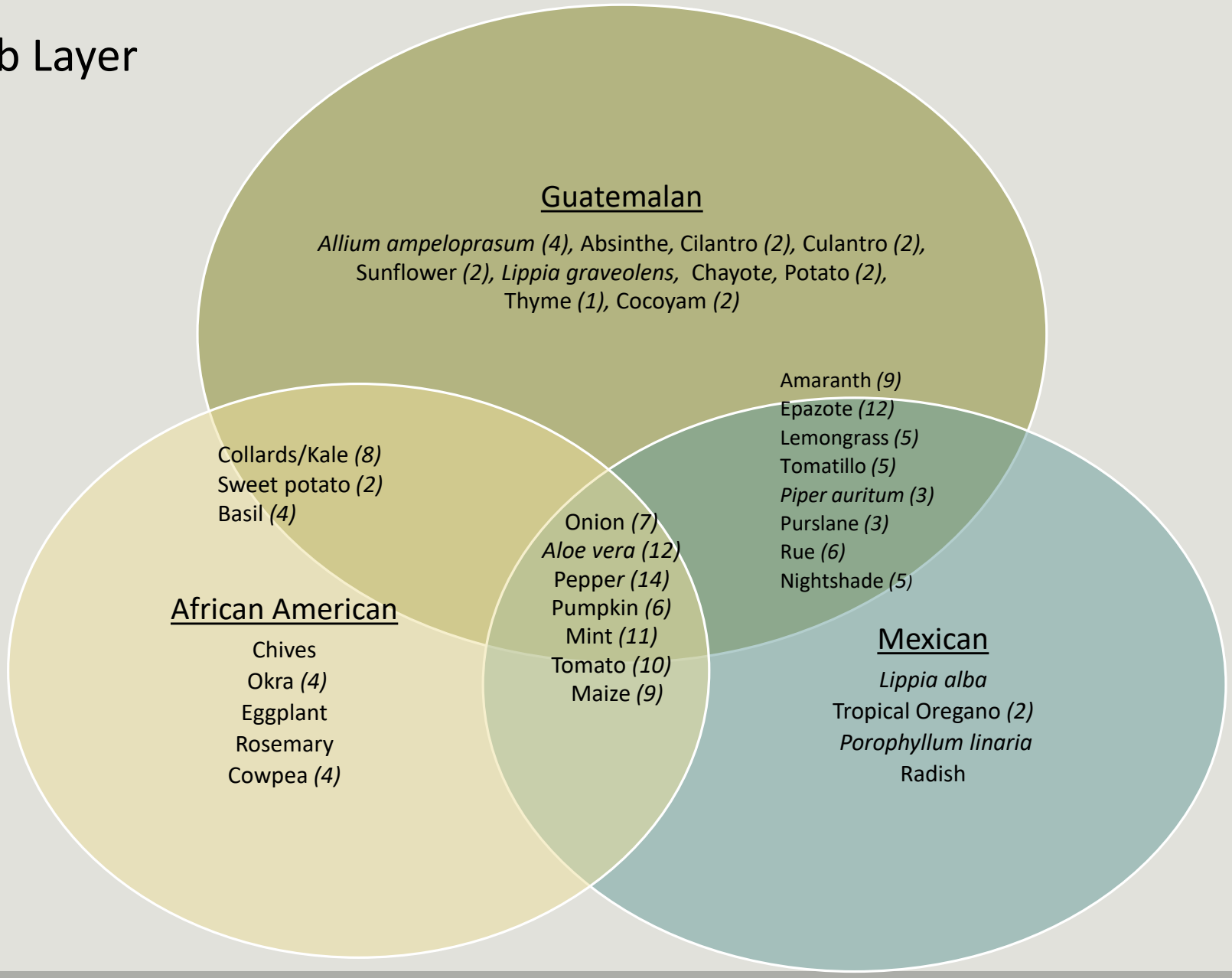


Average Years in Current Home

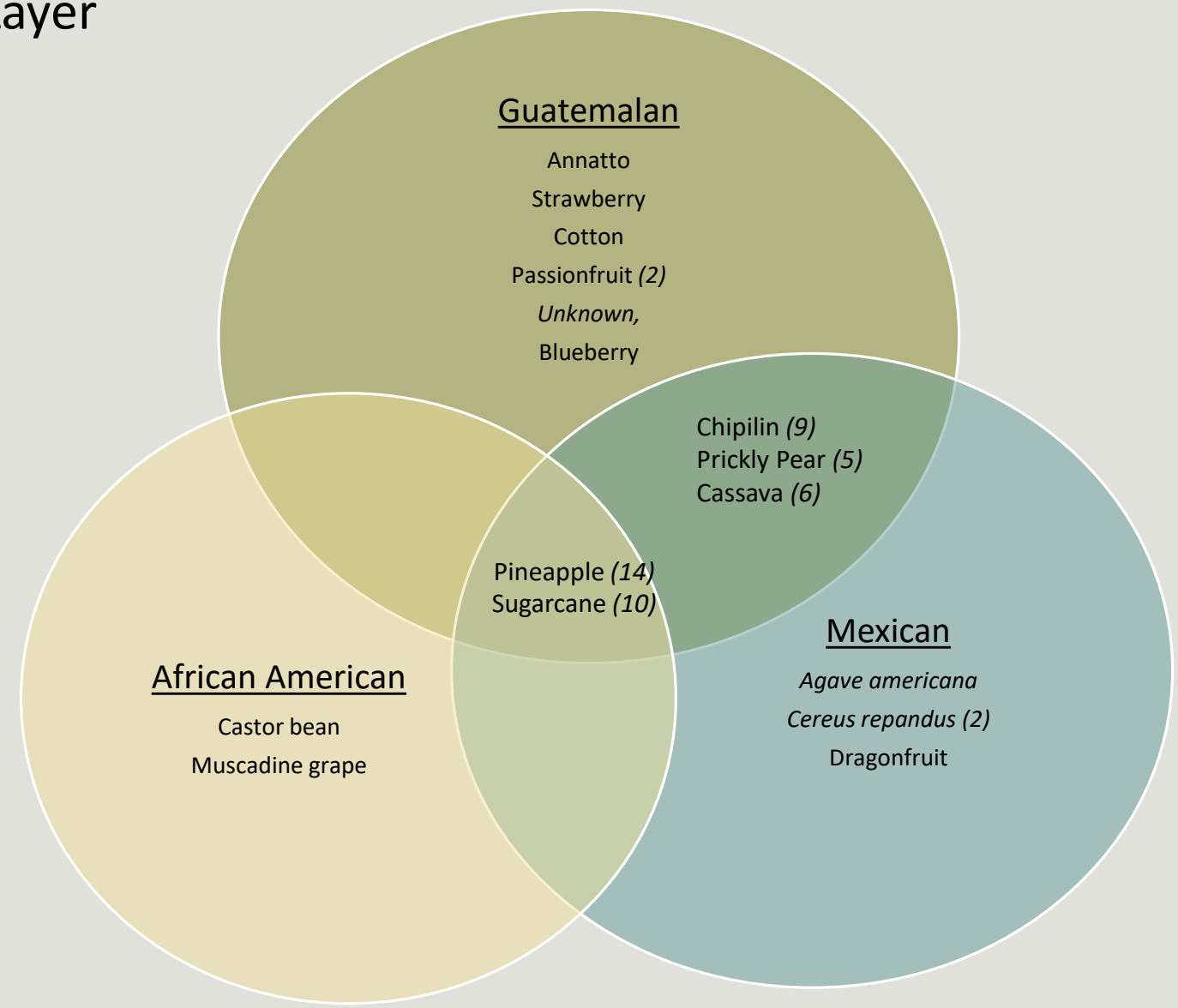



Frequency of garden produce consumption
12
10
8
6
4
2
0
Daily
Several times/week
Several times/month
Seasonally

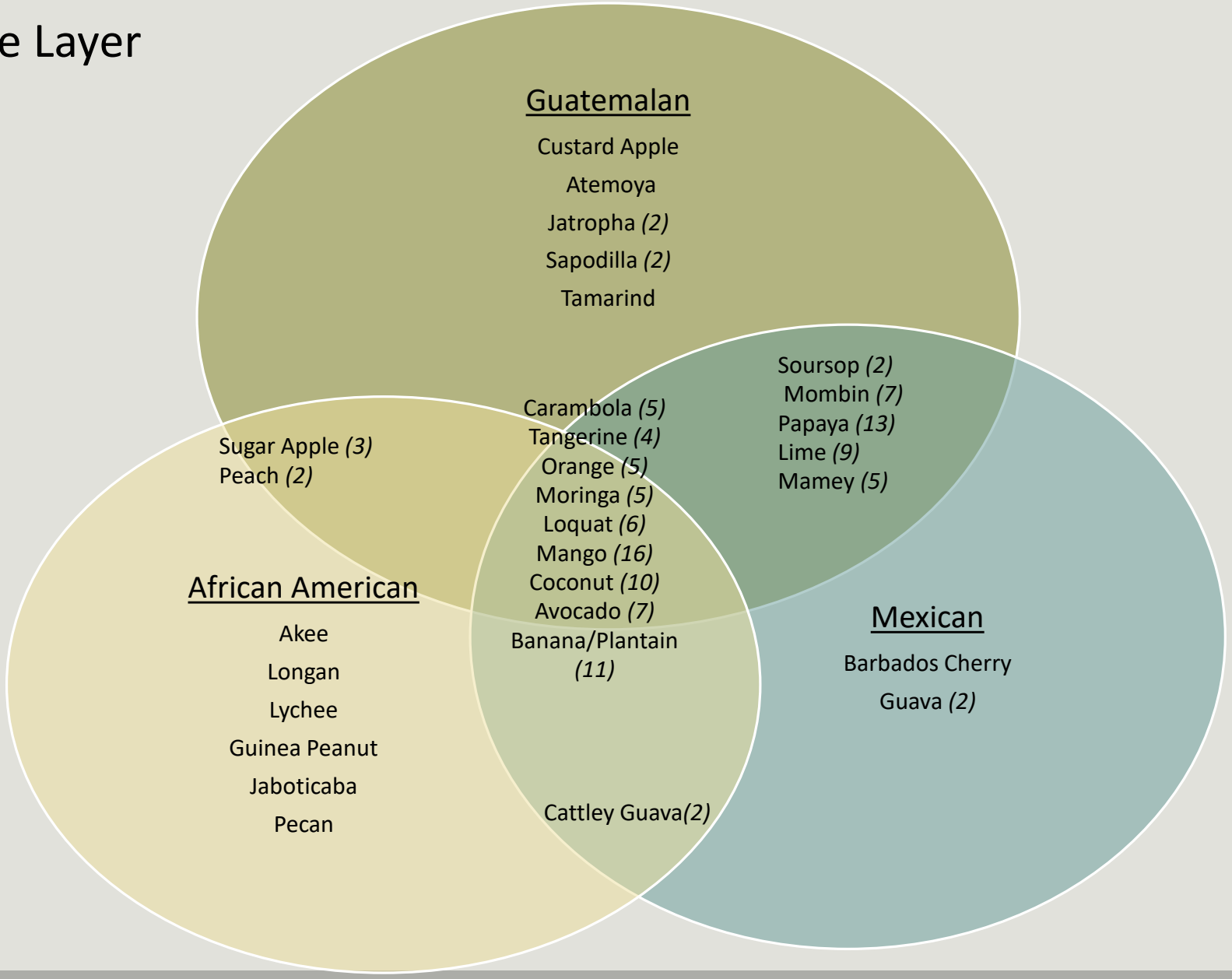
Herb Layer


Guatemalan
Allium ampeloprasum (4), Absinthe, Cilantro *(2),* Culantro *(2),*
Sunflower *(2), Lippia graveolens,* Chayote, Potato *(2),*
Thyme *(1),* Cocoyam *(2)*
Amaranth *(9)*
Epazote *(12)*
Lemongrass *(5)*
Tomatillo *(5)*
Piper auritum (3)
Purslane *(3)*
Rue *(6)*
Nightshade *(5)*
Collards/Kale *(8)*
Sweet potato *(2)*
Basil *(4)*
Onion *(7)*
Aloe vera (12)
Pepper *(14)*
Pumpkin *(6)*
Mint *(11)*
Tomato *(10)*
Maize *(9)*
African American
Chives
Okra *(4)*
Eggplant
Rosemary
Cowpea *(4)*
Mexican
Lippia alba
Tropical Oregano *(2)*
Porophyllum linaria
Radish

Shrub Layer


Guatemalan
Annatto
Strawberry
Cotton
Passionfruit (2)
Unknown,
Blueberry
Chipilin (9)
Prickly Pear (5)
Cassava (6)
Pineapple (14)
Sugarcane (10)
African American
Castor bean
Muscadine grape
Mexican
Agave americana
Cereus repandus (2)
Dragonfruit

Tree Layer


Guatemalan
Custard Apple
Atemoya
Jatropha (2)
Sapodilla (2)
Tamarind
Soursop (2)
Mombin (7)
Papaya (13)
Lime (9)
Mamey (5)
Carambola (5)
Tangerine (4)
Orange (5)
Moringa (5)
Loquat (6)
Mango (16)
Coconut (10)
Avocado (7)
Banana/Plantain (11)
Sugar Apple (3)
Peach (2)
African American
Akee
Longan
Lychee
Guinea Peanut
Jaboticaba
Pecan
Mexican
Barbados Cherry
Guava (2)
Cattley Guava(2)

Distribution of crops across ethnicities

	Total	N=27	Guatemalan	N=13	Mexico	N=5	African American	N=5
	Crop	n	Crop	n	Crop	n	Crop	n
Herb	Species: 44		Species: 30		Species: 21		Species: 16	
	Pepper	18	Epazote	9	*Aloe vera*	5	Collards	5
	Aloe vera	15	Amaranth	8	Pepper	4	Cowpea	4
	Epazote	12	Maize	7			Okra	4
	Tomato	11	Pepper	7			Tomato	4
Shrub	Species: 20		Species: 11		Species: 9		Species: 5	
	Pineapple	16	Chipilin	8	Pineapple	3	Pineapple	3
	Sugarcane	12	Pineapple	8	Prickly Pear	3		
	Chipilin	10	Sugarcane	7				
	Cassava	6						
Tree	Species: 37		Species: 22		Species: 20		Species: 21	
	Mango	19	Papaya	10	Pineapple	4	Mango	4
	Banana/ Plantain	15	Mango	8	Mango	4	Avocado	2
	Papaya	14	Mombin	6	Lime	3	Loquat	2
	Lime	13	Lime	6	Papaya	3	Orange	2

	Women's gardens, N=14			Men's gardens, N=13		
	Crop	n	Use	Crop	n	Use
Herb	37 species			32 species		
	Pepper	11	Sp, V	Pepper	7	Sp, V
	Aloe vera	9	M	Tomato	6	F
	Epazote	8	Sp, M	Mint	5	Sp, M
				Maize	5	V, St
Shrub	17 species			13 species		
	Pineapple	12	F	Sugarcane	6	O
	Sugarcane	6	O	Chipilin	4	V
	Chipilin	6	V	Pineapple	4	F
	Cassava	4	St			
Tree	33 species			26 species		
	Papaya	9	F, M	Mango	11	F
	Mango	8	F	Banana/ Plantain	8	F
	Banana/ Plantain	7	F	Lime	7	F
	Coconut	6	Sd	Papaya	5	F, M

Cited reasons for gardening	
Provisioning services:	**13**
To provide food	3
Convenience and easy access to food	3
Produce is fresher and better quality	3
Medicinal plants	2
To save money on vegetables	2
Cultural Services:	**31**
To make the house look nice	4
To share and give away produce	1
Enjoyment	16
Cultural and family heritage	5
Way of life	2
Recreation	3
Regulatory services:	**1**

Why garden?

- “I see value in having plants” – Guatemalan
- “I garden because I have an addiction! Gardening is my fix” – African American
- "I do this because my father did it back in Mexico…he grew everything!" – Mexican
- "This is what I'm used to." – Guatemalan
- "The house feels settled with a garden, otherwise the house would seem melancholy and lifeless." – Guatemalan
- "I just do it, been doing it so long, I just do it." – African American
- "My father did this too. I don't need to [garden], I just like it." – Honduran
- "Everything I grow, I grow to share." – African American

Constraints to Homegardening	
Physical factors	**20**
Lack of space	7
Lack of irrigation	5
Plant material of desired plants unavailable	2
Climate does not permit certain desired plants	4
Poor soil	2
Regulations	**7**
Renting, do not own home	5
City regulations	2
Personal reasons	**4**
Unstable living situation	2
Takes too much time	1
Is too much work	1

Homegarden Typologies

Homegarden Type		Emphasis			Structure	
	N	Herb	Shrub	Tree	Size, Distinctive features	Desired services
Food Forest	7			x	All available space, extensive	Fruit
Medicine and Spice	2	x	x		Small, intensive cultivation	Medicine and spices
Aesthetic garden	5	x	x	x	Variable; ornamental plants	Beauty, some food production
Production Garden	5	x			Large, intensive cultivation	Food, sometimes income
Cook's garden	8	x	x	x	Small, intensive cultivation	Food, spices, medicine, other products

Highlights

Homegardens

- Quick and convenient access to fresh, culturally appropriate foods
- Improved the appearance of the home
- A source of enjoyment, creativity and pride
- Garden produce as a means to share with others or as a source of income

Other observations

Homeownership:

- Renters grew just as many trees as owners
- Trees were all in pots

Seasonality:

- Farmers of different ethnicities were growing in different planting seasons

Gardening skill is not being passed to the younger generation

Why does this matter?

- Understanding the important contribution of urban gardens to the household.
  - Waldstein, 2008: Immigrant health tends to decrease with acculturation rather than increase.
  - Grivetti and Ogle, 2000: The importance of local knowledge about plants, their identification and processing methods.
    - "Salvage ethnobotany"
  - Understanding the social and cultural role of gardens and the social role of food security and nutrition

- Understanding how to support and encourage homegardeners
  - Regulations?
  - Is there a stigma on gardening?
  - Irrigation supplies?

Originally from South Carolina, he grew up on a farm. “We used to plough with a mule,” he said, and indeed, his land management of furrows and rows reflected this practice. For years, he incubated and raised chickens in an elaborate chicken coop behind his home. Using leaves from his oak and fruit trees as bedding for the chickens, he harvested it periodically and used it in his garden. In the front yard, rows of milk crates lined with plastic bags held this enriched soil, each crate planted with a large collard plant. In addition to soil fertility, the chickens provided meat, eggs and another service. “Every day of my life I’ve woken up to a rooster. I wouldn’t wake up if I didn’t have one in my yard.” When the city informed him he needed to reduce his flock to the legal limit of five birds, he kept the rooster. Gardening is a challenge now, he says, without this important source of soil fertility. But at least he still has his morning alarm.

He was covered in white dust when he was dropped off in the driveway at about 6 pm. Would he show us his garden? Putting down the cooler he was carrying, he grinned. Every square foot of land around the duplex was cultivated. Pots of basil starts and rue cuttings filled the space between the sidewalk and the wall. Neat rows of corn and papaya trees were interspersed with amaranth and coriander seedlings sprouting in the rich soil in the western and southern beds. "This is the corn variety 9854," he said, fingering a leaf. The lower leaves of the corn had been cut, to be used for wrapping *tamalitos*. He recounted how he was from the lowlands of Guatemala where farming is rooted deep in the culture. Unlike many others who fertilize their gardens with kitchen scraps, he had purchased the compost that filled the beds and was using granular fertilizer on the plants. He had lived here nine years. Did he know anyone else with a garden that we could interview? "No one with a garden this nice!", he replied.

How long had she lived in this house? “Just a week!”, she answered. A variety of herbs and vegetables grew in pots, and several newly transplanted papaya seedlings stood, slightly wilted, in the sandy soil. “I brought all these plants with me,” she said. “Except the rose bush. The pot was too big and we had to leave it at the last house. That was my favourite. I like flowers the most.” She unlocked the door to the small, dilapidated house and four young children spilled out to play in the bare dirt yard. “We grew everything in Guatemala – fruit trees, corn, everything. I tell my husband that someday we need to get a proper house so I can plant things everywhere!”

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