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Stability of Household and Housing Characteristics among Farmworker Families in North Carolina: Implications for Health

Thomas A. Arcury[1,2], **Grisel Trejo**[3,2], **Cynthia K. Suerken**[4], **Edward H. Ip**[4,2], and **Sara A. Quandt**[3,2]

[1]Department of Family and Community Medicine, Wake Forest School of Medicine, Winston-Salem, North Carolina

[2]Center for Worker Health, Wake Forest School of Medicine, Winston-Salem, North Carolina

[3]Department of Epidemiology and Prevention, Division of Public Health Sciences, Wake Forest School of Medicine, Winston-Salem, North Carolina

[4]Department of Biostatistical Sciences, Division of Public Health Sciences, Wake Forest School of Medicine, Winston-Salem, North Carolina

Abstract

Household and housing stability are important for health and well-being of individuals, particularly children. This analysis examines stability in household and housing over 2 years for North Carolina farmworker families with children. Mothers with a child aged 2–4 years in farmworker families (n=248) completed interviews over two years. Household measures included number of adults and children, moves, and spouse absence. Housing measures included tenure, persons per bedroom, and kitchen facilities. Household and housing characteristics for participants retained in the study over two years (n=221) were stable in number of persons, tenure, persons per bedroom, and kitchen facilities. Households were large with one-third having 3 or more adults, and one-quarter having 4 or more children. Most families rented houses (over 15% owned), which were crowded. Participants lost to follow-up were similar to retained participants in household characteristics, but had worse housing characteristics. Comparative research on farmworker family household composition is needed.

Introduction

Household and housing provide the most proximate social and physical environments in which individuals live. As such, household and housing characteristics are important factors in the health and well-being of individuals, particularly children. The household is the social environment comprised by the group of people who reside in a common dwelling and share resources (“eat out of the same pot”). Households are often comprised of individuals related by blood or marriage, particularly single nuclear families, and they are an elementary unit of social organization and economy. Access to health care and social programs is often determined by household resources. Household instability (frequent changes in household

Corresponding author: Thomas A. Arcury, PhD, Department of Family and Community Medicine, Wake Forest School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157, Phone: 336-716-9438, Fax: 336-716-3206, tarcury@wakehealth.edu.

members), one component of household chaos [1,2], is related to poor physical and psychological health outcomes for adults and children [3–5]. Housing is the physical environment in which the members of a household live. Poor quality housing is related to poor health for adults and children [6–10].

Migrant and seasonal farmworkers constitute a vulnerable population. They often have low-income and low educational attainment, lack documents to live and work in the US, and lack access to health care [11,12]. Migrant and seasonal farmworkers are contingent workers who earn the major part of their incomes from agricultural employment for part of the year [11,12]. Migrant and seasonal farmworkers differ in that migrant farmworkers change their place of residence for this temporary agricultural employment, and seasonal farmworkers maintain a single residence. Farmworker housing is diverse, and includes group quarters as well as individual housing units [13,14]. Those farmworkers who live in group quarters generally reside in employer-provided labor camps that are composed of farm houses, trailers, or barracks. These group-quarters are often exclusively inhabited by men who are migrant farmworkers. Migrant farmworkers often share bedrooms, as well as cooking, eating, and bathing facilities with other adults who are not related to them. Most migrant and seasonal farmworkers, individuals and families, do not reside in labor camps, but in individual housing units procured in the general private housing market and located in conventional communities [15].

Although little research has documented farmworker housing conditions, this research overwhelmingly indicates that farmworker housing is substandard, whether it is located in labor camps [16–20] or in the community [21–26]. This substandard housing affects the health of farmworkers and the members of their families [14]. Other than showing that housing is crowded [21,22,27,28], almost no research has examined farmworker household composition. Our earlier analysis [29] found that housing and neighborhood characteristics were related to increased stress and limited outward orientation, but did not examine household composition

It is important to understand household composition and housing of farmworker families to determine how these social and built environment characteristics affect the health and well-being of individuals, particularly children. This analysis uses longitudinal data over a two year period from a sample of migrant and seasonal farmworkers recruited in North Carolina. The analysis has two aims. The first aim is to determine the level of stability in farmworker household and housing characteristics over 2 years for a sample of North Carolina farmworker families with children, and delineate factors associated with household and housing changes. The second aim is to determine whether household and housing characteristics differed between those households retained over 2 years and those households that were lost to follow-up. This comparison will help in understanding whether household and housing factors were associated with this loss to follow-up, and whether those lost represent a different component of the farmworker population from those who completed participation.

Methods

Data used in this analysis were collected for "Niños Sanos," a longitudinal investigation of child health and development in farmworker families in North Carolina. The study was approved by the Wake Forest School of Medicine Institutional Review Board, and it obtained a Certificate of Confidentiality from the National Institutes of Health. All participants provided signed informed consent.

Participants

Participants were women in farmworker families with a child between 2 and 4 years of age at recruitment. Each family had at least one adult member employed as a migrant or seasonal farmworker in the previous year. A multi-pronged, site-based sample design was used to identify and recruit farmworker families to the study [30]. "Sites" are organizations or locations with which members of the target community are associated. Site categories (and number of sites within each category) were: Head Start and Migrant Head Start Programs (7); migrant education programs (15); community health centers (4); Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (1); community partner non-profit organizations serving Latino immigrants (2); and stores, churches, and events serving predominantly farmworkers (7). In addition, door-to-door recruiting was undertaken in Latino neighborhoods and farmworker camps. Community interviewers contacted families from previous Latino health studies and from personal networks.

A total of 248 participants (mother-child dyads) were recruited to the study over the period April 2011 through April 2012. It was not possible to obtain precise figures to calculate refusal or participation rates due to the multi-pronged nature of the site-based sampling, organizations compiling lists of potential participants, as well as study staff conducting direct recruiting at sites. It was not possible to know if those refusing to release information were eligible. Organizations may have compiled incomplete lists from their participants, and potential participants could easily have avoided contact at events.

Participants completed quarterly interviews for two years (total of 9 interviews: baseline and 8 quarterly follow-ups). Data for this analysis are taken from the baseline, 1 year follow-up (fourth quarter), and 2 year follow-up (eighth quarter) interviews. Of the initial sample of 248 participants, 223 (89.9%) completed the 1 year follow-up, and 221 (89.1%) completed the 2 year follow-up. Recruitment was completed over 13 months, and data collection was completed over 25 months, April, 2011, through April, 2013.

Data Collection

Native Spanish-speaking community interviewers contacted participants. The trained interviewers introduced and explained the study, including its requirements and incentives, screened for inclusion/exclusion criterion, and asked the family to participate. Those who agreed completed enrollment, including informed consent, and initiated the data collection. Interviews at baseline and quarterly follow-ups were completed in the participants' homes or another location determined by the participant. Interviews were completed in Spanish. Participants received $10 for completing each interview.

Measures

Household characteristics included marital status of the female participant (married or living as married, versus not married), number of adults in the household (1, 2, 3 or more), number of children in the household (1 through 5 or more), total number of residents (2 or 3, through 8 or more). Move in the last year is a dichotomous indicator of changed residence collected in the baseline interview; move in the previous 3 months was collected in the 1-year and 2-year interviews. For those who had moved in the previous year or 3 months, the number of moves was recorded (1, 2, 3 to 6). Finally, whether spouse/partner was absent in last year was a dichotomous indicator of whether the participant's spouse or partner had traveled for farm work in the previous year.

Housing characteristics included housing tenure (grower provided; rented; own home, but rent land; and own home); number of rooms used as bedrooms (0 or 1 through 4 or more); and persons per bedroom (fewer than 2, 2 to fewer than 3, 3 to fewer than 4, 4 or more). Whether the participants had access to their own working refrigerator and their own working cooking surface were dichotomous measures. Among those who did not have an individual cooking surface, the number of additional people who cooked in the kitchen had the values of 1, 2, 3 or more. A basic kitchen components measure was created based on four kitchen characteristics; having an individual working refrigerator, having an individual working way to cook, have a personal storage space for food, and having access to a kitchen that allowed preparation of child's food. If the participant was missing none of these, they were given a score of 3; if they were missing one of these they were given a score of 2; if they were missing two or more of these they were given a score of 1.

Personal characteristics included age in the categories 18 to 25 years, 26 to 35 years, and 36 to 45 years; and education in the categories 0 to 6 years, 7 to 9 years, 10 or more years. Participant having documents to be in the US, partner having documents to be in the US, and either participant or partner having documents to be in the US were dichotomous measures. Years in the US had the values of less than 5, 5 to 9, and 10 or more. Participant current employment had the values of farm work, other work, not working; participant having done farm work in the previous 12 months was dichotomous; and, partners current employment had the values of farm work, other work, not working. Finally, migrant farmworker family was dichotomous.

Statistical Analysis

Counts and percentages are presented for household composition and housing characteristics by year and by participation at the two-year follow-up interview. For the comparison between participants who completed the two-year follow-up to those who did not, we tested their differences in household composition and housing characteristics. Due to many small cell sizes, we used Fisher's Exact Test instead of traditional large-sample statistical tests. Significance levels were set at $\alpha=0.05$. All analyses were performed using SAS version 9.4.

Results

Characteristics

Mothers in the participating families were aged 18 to 45 years when recruited to the study, with most (55.7%) aged 26 to 35 years (Table 1). Most had limited formal education; 43.6% had 6 or few years, and one-quarter had 10 or more years. Ten percent of the participants and 10% of their partners had documents to be in the US; 15.4% of the families had at least one adult with documents. The plurality (47.6%) had been in the US for 10 or more years, with 43.9% having been in the US for 5 to 9 years. Nearly half (42.7%) was not employed, with 38.7% employed in farm work. Almost two-thirds (63.7%) had been employed in farm work in the previous 12 months. The majority of their partners (55.1%) were employed in farm work. Over one-quarter (27.4%) of the participants were in migrant farmworker families.

Household and Housing Characteristics and Stability

Household composition remained extremely stable for the 221 participants retained over two years (Table 2). About 90% were married or living as married. The number of adults living in the households remained fairly constant, about 60% had 2 adults and about 35% had 3 or more adults. The number of children living the households was large (about 30% had 4 or more children) and constant; the number of one-child households decreased from 9.5% to 5.0. The number of total household residents was also large (about 40% with 6 or more residents) and constant.

The number of households that moved remained about the same, with 22.2% who moved in the previous 12 months at baseline, and fewer than 10% who moved during the previous 3 months at 1- and 2-year follow-ups. Similarly, the number who reported absent spouses remains about the same, with 6.4% reporting an absent spouse in the previous 12 months at baseline, and fewer than 4% reporting an absent spouse in the previous 3 months at 1- and 2-year follow-ups.

Housing characteristics were also extremely stable for the 221 participants retained over two years (Table 3). Fewer than 10% of the participants lived in grower provided housing, with about half living in rented housing. Almost one-quarter own their home (a trailer), but rented the land on which it was located. Almost 20% owned their home and land. About 85% had housing with 2 or 3 rooms used only as bedrooms. Over one-third had fewer than 2 persons per bedroom, while over 20% had 3 or more persons per bedroom. Most had access to kitchen facilities, and this number improved, with 85% with access to an individual refrigerator and cooking surface at baseline, and 95% with access at the 1- and 2-year follow-ups. Among the small number of participants (33 at baseline, 9 at the 2-year follow-up) who had to share a cooking surface, most had to share it with 2 others. The number scored 3 on the basic kitchen components increased from 78.7% at baseline, to 95.5% at the 2-year follow-up.

Household and Housing Characteristics: Those Who Maintained Participation and Those Who Did Not Complete Participation

Several household baseline characteristics were similar when comparing those who completed participation at year 2 to those who did not. These household characteristics included marital status, number of adult residents, number of child residents, and total number of residents (Table 4). However, more of those who moved in the previous year (24.6%) did not complete participation, compared to those who did not move in the previous year (6.0%).

Those who completed participation differed significantly from those who did not in several housing characteristics (Table 5). Families who lived in grower-provided housing were less likely to participate (40.6%) in the two year follow-up than families who lived in other types of housing (about 7% with rental housing and with owned home but rented land, and none of those who owned home did not complete participation). Families with fewer rooms used only as bedrooms (41.7% versus about 10% with more rooms used only as bedrooms), and those with 4 or more persons per bedroom (31.6% versus about 10% of those with fewer persons per bedroom) were less likely to participate in the two year follow-up. More of those who had an individual refrigerator at baseline completed participation (92.6%) than did those who did not possess an individual refrigerator (74.4%); similarly, more of those who had an individual cooking surface at baseline completed participation (94.5%) than did those who did not have access to an individual cooking surface (67.3%). Finally, higher scores for basic kitchen components were associated with completing participation; 94.6% of those with a score of 3, 80.0% with a score of 2, and 71.1% of those with a score of 1 completed participation.

Those who completed participation and those who did complete participation did not differ significantly on age, legal documents, years in the US, or doing farm work in the past 12 months. They did differ on migrant family status, such that 22.1% of the migrant farmworker families did not complete participation, while 6.7% of the seasonal farmworker families did not complete participation (p=0.001).

Discussion

The households in which the majority of participants lived were stable. The participants were married, and the number of adult and child residents remained constant. This is a positive context for these farmworker families and their children, as it indicates that household instability does not add chaos to their lives [3–5]. At the same time, many of these households were large and complex, and their housing crowded. The participants lived in relatively large households, with an average of 2.52 adults, 3.00 children, and 5.52 total residents per household at baseline, and 2.48 adults, 3.18 children, and 5.65 total residents per household at year 2. The average household size in 2010 for all US households was 2.55, for all Hispanic US households was 3.36, for family households was 3.91, and for Hispanic family households was 4.22 (http://www.census.gov/hhes/families/data/cps2012AVG.html). Based on our inclusion criterion of a mother with at least one child, all of the households in Niños Sanos were family households; the average size of the participant households is one person larger than Hispanic family households in the US. Over one-third of the households

contained 3 or more adults, which indicates a complex household structure (a structure that goes beyond a single nuclear family). We do not know how additional household members are related to the participant. The household often included a large number of children: over 10% with 5 or more, and over 25% with 4 or more. More than 2 persons slept in each bedroom for the large majority of these households, with about 6% having 4 or more persons per bedroom. The basic definition of crowding is more than 1 person per room (excluding bathrooms) [14]. We did not collect the data to create this measure. However, 2 or more persons per bedroom indicates crowded housing. The large number of residents, particularly an additional adult who is not a member of the nuclear family and the crowded conditions, suggest a certain level of structural chaos [1,2].

The housing in which the participants lived had several positive characteristics. Although most of the participants lived in rented housing, a significate number of participants were home owners – even though many rented the land on which their house was located. Few of the participants lived in grower-provided housing; these were more likely to be migrant (versus seasonal) farmworker families. The housing also had negative characteristics. As noted, it appears that the housing was crowded. At baseline, about one-in-six participants did not have access to an individual working refrigerator or cooking surface; although this number decreased to less than one-in-twenty over two years. The poor housing quality reflects research on farmworker family housing in North Carolina and elsewhere [21,22].

As noted, those lost to follow-up were similar in household composition (marital status, number of adults, number) to those who completed participation. Those lost to follow-up differed in housing characteristics from those who completed participation. They were more likely to live in grower-provided housing, and live in housing that was smaller (fewer bedrooms), more crowded (more persons per bedroom), and more often lacking access to the kitchen. These are important results, as they indicate that migratory status is not related to the structure of farmworker-family households. As expected, these results indicate that migrant farmworker housing is of lower quality than seasonal farmworker housing.

Comparing these results to other farmworker research is difficult because little research has addressed farmworker household and housing characteristics. Our results support other limited findings that suggest that farmworker family households are crowded [21,22,27,28]. Our results also reflect the substandard housing quality of farmworker housing, whether it is used by families or single men [20–25].

These results have implications for the health of farmworkers and their children. Quandt and colleagues [14] review the health effects of substandard housing for farmworkers. We have already shown that household and housing characteristics are associated with some health outcomes [13] using only baseline data; therefore, did not examine these associations here. Specifically, household structure and poor housing were related to increased stress and limited outward orientation (valuing interaction and activities outside of the household or family unit) among mothers in farmworker families. The stability in the persons living in these households is a positive situation that does not indicate family chaos. However, the large number of people, adults and children, in each household and the crowded conditions,

may increase chaos [1,31]. Family chaos has been related to stress among adults, and to developmental delay among children [1–3].

This research should be evaluated in light of its limitations. The sample, while it may be representative of farmworker families in North Carolina, is not random, and the participants were recruited from a single state. Therefore, generalizations should be made with caution. Our measures of household composition and housing are limited. We did not include a direct measure of chaos. At the same time, the sample includes a large number of farmworker families with young children, we had a high retention rate (89% across two years), and we were able to follow many of the migrant farmworker participants across state and national boundaries.

Farmworker family households in North Carolina are stable in membership, but include a large number of adults and children. Most farmworker families live in rented houses rather than labor camps, with many being home owners. However, their housing is crowded. Additional attention needs to be directed to the household composition of farmworker families. Household composition provides the proximal social environment for these families. Research on farmworker household composition is crucial to understand how this social environment affects the health and well-being of adults and children. Most farmworkers across the US are not single men who live in labor camps; they are families living in community housing. Seasonal (non-migrant) housing falls outside the federal farmworker housing regulations contained in the Migrant and Seasonal Agricultural Worker Protection Act (http://www.dol.gov/compliance/laws/comp-msawpa.htm; accessed June 10, 2014). State and local housing regulations are needed to improve the housing for farmworkers and other vulnerable populations.

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Table 1

Personal Characteristics, Mothers in Farmworker Families, North Carolina at Baseline (2011–2012).

Personal and Family Characteristics	n	%
Age		
18 to 25 years	72	29.0
26 to 35 years	138	55.7
36 to 45 years	38	15.3
Education		
0 to 6 years	108	43.6
7 to 9 years	76	30.7
10 or more years	64	25.8
Married or Living as Married	224	90.3
Participant has Documents to be the US	25	10.1
Participant's Partner has Documents to be the US	22	10.0
Either Participant or Partner has Documents to be in the US	38	15.4
Years in US		
Less than 5	21	8.5
5 to 9	108	43.9
10 or more	117	47.6
Current Employment		
Farm work	96	38.7
Other work	46	18.6
Not working	106	42.7
Farm Work in Previous 12 Months	158	63.7
Current Employment Partner		
Farm work	125	55.1
Other work	90	39.7
Not working	12	5.3
Migrant Farmworker Family	68	27.4

Table 2

Household Composition of Farmworker Families 0ver Two Years.

Household Composition	Baseline N=221		1 Year N=219		2 Years N=221	
	N	%	N	%	N	%
Marital status						
Married/living as married	201	91.0				
Not married	20	9.0	.	.	.	.
Number of adults						
1	8	3.6	6	2.7	13	5.9
2	130	58.8	138	63.0	129	58.4
3 or more	83	37.6	75	34.2	79	35.7
Number of children						
1	21	9.5	15	6.8	11	5.0
2	61	27.6	64	29.2	58	26.2
3	77	34.8	78	35.6	86	38.9
4	38	17.2	35	16.0	34	15.4
5 or more	24	10.9	27	12.3	32	14.5
Number of residents						
2 to 3	14	6.3	10	4.6	11	5.0
4	50	22.6	50	22.8	39	17.6
5	67	30.3	66	30.1	76	34.4
6	39	17.6	43	19.6	39	17.6
7	26	11.8	29	13.2	32	14.5
8 or more	25	11.3	21	9.6	24	10.9
Move (previous year, previous 3 months)						
No	172	77.8	201	91.8	201	91.0
Yes	49	22.2	18	8.2	20	9.0
Number of moves						
1 move	30	13.6	16	7.3	19	8.6
2 moves	11	5.0	2	0.9	0	0.0

Household Composition	Baseline N=221		1 Year N=219		2 Years N=221	
	N	%	N	%	N	%
3 to 6 moves	8	3.6	0	0.0	1	0.5
Spouse absent in last year						
No	205	93.6	211	96.3	213	96.4
Yes	14	6.4	8	3.7	8	3.6

Table 3

Housing Characteristics of Farmworker Families over Two Years.

Housing	Baseline N=221		1 Year N=219		2 Years N=221	
	N	%	N	%	N	%
Housing tenure						
Grower provided	19	8.6	19	8.7	16	7.2
Rented	118	53.4	109	49.8	109	49.3
Own home, but rent land	50	22.6	51	23.3	50	22.6
Own	34	15.4	35	16.0	40	18.1
Rooms used only as bedrooms						
0 or 1	7	3.2	8	3.7	9	4.1
2	95	43.0	96	43.8	89	40.3
3	97	43.9	95	43.4	100	45.2
4 or more	22	10.0	20	9.1	23	10.4
Persons per bedroom						
Fewer than 2	83	37.7	74	33.8	80	36.2
2 to fewer than 3	88	40.0	93	42.5	88	39.8
3 to fewer than 4	36	16.4	38	17.4	39	17.6
4 or more	13	5.9	14	6.4	14	6.3
Individual refrigerator						
Yes	189	85.5	208	95.0	216	97.7
No	32	14.5	11	5.0	5	2.3
Individual cooking surface						
Yes	188	85.1	208	95.0	212	95.9
No	33	14.9	11	5.0	9	4.1
Number of people who cook in kitchen						
1	2	6.7	1	12.5	1	12.5
2	16	53.3	5	62.5	6	75.0
3 or more	12	40.0	2	25.0	1	12.5
Basic kitchen components						
3	174	78.7	205	93.6	211	95.5

	Baseline N=221		1 Year N=219		2 Years N=221	
Housing	N	%	N	%	N	%
2	20	9.0	6	2.7	6	2.7
1	27	12.2	8	3.7	4	1.8

Table 4

Household Composition of Farmworker Families at Baseline Comparing Participation at Two Year Follow-up.

Household Composition	Participation at 2 Year Follow-up				p-value
	Yes N=221		No N=27		
	n	%	n	%	
Marital status					
Married/living as married	201	89.7	23	10.3	0.309
Not married	20	83.3	4	16.7	
Number of adults					
1	8	100.0	0	0.0	0.684
2	130	87.8	18	12.2	
3 or more	83	90.2	9	9.8	
Number of children					
1	21	91.3	2	8.7	0.983
2	61	88.4	8	11.6	
3	77	87.5	11	12.5	
4	38	90.5	4	9.5	
5 or more	24	92.3	2	7.7	
Number of residents					
2 to 3	14	87.5	2	12.5	0.949
4	50	89.3	6	10.7	
5	67	88.2	9	11.8	
6	39	92.9	3	7.1	
7	26	89.7	3	10.3	
8 or more	25	86.2	4	13.8	
Move in last year					
No	172	94.0	11	6.0	< 0.001
Yes	49	75.4	16	24.6	
Number of moves					
1 move	30	81.1	7	18.9	0.489

	Participation at 2 Year Follow-up				
	Yes N=221		No N=27		p-value
Household Composition	n	%	n	%	
2 moves	11	68.8	5	31.3	
3 to 6 moves	8	66.7	4	33.3	
Spouse absent in last year					
No	205	88.7	26	11.3	1.000
Yes	14	93.3	1	6.7	

Table 5

Housing Characteristics of Farmworker Families at Baseline Comparing Participation at Two Year Follow-up.

Housing	Participation at 2 Year Follow-up				P-value
	Yes N=221		No N=27		
	n	%	n	%	
Housing tenure					
Grower provided	19	59.4	13	40.6	< 0.001
Rented	118	92.2	10	7.8	
Own home, but rent land	50	92.6	4	7.4	
Own	34	100.0	0	0.0	
Rooms used only as bedrooms					
0 or 1	7	58.3	5	41.7	0.005
2	95	94.1	6	5.9	
3	97	87.4	14	12.6	
4 or more	22	91.7	2	8.3	
Persons per bedroom					
Fewer than 2	83	88.3	11	11.7	0.026
2 to fewer than 3	88	93.6	6	6.4	
3 to fewer than 4	36	90.0	4	10.0	
4 or more	13	68.4	6	31.6	
Individual refrigerator					
Yes	189	92.6	15	7.4	0.001
No	32	74.4	11	25.6	
Individual cooking surface					
Yes	188	94.5	11	5.5	< 0.001
No	33	67.3	16	32.7	
Number of people who cook in kitchen					
1	2	100.0	0	0.0	0.577
2	16	69.6	7	30.4	
3 or more	12	60.0	8	40.0	

Housing	Participation at 2 Year Follow-up				P-value
	Yes N=221		No N=27		
	n	%	n	%	
Basic kitchen components					
3	174	94.6	10	5.4	< 0.001
2	20	80.0	5	20.0	
1	27	71.1	11	28.9	