Comparing Urban Agriculture in Four Areas of Portland, Oregon

Mapping and Survey Results

Prepared by:
Laura Combs, MURP
Nathan McClintock, PhD

Toulan School of Urban Studies & Planning
Portland State University
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Acknowledgements & Credits

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Principal Investigators:
Nathan McClintock, PhD, Portland State University
Eugene McCann, PhD, Simon Fraser University

For more information on this project, please contact:
Nathan McClintock (urbanag@pdx.edu)

Introduction

Study Areas in Portland:

- Inner North/Northeast
- Cully
- Inner Southeast
- East Portland

Total Survey Respondents: 572

Total Respondents with Home Gardens: 479

This report summarizes the results of a mail survey of urban agriculture practices in four areas of Portland, completed in Summer 2016, a mapping study conducted at the same time, and an internet survey of community gardeners conducted in Spring 2017.

The two surveys and mapping study are part of a wider research project entitled Urban agriculture, policy-making, and sustainability, led by Dr. Nathan McClintock of the Toulan School of Urban Studies & Planning at Portland State University and Dr. Eugene McCann of the Department of Geography at Simon Fraser University in Vancouver, British Columbia. Funded by the National Science Foundation, this project incorporates geospatial and survey data, interviews and focus groups with urban agriculture advocates, practitioners, policymakers, as well as an analysis of policy and discourses surrounding urban agriculture's role in urban sustainability. In particular, we are examining urban agriculture policies and practices in both Portland and Vancouver, BC in order to understand how they contribute to the development of urban spaces, as well as the ways in which urban agriculture practitioners, advocates and policy-makers facilitate urban food production. A nearly identical survey was

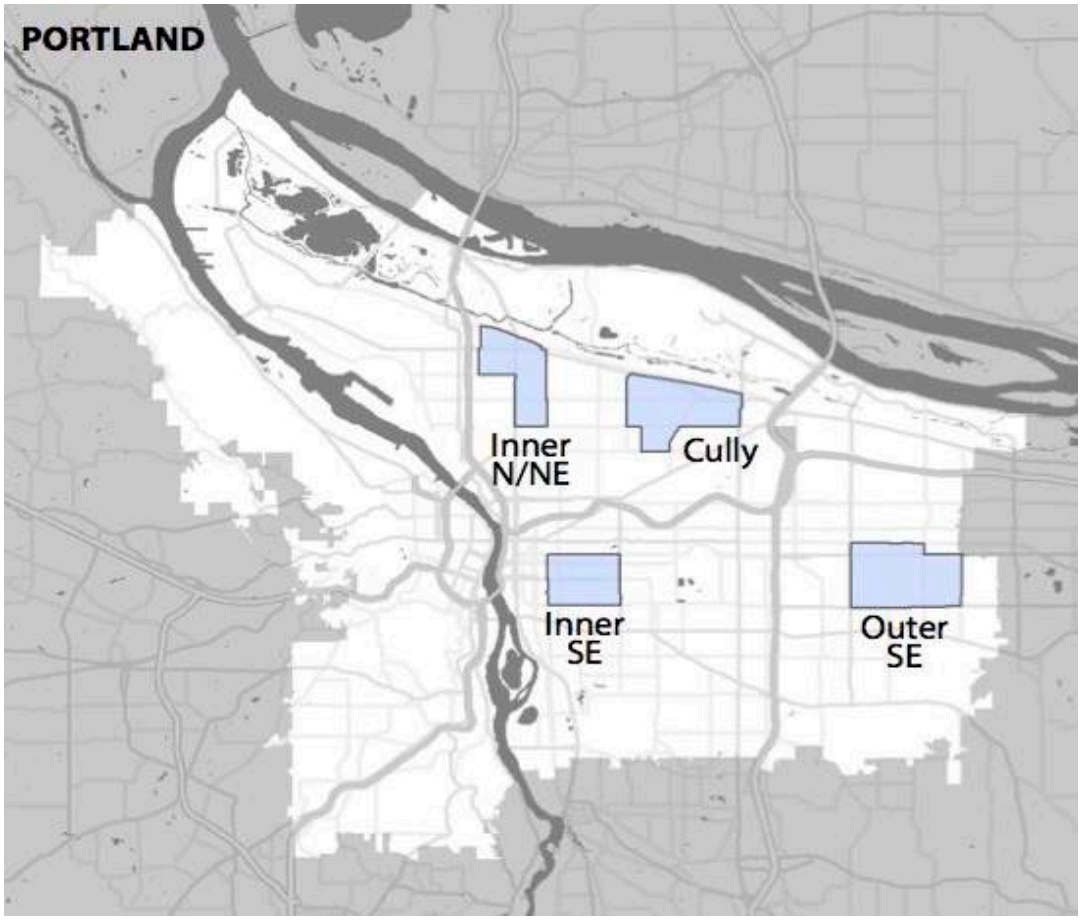


Image 1: Map of the Four Study Areas

Introduction

distributed to households in Vancouver, BC. Data from both surveys will be used to compare the gardening practices and motivations between the two cities.

The first survey was mailed to a random sample of 3,000 households across four distinct areas of the city in June 2016: Inner North/ Northeast (census tracts roughly paralleling the boundaries of Piedmont, Woodlawn, and King), Cully, Inner Southeast (census tracts including parts of Hosford-Abernethy, Buckman, and Sunnyside), and Outer Southeast (Centennial and Hazelwood), or what we refer to hereafter as "East Portland." The two-page survey, sent in English, Spanish, Russian, and Mandarin, consisted of about 30 questions, spanning topics from garden size, yield, and gardener demographics, to the motivations behind home gardening and suggestions for increased city support.

We examined these same four geographic areas using Bing and Google Earth imagery to look for concentrations of gardens, using ArcGIS software to identify any spatial patterns or trends.

Finally, to identify differences between home gardeners and community gardeners, we complemented the mail survey with an online survey consisting of questions that were nearly identical to those in the mail survey. A link to the online survey was circulated citywide via a monthly e-newsletter to plot holders in all 52 community gardens managed by the City of Portland's Community Gardens program.

Earl Boyles Community Garden

Neighborhood Snapshots

To provide a brief demographic and socio-economic context for the research study areas in the broader context of the City of Portland, we have included selected statistics below. It is also helpful to compare these statistics (for example, educational attainment, income, home ownership, and race/ethnicity) to those of our survey respondents. This can help us identify similarities and differences between gardeners and the surrounding population in each study area.

Table 1: Portland Neighborhood Snapshots (2015)

	Inner N/NE		Cully		Inner SE		East Portland		City of Portland	
Population										
Total	12,035		13,168		15,689		18,966		612,206	
Density (per sq. mile)	8,094		6,545		12,077		8,031		4,588	
Median Age										
Female	35		35		37		34		37	
Male	33		35		40		33		36	
Race										
White	8,209	68%	8,488	64%	13,806	88%	13,322	70%	475,155	78%
Persons of Color	3,826	32%	4,680	36%	1,883	12%	5,644	30%	137,051	22%
Hispanic or Latino Population										
Hispanic/Latino	1,377	11%	3,415	26%	747	5%	1,911	10%	59,670	10%
Not Hispanic or Latino	10,658	89%	9,753	74%	14,942	95%	17,055	90%	552,536	90%
Average Household Size										
	2		3		2		3		2	
Household Type										
Family Households	2,367	49%	2,767	60%	2,770	38%	4,069	65%	130,522	51%
Married-Couple	1,536	32%	1,673	36%	2,221	31%	2,514	40%	96,476	38%
Other Family	831	17%	1,094	24%	549	8%	1,555	25%	34,046	13%
Nonfamily Households	2,489	51%	1,880	41%	4,461	62%	2,241	36%	123,645	49%
Male Householder	1,127	23%	908	20%	2,095	29%	1,102	18%	58,581	23%
Female Householder	1,362	28%	972	21%	2,366	33%	1,139	18%	65,064	26%
Educational Attainment, population 25 years and older										
High School Degree or below	1,986	22%	3,496	40%	1,136	9%	5,959	48%	113,000	25%
Junior or Community College	2,383	26%	2,768	31%	3,260	26%	4,638	37%	129,660	29%
Undergraduate Degree	3,090	34%	1,766	20%	4,906	40%	1,433	11%	120,950	27%
Graduate School	1,742	19%	803	9%	3,054	25%	493	4%	81,230	18%
Median Household Income (in 2015 dollars)										
	$57,581		$42,762		$60,990		$39,491		$55,003	
Ratio of Income in 2015 to Poverty Level										
Under 1.00 (Doing Poorly)	1,997	16.8%	4,120	31.6%	1,782	11.5%	4,639	24.8%	107,600	18.0%
1.00 to 1.99 (Struggling)	2,055	17.3%	2,719	20.8%	2,533	16.4%	5,530	29.5%	106,774	17.8%
2.00 and Over (Doing Ok)	7,802	65.8%	6,217	47.6%	11,123	72.1%	8,553	45.7%	384,478	64.2%
Tenure										
Owner Occupied	2,876	59%	2,461	53%	3,092	43%	3,401	54%	134,535	53%
Renter Occupied	1,980	41%	2,186	47%	4,139	57%	2,909	46%	119,632	47%

Source: 2015 U.S. Census American Community Survey, 5-Year Estimate via Social Explorer

Looking Closer: Response Rates

Survey Response Rates by Study Area:

- Inner N/NE: 211 (37%)
- Cully: 119 (21%)
- Inner SE: 150 (26%)
- East Portland: 92 (16%)
- All Study Areas: 572

Survey response rates differed somewhat across the four study areas. The study area in Inner North/Northeast Portland had over double the response rate as those from the East Portland study area, despite doubling the number of surveys sent to East Portland households. Response rates in Inner Southeast and Cully fell between the other two. Survey respondents appeared to self-select from the group of people participating in urban agriculture, as they accounted for 84% of all responses (479 in total). The majority of people who responded to the survey, regardless of whether they gardened, were women (72%) between 35-69 years old, part of a couple without kids (31%) and living above the poverty level (74%).

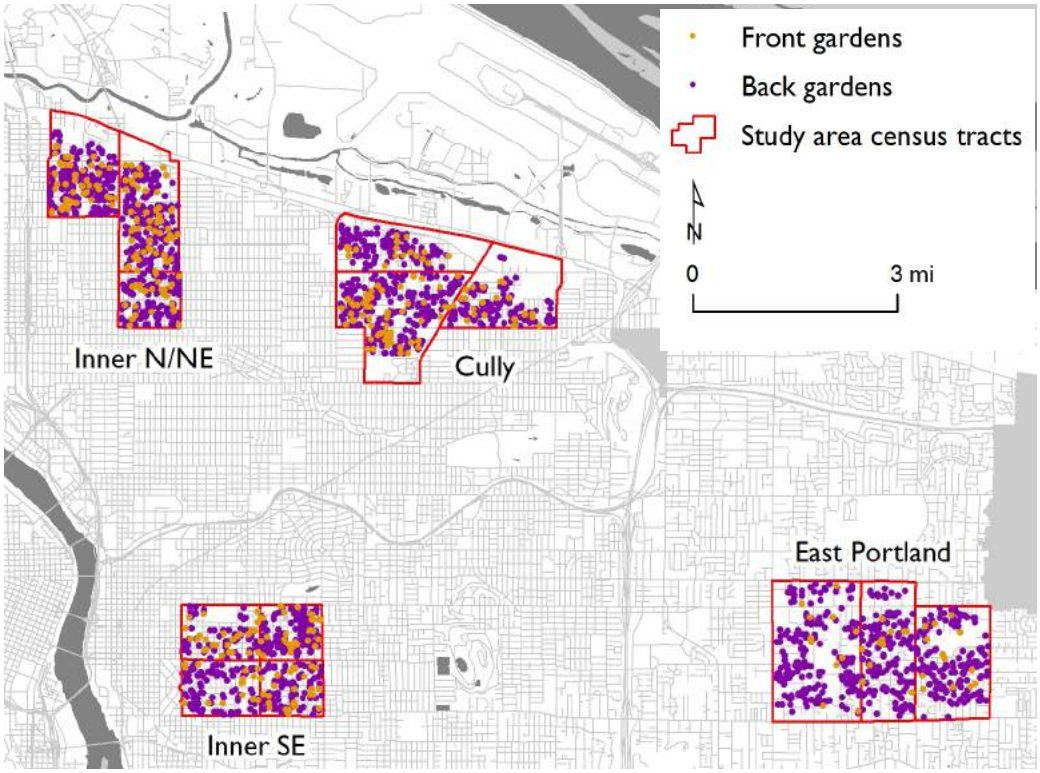
We proceed with the caveat that the results presented here are representative only of the survey respondents, and may not necessarily be generalizable to the larger population. While our sample size would allow us to generalize our results to the overall population with a margin of error of + or – 6%, such an interpretation would somewhat inaccurate, as results are likely skewed due to both self-selection bias and non-response error, despite our efforts to reach out in multiple languages. In other words, the views of those most interested in the survey topic are likely overrepresented, while the views of other gardeners, especially those whose first language is not English, are underrepresented here. Given the low number of responses from non-English speakers and the disproportionate number of women who responded, we have neither weighted the results nor attempted to compare results along gender or racial/ethnic lines. We also want to underscore that our study is not a thorough census to quantify exactly how much urban agriculture exists in these four areas of Portland, but rather an effort to understand how motivations and practices are similar and how they differ across the city.

Results of Mapping Analysis

Examining high-resolution aerial imagery from Bing and, in some cases, Google Streetview, we were able to identify the location of gardens within the designated study areas. Garden beds are often identifiable, for example, by the right angles or rectangular shape of planter boxes. After mapping these points, were then able to perform a variety of statistical analyses to identify spatial patterns related to the distribution of gardens in our study areas. In future publications, we plan to compare the mapping results with the survey results presented in this report. The numbers reported here are most likely an undercount, given that highly irregular planting areas, gardens under 1m^2 (about 3 x 3 ft), and shaded areas are nearly impossible to identify. As with the survey, however, we underscore that ours is not an effort to inventory all gardens, but rather to identify patterns of interest.

Table 2: Visually Identified Gardens in our Study Area

Study Area	# of Res. Tax Lots	Total Gardens Identified	Garden Location							
			Front Yard	%	Back Yard	%	Parking Strip	%	Other	%
Cully	5,927	1,112	212	19%	839	75%	29	3%	37	3%
Inner SE	5,105	582	117	20%	427	73%	24	4%	14	2%
Inner N/NE	6,327	1,025	205	20%	753	73%	55	5%	9	1%
East PDX	4,767	523	42	8%	475	91%	0	0%	4	1%
All Study Areas	22,126	3,242	576	18%	2,494	77%	108	3%	64	2%



Home Gardeners: Comparing Study Areas

For the rest of this report, we restrict our results for those survey respondents who reported producing food in their home gardens. Comparing study areas within Portland can help us better understand patterns from the mapping portion of the research in greater detail, while revealing the primary motivations behind home gardening, and whether these differ between neighborhoods or populations.

Garden Location

- **Most gardens are backyard gardens or are not visible from the street.**
- **Home gardens visible from the street are most common in Cully and Inner NE Portland.**

"Spatial contagion" is the idea that similar events tend to cluster geographically. In the case of gardening, people are more likely to establish gardens if there are other gardens visible on their street. This concept may help explain high concentrations of visible gardens in some areas, notably Cully and Inner N/NE.

Across the board, most gardens are not visible from the street (what we call "non-visible" in the table below), meaning they are planted in the backyard rather than in the front yard or parking strip. This can be for many reasons from size constraints to concern about vandalism. Inner NE and Cully had the highest percentages of visible agriculture, 10% higher than the study area counterparts in Southeast.

Table 3: Location of Garden by Study Area

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
Visible	75	43%	45	43%	41	33%	24	32%	185	39%
Non-visible	97	55%	59	56%	79	64%	50	67%	285	59%
NR	3	2%	1	1%	4	3%	1	1%	9	2%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Portland Side Yard Garden

Home Gardeners: Comparing Study Areas

Educational Attainment

- Surveyed gardeners have higher educational attainment levels overall
- 40% of surveyed gardeners have a graduate degree

Overall, surveyed gardeners have a higher level of educational attainment than the surrounding population. This may be an artifact of response bias; people who respond to surveys, by and large, have completed more formal schooling. That said, there are some interesting trends that characterize who is engaged in gardening. In Cully, for example, where there is a high concentration of commercial urban agriculture due in part to larger lot sizes, half of respondents have graduate degrees, as compared to only 9% of Cully's overall population.

There are also statistically significant differences in educational attainment between the different study areas. Most respondents with a only a high school education or some college reside in East Portland, while the most with an undergraduate degree reside in Inner SE. These differences mirror differences in educational attainment levels among the overall population in each area (as reported by the US Census), and tend to correlate with income levels. According to our mapping analysis, the share of visible urban agriculture is higher in those areas with higher levels of educational attainment.

Table 4: Educational Attainment by Study Area

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
High School or less	10	6%	6	6%	0	0%	9	12%	25	5%
Junior College or Some College	30	17%	19	18%	11	9%	35	47%	95	20%
Under-graduate	60	34%	27	26%	55	44%	17	23%	159	33%
Graduate	71	41%	53	50%	54	44%	13	17%	191	40%
NR	4	2%	0	0%	4	3%	1	1%	9	2%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

People of Color & Immigrants

Surveyed gardeners mostly identified as white. Responses from people who identified as people of color mostly came from Inner N/NE and East Portland study areas, but were still vastly underrepresented compared to the overall neighborhood demographics (see table 1). For example, while 36% of Cully residents were people of color in 2015, only 7% of surveyed Cully gardeners identified as people of color.

Immigrants or the children of immigrants also responded in small numbers, only 12% respondents. Immigrant gardeners or their children who garden in East Portland, however, comprised 17% of respondents.

Home Gardeners: Comparing Study Areas

- People of color are largely underrepresented in every study area. Citywide, people of color comprise approximately 22% of the population, while only 10% of the surveyed gardeners identified as people of color.
- Many gardeners come from other countries, including: Mexico, Korea, Columbia, Germany, England, Canada, Greece, Italy, and Poland

Table 5: Survey Respondents by Study Area Identifying as People of Color

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
People of Color	26	15%	7	7%	5	4%	9	12%	47	10%
White	138	79%	92	88%	111	90%	63	84%	404	84%
NR (or blank)	11	6%	6	6%	8	6%	3	4%	28	6%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Surveyed gardeners tended to be more affluent than the larger populations in three of our four study areas (Inner N/NE, Inner SE, and Cully). In East Portland study area, however, respondents were overall less affluent than the surrounding population. Respondents with "visible" gardens also tended to be more affluent. Households making between $50,000 and $75,000 were the group with the highest proportion of gardens in the front or side yards.

Household Size

- Most gardeners reported living in a 2-person household (37% across all study areas)
- Inner SE has the highest proportion of gardeners living in 4-person households

In general, household size is important for understanding the context of income levels and the household demand for food. Most gardeners across study areas live in two-person households. Inner SE had the smallest share of single-person households and the largest share of four-person households (which should be considered when observing higher income levels among Inner SE gardeners). Inner N/NE and Inner SE had the highest number respondents living in two-person households.

Table 7: Household Size by Study Area

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
1	24	14%	19	18%	11	9%	12	16%	66	14%
2	65	37%	36	34%	51	41%	25	33%	177	37%
3	43	25%	22	21%	27	22%	20	27%	112	23%
4	23	13%	19	18%	27	22%	11	15%	80	17%
5 to 8	15	9%	5	5%	4	3%	7	9%	31	6%
NR	5	3%	4	4%	4	3%	0	0%	13	3%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Home Gardeners: Comparing Study Areas

Income

- Gardeners in East Portland tended to be less affluent than the wider neighborhood population, while those in Cully, Inner N/NE, and Inner SE tended to be more affluent

However, when considering patterns related to household income, it is important to also consider the size of each household; analysis based on income alone can lead to false conclusions about the resources available to that household – a household income of $100,000, for example, goes farther for a couple with no kids than it does for a household of six. Analyzing responses based on a respondent's position in relation to a poverty threshold, which is calculated based on household size and income. We used a measure widely used in surveys: 150% of the federal poverty level.

Table 6: Income of Respondents by Study Area

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
<$35K	35	20%	17	16%	15	12%	15	20%	82	17%
$35K to $50K	12	7%	12	11%	7	6%	19	25%	50	10%
$50K to $75K	27	15%	22	21%	18	15%	17	23%	84	18%
$75K to $100K	30	17%	15	14%	23	19%	9	12%	77	16%
>$100K	56	32%	33	31%	47	38%	9	12%	145	30%
NR	15	9%	6	6%	14	11%	6	8%	41	9%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Poverty

- 75% of surveyed gardeners live above the poverty line
- 25% of East Portland gardeners live below the poverty line, as compared to 18% from Inner N/NE, 17% in Cully, and 7% in Inner SE

About three-quarters of those responding to the survey with urban agriculture are above the poverty line, and the rates are even higher for those with front yard gardens (78% above the poverty level). The difference between visible and non-visible gardening is approximately the same for those above and below the poverty line.

Table 8: Surveyed Gardeners Living Above or Below the Poverty Line

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
Above	128	73%	81	77%	101	81%	50	67%	360	75%
Below	32	18%	18	17%	9	7%	19	25%	78	16%
NR	15	9%	6	6%	14	11%	6	8%	41	9%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Home Gardeners: Comparing Study Areas

Housing Tenure

- **81% of surveyed home gardeners own their homes**

Homeownership appears to be an important predictor of engagement in home gardening. Most survey respondents with urban agriculture own their home – 81% overall. The highest proportion of homeowners were from the Cully study area, while rentership rates were highest in Inner N/NE.

Likely due to this higher rate of rentership, 15% of respondents in Inner N/NE cited "owning my home" as one way to increase their involvement in urban agriculture, significantly higher than in the other study areas.

Table 9: Housing Tenure of Surveyed Gardeners by Study Area

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
Own	131	75%	89	85%	103	83%	63	84%	386	81%
Rent	36	21%	15	14%	17	14%	8	11%	76	16%
Co-op Housing	1	1%	0	0%	0	0%	0	0%	1	0%
Other	2	1%	1	1%	1	1%	4	5%	8	2%
NR	5	3%	0	0%	3	2%	0	0%	8	2%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Garden Yield & Produce Consumpton

- **Cully gardeners grow slightly more of the produce they eat**

Across the study areas, there is not a significant difference between neighborhood and garden size or yield. Generally, most respondents have small gardens that produce less than 25% of their produce consumption (71% of all gardens). In Cully, however, 38% of surveyed gardeners reported growing more than 25% of the produce they consume, double that of Inner SE gardeners (19%). Cully gardens between 500 and 1000 square feet made up the largest share of their gardeners' responses (43%), significantly larger than average garden sizes in Inner SE and East Portland, and perhaps accounting for the higher contribution to produce needs. As we discuss in a later section of this report, space constraints are a key motivation for joining community gardens.

Table 10: Garden Yield by Study Area

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
< 10%	67	38%	28	27%	62	50%	30	40%	187	39%
10-25%	53	30%	36	34%	37	30%	26	35%	152	32%
25-50%	27	15%	23	22%	13	10%	9	12%	72	15%
50-75%	18	10%	12	11%	6	5%	8	11%	44	9%
75-100%	6	3%	5	5%	5	4%	1	1%	17	4%
NR	4	2%	1	1%	1	1%	1	1%	7	1%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Home Gardeners: Comparing Study Areas

Urban Livestock

- **Most study areas had relatively low participation in livestock production, particularly Inner SE which reported 7% of survey respondents with gardens also raising livestock.**
- **The highest rates of livestock and urban agriculture are found in Inner N/NE and East Portland**

Only 13% of surveyed gardeners (86 respondents) also own some type of food producing animal or urban livestock (e.g., chickens, bees, goats). The largest proportion of respondents with animals live in East Portland (19%). Overall, most of this group (65 people) have chickens, while 19 have beehives.

Table 11: Survey Respondents with Urban Agriculture and Livestock by Study Area

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
Yes	27	15%	14	13%	9	7%	14	19%	64	13%
No	148	85%	91	87%	115	93%	61	81%	415	87%
Total	175	100%	105	100%	124	100%	75	100%	479	100%

Urban Chickens

What are the primary motivations for home gardening?

"it is amazing to eat something you grow" – Inner SE

"better quality food than what you can buy at stores, good hobby" – Cully

"garden therapy, know what is in our eggs, closer to my food production" – Inner NE

"I love gardening and cooking the food I grow" – Inner NE

"I like to take care of land and it is a family traditions to keep a vegetable garden at home" – Outer SE

"I come from a family of farmers … I love gardening and have done it since I was little" – Cully

"wanting fresh vegetables, couldn't get certain veggies in store" - Inner NE

"environmentally responsible, healthier options, no pesticides" - Inner SE

Understanding the main motivations and concerns driving residential food production can help policymakers and urban agriculture groups identify ways to support existing practices and find creative solutions to expand interest. Across all of our study areas, the most common reasons given for growing food at home were to have fresh produce and because the activity itself is fun (see Table 12). These reasons were closely followed by "to eat more healthily," "knowing where my food comes from," and "to live more sustainably."

While the average ranking of each motivation appears pretty similar across all of the study areas, there were a few interesting and significant differences. These include:

To Save Money on Groceries - Inner SE ranked this factor much lower than the other 3 neighborhoods, likely because these survey respondents reported the highest household incomes. Conversely in East Portland, where incomes were lowest and poverty rates highest, surveyed gardeners ranked this factor as more important.

To be More Self-Sufficient and/or Self-Reliant - Respondents in Cully and Inner N/NE ranked this factor similarly, and as more important than those in Inner SE. These neighborhoods also had higher rates of livestock ownership than Inner SE.

To Have Enough to Eat - Inner SE ranked this factor significantly lower than other three neighborhoods.

Table 12: Motivations for Growing Food (mean score from 1-5)

	Inner N/NE	Cully	Inner SE	East PDX	All Study Areas
To Have Fresh Produce	4.5	4.4	4.4	4.4	**4.4**
For Recreation/Fun	4.2	3.8	3.9	4.1	**4.0**
To Eat More Healthily	4.1	4.0	3.8	3.9	**4.0**
To Know Where Food is From	4.2	4.0	3.7	3.9	**4.0**
To Live More Sustainably	4.0	3.8	3.7	3.8	**3.9**
Increase Self-Sufficiency	3.7	3.8	3.2	3.5	**3.6**
For the Environment	3.5	3.3	3.2	3.2	**3.3**
To Save Money on Groceries	3.2	3.2	2.7	3.4	**3.1**
To Improve Yard Appearance	2.7	2.7	2.4	3.0	**2.7**
To Connect with Community	2.6	2.8	2.4	2.7	**2.6**
Preparedness in Crisis or Disaster	2.3	2.2	2.0	2.7	**2.3**
To Have Enough to Eat	2.0	2.0	1.5	2.2	**1.9**
To Eat Culturally Specific Food	1.9	1.5	1.5	1.9	**1.7**
To Earn Money	1.2	1.2	1.1	1.5	**1.2**

What are the primary motivations for home gardening?

"love the taste and being able to control what fertilizer and pesticides to use" - East Portland

"hobby, enjoyment, wanting to teach my children, enjoying the process of producing it" - Cully

"my parents raised us on homegrown vegetables. I've always gardened" - Inner SE

"fresh, delicious berries and herbs. Less expensive and fresher" - Inner NE

"gardening makes me feel good, gives me peace" - Inner NE

"it's fun, great balance to work, saves money and makes sense" - Inner NE

"to grow plants that may become extinct, or not available at market" - East Portland

"it makes me feel like I have a real home, and reminds me of the garden my folks had growing up" - Inner NE

To Earn Money- East Portland ranked this factor significantly higher than the other three study areas, perhaps for the same income-related reasons cited above; however, for all study areas this was the least important motivation for home gardening practices.

To be Prepared in Case of a Crisis or Disaster- East Portland gardeners ranked this as more important than did respondents from the other study areas.

To Know Where My Food Comes From- Inner N/NE respondents ranked this higher.

To Eat Foods Specific to My Culture- East Portland and Inner N/NE ranked this factor highest. These two study areas also had the highest proportion of people of color and immigrants among respondents.

Front Yard Garden

What would increase home food production?

To increase food production, gardeners reported that the following would help them grow more food...

- more free time (53%)
- more knowledge (38%)
- more space at home (35%)
- a tax incentive (31%)

Similar to understanding individual motivations, hearing from community members about what they would need to increase their production -- or maybe even turn them into a home gardener if they're not already -- is important when advocating for new policies and resources.

Top 4 factors or needs:

More Free Time- This factor was ranked highest for each study area. Across all areas, 53% of respondents chose this as a way to increase food production.

More Skills or Knowledge- Survey respondents ranked having more gardening skills and knowledge as another top factor for increasing food production, particularly in Inner N/NE. This was a less important factor for East Portland, where more respondents chose a tax incentive as a motivating factor.

More Space at Home- This factor was chosen most by respondents in Inner SE (41%) and was chosen by only 23% of respondents in East Portland.

A Tax Incentive- All study areas chose a tax incentive as one of the top five reasons to increase food production.

Table 13: Factors to Increase Food Production (by # of households who chose each factor)

	Inner N/NE		Cully		Inner SE		East PDX		**All Study Areas**	
More free time	97	55%	63	60%	67	54%	29	39%	256	**53%**
More skills/ knowledge	77	44%	41	39%	43	35%	22	29%	183	**38%**
More space at home	68	39%	30	29%	51	41%	17	23%	166	**35%**
Tax incentive	63	36%	34	32%	27	22%	24	32%	148	**31%**
Better access to supplies	33	19%	15	14%	16	13%	15	20%	79	**16%**
Nothing	18	10%	9	9%	14	11%	11	15%	52	**11%**
Home ownership	26	15%	6	6%	14	11%	3	4%	49	**10%**
Community garden access	16	9%	4	4%	16	13%	8	11%	44	**9%**
Less regulations	17	10%	7	7%	7	6%	8	11%	39	**8%**
Production profits	15	9%	7	7%	5	4%	5	7%	32	**7%**

What would increase home food production?

Additional factors or needs:

Better Access to Supplies- Respondents in Inner N/NE and East Portland selected "access to supplies" more than the other two areas.

If I Owned My Home- More residents of Inner N/NE and Inner SE selected home ownership as motivating factor to grow more food, while Cully and East Portland ranked this factor below several others.

Access to a Community Garden- Gardeners in Inner SE and East Portland selected "access to a community garden" more than respondents from Cully.

However, the following did not appear to be major factors:

Less Restrictive Regulations- Fewer than 10% of all survey respondents indicated that regulations limited their production.

An Opportunity to Make Money from Food Production- Across all study areas, respondents indicated that the opportunity to make a profit was not a major motivation to grow food or increase production.

Across all study area respondents who garden, 11% are satisfied with their current level of food production.

Portland Backyard Garden

Engagement with Urban Agriculture Policy

Participation in Urban Agriculture or Food Policy Groups

- Only 13% of all survey respondents have ever participated in an organization, association, or agency that works on urban agriculture or food policy.
- Gardeners from Inner N/NE comprised the largest proportion of those actively engaged

Gardeners in Portland engage in multiple ways with local policy and planning that impacts urban food production. Engagement can mean active participation in municipal policymaking via advisory committees, policy councils, or neighborhood associations, or community-based organizations, but it can also mean the various ways in which people connect to policy on the ground, that is, how policies impact their practices. We wanted to gauge the extent to which gardeners were actively engaged in policymaking, as well as the ways that they feel that policies impact them. We also wanted to measure public support for the various kinds of policy and regulations that impact food production.

Table 14: Participation in Urban Agriculture/Food Policy Organizations or Groups

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
Yes	29	17%	16	15%	10	8%	8	11%	63	13%
No	144	82%	89	85%	112	90%	67	89%	412	86%
NR	2	1%	0	0%	2	2%	0	0%	4	1%

Organizations include: Growing Gardens, CSAs, Oregon Food Bank, Portland Fruit Tree Project, Friends of Community Gardens, Zenger Farms, Portland Urban Beekeepers, and Learning Gardens Lab

Impacts of City Regulations

- 90% of gardeners responded that city regulations have not affected their food production practices

When asked "Have city regulations affected your food production practices?" a vast majority responded "no". This suggests that either city regulations do not pose much of a burden on residential food production, or that gardeners feel that the city plays a minimal role in facilitating production, for better or for worse. Among those who replied that city regulations had impacted their production, most issues were related to limits on the amount of livestock (particularly bees and chickens), and restrictions on planting in the parking strip. One respondent raised concerns about soil and air quality and its effect on food – an issue where a lack of city regulation or oversight could affect agricultural production. Other comments regarding city regulation included:

- Neighbors' complaints about having ducks
- Missed opportunity to plant fruit trees in the parking strip
- Limits on raised beds in the parking strip

Table 15: Do City Regulations Impact Your Food Production Practices?

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
Yes	15	9%	3	3%	8	6%	6	8%	32	7%
No	158	90%	102	97%	113	91%	66	88%	439	92%
NR	2	1%	0	0%	3	2%	3	4%	8	2%

The Role of the City

Call for City Support of Urban Agriculture

- **94% of all survey respondents agree that the City should encourage or support food production.**
- **Paying for soil testing for heavy metal pollution was ranked with the highest importance out of a list of ways for the City to be involved with urban agriculture practices.**

Table 16: Should the City Encourage or Support Food Production?

	Inner N/NE		Cully		Inner SE		East PDX		All Study Areas	
Yes	198	94%	111	93%	145	97%	83	90%	537	94%
No	12	6%	5	4%	3	2%	6	7%	26	5%
NR	1	0%	3	3%	2	1%	3	3%	9	2%
Total*	211	100%	119	100%	150	100%	92	100%	572	100%

*includes respondents not currently engaged in food production

Almost all survey respondents felt that the City should find ways to encourage and support food production. When asked whether they agree or disagree with the following statements (1=strongly disagree, 5=strongly agree), survey respondents who garden responded in the following ways:

Agree or strongly agree

- Help pay for soil testing for heavy metals and other toxics
- Specify basic living standards for food-producing animals
- Use more of the open space in parks for community gardens
- Allow the sale of produce grown in a community garden
- Lower property taxes on properties producing food
- Allow the sale of produce grown at home
- Regulate what types of animals people can keep in the city
- Regulate nuisances (smells, noise, sight)

Neither agree nor disagree

- Require permits for food-producing animals
- Prohibit animal slaughter
- Regulate size and locations of sheds, coops, and greenhouses

Disagree

- Regulate the distance of food production to property boundaries

Table 17: Survey Respondents Support of Potential City Involvement and Regulation of Urban Agriculture (mean score from 1-5)

	Inner N/NE	Cully	Inner SE	East PDX	**All Study Areas**
Pay for Soil Testing for Metals and Toxins	4.3	4.1	4.4	4.2	**4.3**
Specify Basic Living Standards for Food Producing Animals	4.1	4.2	4.2	4.1	**4.1**
Use More Open Space for Community Gardens	3.9	4.0	3.9	4.2	**4.0**
Allow Sales from Community Gardens	3.9	3.8	3.7	3.9	**3.9**
Lower Property Taxes on Properties Producing Food	3.9	3.8	3.5	4.2	**3.8**
Allow Sales from Home Gardens	3.8	3.8	3.7	3.8	**3.8**
Regulate Animal Types	3.6	3.6	3.9	3.7	**3.7**
Regulate Nuisance	3.4	3.6	3.6	3.5	**3.5**
Require Permits for Food Producing Animals	2.9	3.0	3.3	3.2	**3.0**
Prohibit Slaughter	2.9	2.9	2.8	2.9	**2.9**
Regulate Size and Locations of Sheds, Coops, Greenhouses	2.8	2.8	2.9	2.9	**2.8**
Regulate Food Production Setbacks	2.5	2.5	2.4	2.8	**2.5**

The Role of the City

Other types of City involvement and encouragement, suggested by survey respondents include:

- "Subsidies for people who can provide for food banks"
- "Subsidize waste management company to make cheaper fees for yard debris bins"
- "Allow/encourage people to remove lawns and grow food and native plants instead"
- "Classes, cheap starts or seeds"
- "Free consultants to come to home to teach organic gardening"
- "Free soil testing. Encouragement via free workshops. Training on growing techniques"
- "Seed bank, classes, produce swap"
- "Tax subsidies, free programs, educational resources"
- "Free veggie starts and compost"
- "PSAs, mailed fliers, mailed education and encouragement"
- "Free/low cost workshops in partnership with community groups. Facilitated seed/start exchanges"
- "Lower prices on water used for gardens."
- "Make more community gardens available. Give a tax break on property taxes if there is a food garden on the property"
- "Demonstrations at fairs"
- "Raise limits for number of chickens without having to get a permit"
- "Encouraging the establishment of gardens on unused public and private land"
- "Basic classes, subsidize garden beds, communal gardens "coaching," cooking classes"
- "Provide opportunity for sharing overflow"
- "It would be nice if the city published growing/raising rules prior to the season. Provide demos for cultivation. Advertise all community growing spaces on websites. Offer incentives to raise bees!"
- "Classes and seed/equipment sharing"
- "We should be able to sign up to get emails about local community gardens"
- "Have lower cost cisterns, rain barrels, and composters for sale"

Front Yard Garden

Community Gardens

Where their community gardens are located:

- Inner N/NE - 13%
- Cully - 8%
- Inner SE - 56%
- East PDX - 9%
- Other areas - 14%

Garden yield:

- Little (<10%) - 7%
- Some (10 - 25%) - 24%
- A lot (25-50%) - 33%
- Most (50-75%) - 16%
- Almost all (75-100%) - 20%

Age of Their Garden Plot (years):

- 0-2 - 34%
- 3-5 - 30%
- 6-10 - 18%
- 11 or more - 18%

Time commitment (hr/wk):

- 1-2 - 12%
- 2-3 - 16%
- 3-5 - 29%
- 5-7 - 18%
- 8 or more - 25%

An additional survey was circulated to gardeners participating in the City of Portland's Community Gardens program. Portland has 52 community gardens; at least 20 of them are within 1-mile of a study area. Overall, we received 75 responses from community garden participants, the majority of whom live in Inner Southeast Portland (56% of responses). Similar to the respondents of the first survey, most community gardener respondents were female and middle aged (35-69). A smaller percentage of people under 35 responded to the Community Garden Survey than to the general survey (12% compared to 15%). The typical respondent was more likely to make less than $50,000 a year (56%), live in a detached house that they owned (53%), have a college degree (76%), and be above the poverty line (72%). As this survey was only distributed and conducted in English, we offer the same caveats regarding generalizability of our results as we do above for the mail survey. Results here are representative only of the respondents. Future research will focus on examining the experiences of non-English speaking gardeners; we are currently analyzing focus group and interview data collected from Spanish-speaking gardeners, which we will incorporate into future publications.

NE 72nd Community Garden

Community Gardens - Primary Obstacles

Satisfaction

- Very satisfied - 70%
- Somewhat satisfied - 23%
- Neutral - 5%
- Somewhat unsatisfied - 1%

Involvement in a food-related organization? :

- Yes - 23%
- No - 77%

Time on Wait List?

- Yes – 59%
- No – 35%

What would improve their experience as a community garden member?

While most respondents indicated that they were satisfied with their community gardening experience (70%), a majority also said they spent time on a waitlist. Lowering wait list time and increasing plot availability were common suggestions to improve and increase involvement in community gardening practices, and to make the opportunity more widely accessible to community members across Portland. Other obstacles to an optimal experience were vandalism and stealing, and a limit to function and capacity due to a lack of volunteers, organization, or funding.

Table 18: Primary Obstacles (mark all that apply)

Vandalism and stealing	21	28%
Need for volunteers	15	20%
Lack of organization	12	16%
Lack of funding	11	15%
Poor soil quality	11	15%
Lack of access to resources	6	8%
Conflicts between gardeners	5	7%
Other	33	44%

We received a variety of comments in response to this question. We have listed some of them here:

- “More get-togethers with fellow gardeners”
- “Better communication/consultation with the garden program coordinators”
- “Better communication when public goods are delivered like burlap bags, compost, mulch”
- “Common greenhouse or hoop house to encourage year round gardening”
- “Communication between gardeners is problematic”
- “More help with larger projects for the garden as a whole outside of individual plots (i.e. organizing work parties to build enthusiasm, more leadership)”
- “Plots that aren’t in the shade”
- “Less big brother-y”
- “No more added requirements for volunteering”
- “More social opportunities”
- “Classes on year round gardening and rotations of crops”
- “Partnering with more places to provide additional locations. (and to reduce wait list times)”
- “Shorter time on the wait list and more room”
- “More commitment from other gardeners”
- “Problem taking away trash”
- “Better quality free compost”

Community Gardens

- "More room for growing berries"
- "More ADA plots and firmer paths to the entrance and ADA plots. Current gravel makes it hard for mobility devices"
- "Have others weed their plots, have neighbors not take produce, plots turn over frequently"
- "More community garden events"
- "Receiving a ready plot. Had to spend personal dollars to rehab the older plot that was received"

Motivations & City Support

Similar to the original survey, soil testing for heavy metal pollution was considered to be an important way to the City to support community gardening. Creating more gardens through transformation of parks open space was another top way the City could increase support of community agriculture.

Table 19: Average Ranking of Suggested Ways to Increase City Support of Community Gardening (Scale of 1-5)

Pay for Soil Testing for Metals and Toxins	4.4
Use More Open Space for Community Gardens	4.2
Specify Basic Living Standards for Food Producing Animals	4.1
Lower Property Taxes on Properties Producing Food	3.7
Allow Sales from Home Gardens	3.4
Regulate Nuisance	3.3
Regulate Animal Types	3.3
Require Permits for Food Producing Animals	3.0
Allow Sales from Community Gardens	2.9
Prohibit Slaughter	2.6
Regulate Size and Locations of Sheds, Coops, Greenhouses	2.6
Regulate Food Production Setbacks	2.3

Everett Community Garden

Community Gardens: Motivations & City Support

Why did you or your household begin growing food in a community garden?

- "no garden space at home"
- "enjoying eating organic and fresh vegetables"
- "grow food for family"
- "access to tasty organic vegetables"
- "joy and enjoyment"
- "for additional gardening space"
- "important family tradition"
- "for friendship and community"

The highest ranked motivations for community gardeners' food production were similar to those of home gardeners – the enjoyment of growing fresh produce, the intimate knowledge of where the food came from, the healthy exercise and product, and the connection with the environment. An additionally common response was that there was a lack of space at home.

Table 20: Average Ranking of What Motivates Growing Food in Community Gardens (Scale of 1-5)

To Have Fresh Produce	4.6
To Know Where the Food Comes From	4.5
To Eat More Healthily	4.4
To Live More Sustainably	4.4
For Environmental Reasons	4.1
To Be More Self-Sufficient or Self-Reliant	4.0
For Recreation/Fun	3.9
To Save Money on Groceries	3.6
To Connect with Community	3.2
To Be Prepared in Crisis or Disaster	2.6
To Have Enough to Eat	2.5
To Make the Neighborhood Look Nice	2.3
To Eat Culturally Specific Foods	2.0
To Earn Money	1.2

Other motivations for food production

- "To teach my child how to garden"
- "Gardening helps my depression and anxieties and gets me out of the house"
- "Pure enjoyment, contribute food to charity"
- "Because I don't have a backyard or growing space of my own"
- "To get outside"
- "It provides me a place to 'be.' I feel important and needed. I can go just relax."
- "Exercise, to be outdoors!"

Should the City encourage or support more community gardens?

- 72 out of 75 surveys say "YES"

What kind of encouragement and/or support should the city provide? Many of these revolved around decreasing wait times and increasing access to more garden spaces throughout the city.

- "More community gardens for people"
- "Encourage more residents to join gardens in their area"

Community Gardens: Increasing Production

- "More mulch and compost and many more gardens so there isn't a waiting list"
- "More gardening opportunities in disadvantaged areas"
- "As Portland's density increases, the city should own more spaces for community gardens and provide garden plots at a reasonable cost, as well as providing gardening education. Food literacy and sustainability is important."
- "More people should know about the program."
- "Support in the way of more permanent land…an increase in gardens in the areas closer to more people…the ones close in don't seem to meet demand"
- "Increased information and outreach to immigrant and non-English speakers"
- "Increased funding for garden managers"

- **When asked about factors that would spark more food production, community gardeners responded similarly to those of the original survey – it boils down to needing more free time.**
- **Having more space is another shared factor between both surveys. However, community gardeners ranked having additional space at home higher than home gardeners (43% and 35% respectively).**

Table 21: What Would Help You Produce More Food? (mark all that apply)		
More free time	32	43%
More space at home	32	43%
More space at CG	27	36%
More skills/knowledge	15	20%
Tax incentive	11	15%
Home ownership	10	13%
Less growing restrictions	10	13%
Better access to supplies	9	12%
Production profits	6	8%
Nothing	6	8%

Some recommendations based on the question "Is there anything that could improve your experience as a community garden member?"

1. Locate opportunity sties for community garden infill. Decrease waitlist times and increase overall supply.
2. Promote increased accessibility and inclusion for diverse populations.
3. Expand opportunities for outreach, teaching, learning, and access to high quality resources.
4. Better communication amongst gardeners and between gardeners and program coordinators.
5. Increased social opportunities and community building.

Preliminary Conclusions & Recommendations

To conclude, food production in Portland is widespread in our four study areas, with a significant portion of the population engaged in producing at least some of the food they eat. Most people grow their own food in order to have access to fresh produce and simply for the pleasure of doing so, that is, for recreation or fun. Other primary motivations included eating more healthily and knowing where food comes from. Wanting to live more sustainably was also important, but as a motivation was limited to more affluent respondents with higher levels of educational attainment.

Support for the City of Portland's role in encouraging and supporting urban agriculture appears to be strong. Moving forward, we suggest that policymakers consider the motivations we have listed here when considering how best to foster community participation or frame discussion about urban food production. Despite Portland's global renown for sustainability planning, framing issues in terms of environmental concerns or sustainability may not resonate with everyone, whereas framing issues in terms of motivations that appear to be more universal – fun, freshness, and healthy eating – may prove more fruitful for policymakers and planners, and may lead to more active community engagement in public policymaking and planning efforts.

More specifically, we offer the following suggestions for ways to support home gardeners:

1. Expand learning opportunities for interested gardeners
2. Establish garden tool libraries to increase access to resources and supplies.
3. Continue support of non-profits and community groups focused on gardening.
4. Provide or subsidize soil tests, particularly in neighborhoods affected by pollution.
5. Provide tax incentives for food production practices.

To better support community gardeners, we suggest the following:

1. Continue to identify potential sites and establish new community gardens in order decrease wait times and increase the overall number of plots.
2. Continue and expand outreach efforts to historically underserved groups, lower income Portlanders, and renters.
3. Expand educational opportunities within community gardens and the Community Gardens program.