

# Increasing healthy food access in communities of low income and low access: Evaluating a community-initiated food hub



Patricia A. Sharpe, PhD, MPH  
Prevention Research Center  
Arnold School of Public Health  
University of South Carolina  
Columbia, South Carolina 29208

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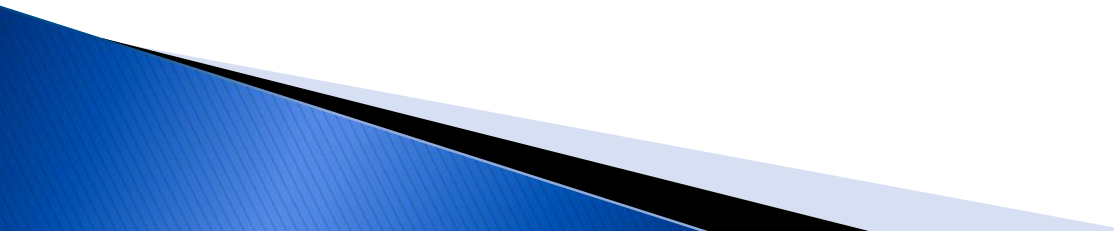
# What is a food hub?

- ✓ Facilitates "the aggregation, storage, processing, distribution, and/or marketing of locally or regionally produced food products"<sup>1</sup>
- ✓ Usually supports small to mid-sized local producers and has local food security as a goal<sup>2</sup>
- ✓ Usually includes a farmers' market'
- ✓ May include food retail space, on-site gardens, commercial kitchen, community education and job training
- ✓ Review (2012) found a small amount of data suggesting public health and economic benefits, but rigorous evaluation has not been conducted.<sup>3</sup>

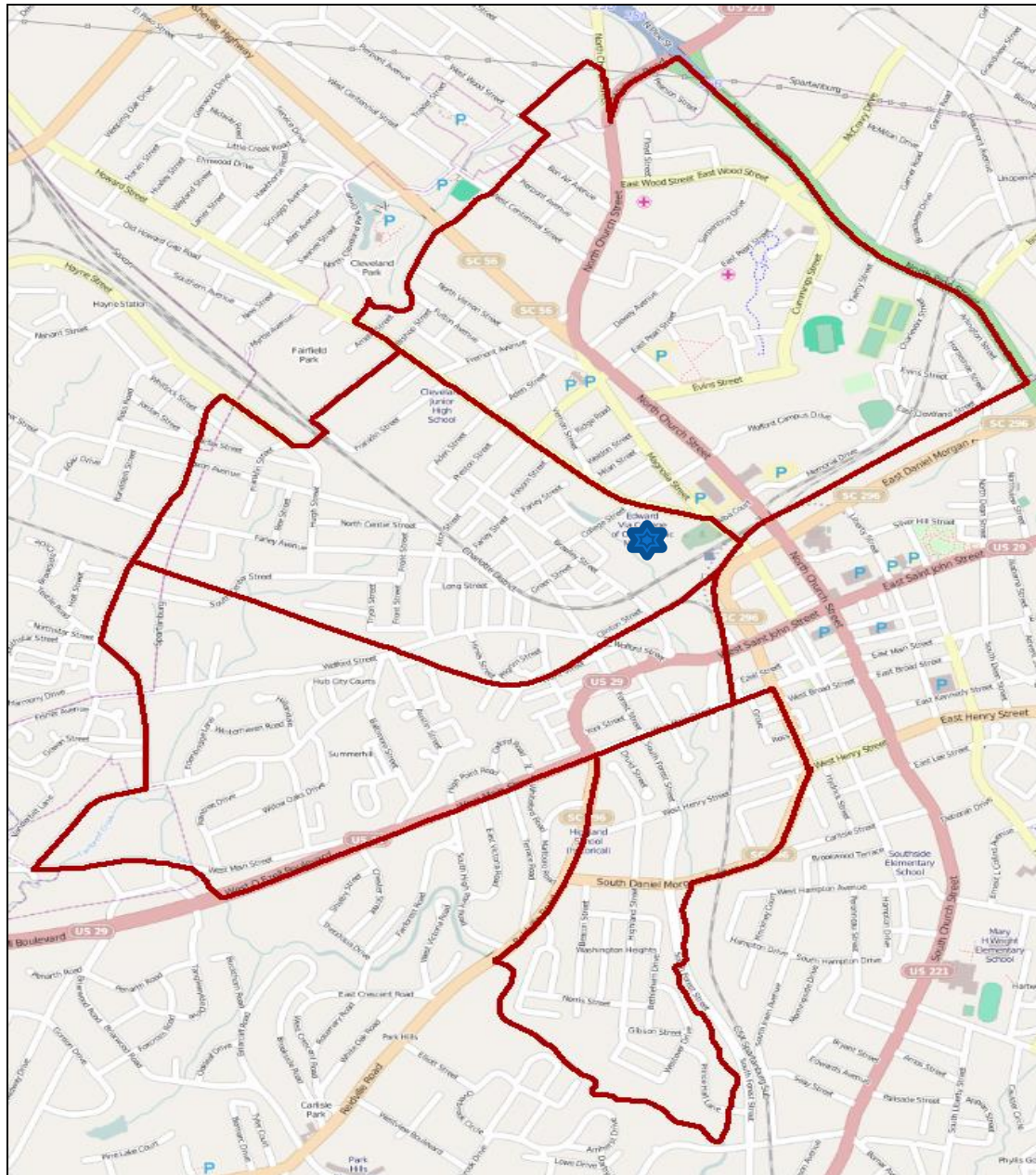
# Background

- ▶ Community partners' funding
  - Healthy Food Finance Initiative (HFFI) grant and loan
  - local grants
  - local government funds
- ▶ Researchers' funding
  - National Cancer Institute
  - PAR 12–257 *Time–Sensitive Obesity Policy and Program Evaluation (R01)*
  - Rapid–response funding

## Setting: Food hub intervention community

- ▶ Four census tracts named as primary service area for HFFI grant
  - ▶ HFFI grant awardee: Non-profit focused on housing and job training
  - ▶ Other key partners: Farmers' market, community development corporation, city government
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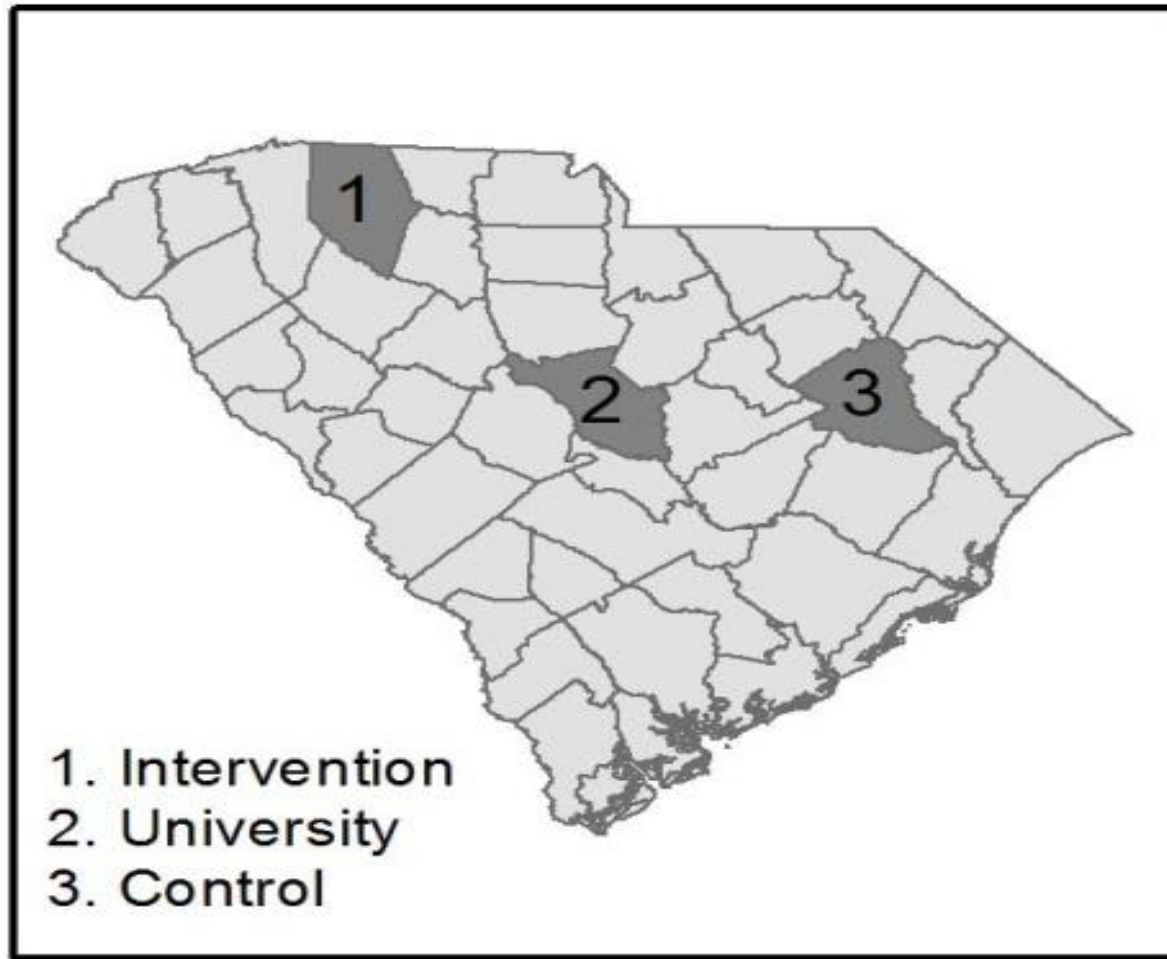
# Proposed food hub service area of four census tracts



 food hub



# Study sites



# Characteristics of intervention and matched comparison communities

	Intervention site 4 census tracts				Matched comparison site 3 census tracts <sup>b</sup>			South Carolina
n households (hh)	2318				4141			
By census tract	a <sup>1</sup>	b <sup>1</sup>	c <sup>1</sup>	d	x <sup>1</sup>	y <sup>1</sup>	z <sup>1</sup>	
%African American	43	96	99	99	94	100	88	28
% HHs < FPL	28	57	58	62	38	31	47	16
% hh without car	29	37	52	59	24	33	43	7
% low food access	54	100	33	na	53	78	100	
	Intervention county				Comparison county			
% overwt. & obese	58				68			67
% eat ≥5 F&V /day	13				14			9

<sup>1</sup> USDA food desert designation

HHs=households FPL=federal poverty level income na=not applicable

F&V=servings of fruits & vegetables

Sources: US Census American Community Survey; USDA food desert locator; SC Dept. of Health & Environmental Control/CDC data

# Harvest Park food hub

- ▶ Complex centrally located in “food desert” census tracts

## Proposed components

- ▶ Small grocery store
- ▶ Local farmers’ market
- ▶ Urban farm on-site:  
produce, chickens, bees,  
hoop houses
- ▶ Mobile produce market
- ▶ Double SNAP incentive
- ▶ Community education
- ▶ Classroom
- ▶ Demonstration garden
- ▶ Culinary arts job training  
with commercial kitchen
- ▶ Café
- ▶ Local jobs creation



Mobile market truck



# Food hub site



Greenhouse



Grocery, cafe & culinary arts program



Part of farmers' market area



Culinary arts students



Crop



Farmers' market vendor


# Research Aims

Primary aim: Evaluate the impact of a food hub intervention on primary food shoppers' a) **daily fruit and vegetable intake** and b) **diet quality** compared to the matched comparison community.

## Secondary aims:

1. Evaluate the impact of a food hub intervention on primary food shoppers' **body weight, energy intake, perceived community food environment** and **food shopping behaviors** compared to the matched comparison community.
2. Conduct a process and context evaluation: Assess intervention reach, dose, implementation fidelity, compatibility in the community, and community context (e.g, confounders, food environment)

# Mixed Methods Quasi-experiment with Matched Comparison Site

		Food hub Year 1		Food hub Year 2	
Intervention	$O_1$	X	$O_2$	X	$O_3$
----- Comparison	$O_1$		$O_2$		$O_3$
Process and context evaluation 					

$O^{1,2,3}$  = in-person interviews and 24 h. dietary recall

# Sample size and enrollment goal

Minimum n per group at Time 3 = 200

Assumes small effect size (Cohen's  $d=.30$ )

(.75 serving increase in F&Vs or 1.8 kg weight loss)

Enrollment goal  $n=280$  per group (560)

( $n=200 + 40\%$  more to allow for attrition)

94% of enrollment goal achieved  $n=527$



# Methods and measures

- ▶ Recruitment Nov 2013–April 2014
  - Three mailings to residential addresses
  - Community outreach recruiters
  - Multiple recruitment venues and strategies
- ▶ Data collection with family food shoppers
  - In-person interview (30–45 minutes) in field offices or at community centers.
  - Telephone-based 24-hr. dietary recall (Minnesota NDSR protocols)



# Methods and measures (cont.)

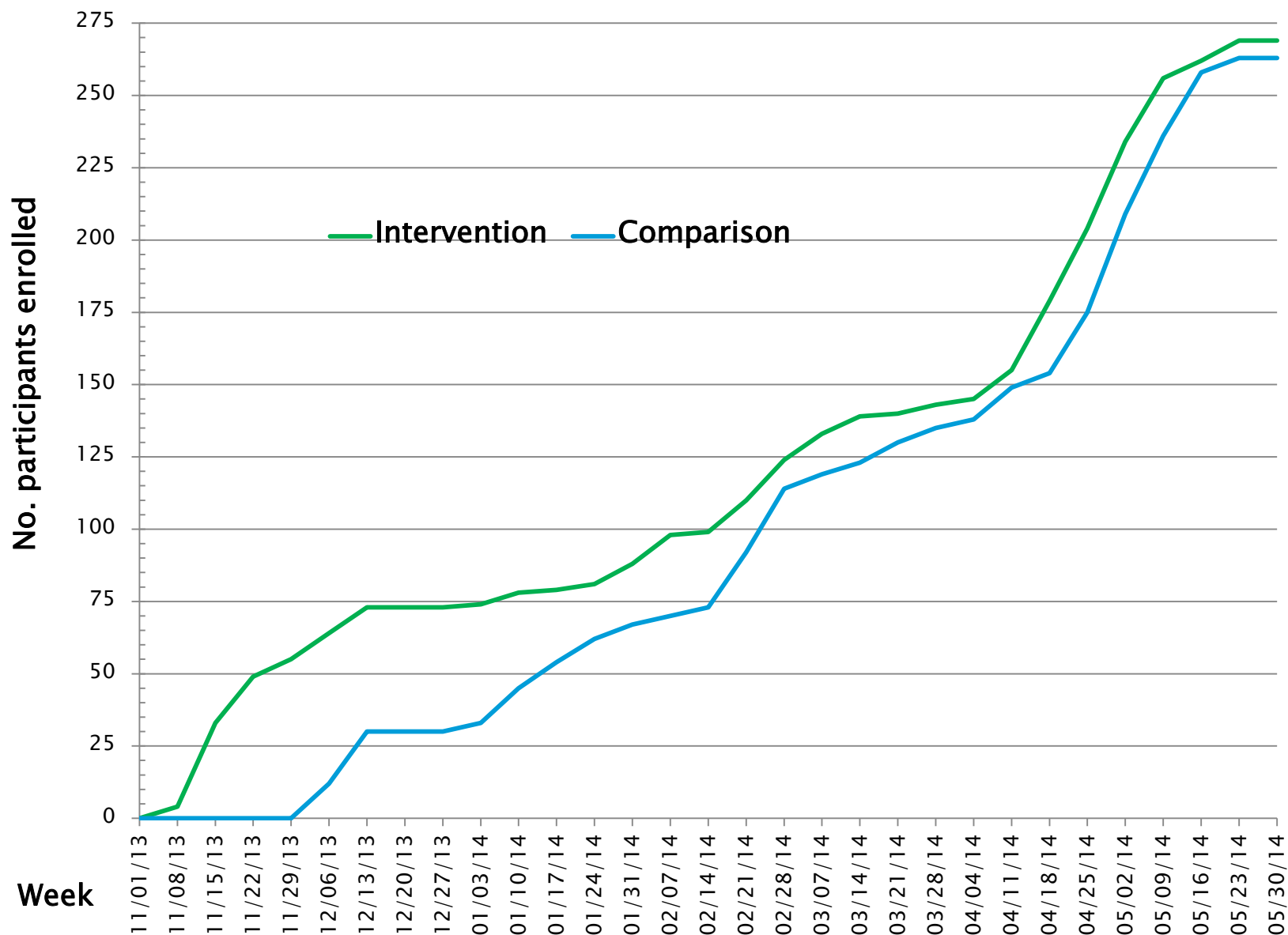
## ➤ **Process and context evaluation**

- Qualitative interviews (leaders' and residents impressions)
- SNAP sales and SNAP incentives data (time series analysis)
- Farmers' market shopper intercept survey
- Food cost comparison (food hub grocery vs. top 5 stores)
- Tracking of implementation fidelity

## ➤ **Community food environment assessment** (context and change over time)

- GPS groundtruthing and geocoding of stores and restaurants
- GIS analysis: distance, density, type of outlet, etc. relative to residence addresses

# Cumulative Enrollment



Retention (interviews)	Time 1 11/13–5/14 n=527	Time 2 5/15–8/15 n=439	Time 3 5/16–8/16 n=408 <sup>1</sup>
T1 to T2		83.3%	
T2 to T3			92.9%
T1 to T3			77.4%
Dietary recall completion <sup>2</sup>	88.6%	95.0%	96.1%

<sup>1</sup>Retention goal of n=200 per group was met.

<sup>2</sup>Percentage of n interviewed at each time point who also completed 24-hour dietary recall.

# Comparability of participants in the intervention and matched comparison communities at baseline



## Characteristics of family food shoppers at Time 1, n=527

Characteristics of main food shoppers or their households		Intervention n=265	Comparison n=262	<i>p</i> <sup>1</sup>
Age mean years (SD)		51 (15)	54 (14)	<.01
Race %	African American	89	96	<.01
Gender %	Women	77	82	.15
Education %	<high school	34	28	.19
	high school	38	38	
	≥1 year of college	28	34	
BMI category: overweight or obese %		78	82	.18
BMI mean (SD)		32 (9)	32 (9)	.91
<sup>2</sup> Household income %	<\$10,000	47	46	.26
	\$10,000–19,999	35	28	
	\$20,000–29,999	11	13	
	≥\$30,000	7	12	
Children in household (≥1) %		38	28	.02

BMI=Body mass index (weight in kg/height in m<sup>2</sup>)

<sup>1</sup> *t* test of means; chi-squared or Fisher's exact test of categorical data

<sup>2</sup> Annual, self-reported, all sources of income and benefits

Note. Some categories were collapsed for table; not all categories shown.



## Characteristics of family food shoppers at Time 1, n=527

Characteristics of main food shoppers or their households	Intervention n=265	Comparison n=262	<i>p</i> '
Household received <b>SNAP</b> (past yr) %	64	67	.48
<b>Transport to main food store</b> – other than own car %	59	51	<.01
<b>Food security</b> (during past year) <sup>2</sup>			
<b>Entire household</b> %      low/very low	64	61	.27
high/marginal	36	39	
<b>Households with children</b>			
<b>Child food security</b> %      low/very low	33	38	.26
high/marginal	67	62	

*SNAP=Supplemental Nutrition Assistance Program*

<sup>7</sup> *t* test of means, chi-squared or Fisher's exact test of categorical data

<sup>2</sup> USDA ERS [www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx#security](http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx#security)

Note. Some categories collapsed. Not all categories shown.

## Main dietary variables at baseline, n=470<sup>1</sup>

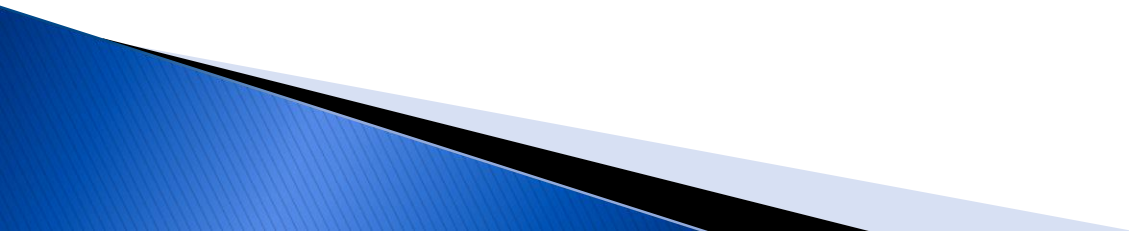
Dietary intake of food shoppers	Intervention n=241 mean SD	Comparison n=229 mean SD	<i>t</i>	<i>p</i>
24-hour energy intake (kcal)	1851 (999)	1766 (874)	.98	.33
24-hour HEI-2010 score	47.7 (12.7)	49.7 (13.5)	-1.65	.10
24-hour fruit+veg servings	3.7 (3.3)	3.8 (2.9)	-.39	.70
24-hour fruit+veg cup equivalents/1000 kcal	1.1 (1.2)	1.2 (.99)	-.89	.38

<sup>1</sup>Participants with complete dietary recall data.

# Discussion

Challenges and successes

Questions and discussion



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Soulfully Fit Committee

Office of Downtown Development

Many community leaders and partners





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