

“Consumption Responses to In-Kind Transfers:
Evidence from the Introduction of the Food Stamp Program

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Background

- In-kind programs feature prominently in U.S. income support policies
- Economic theory has strong predictions about how in-kind transfers impact consumption
- Despite the prominence of the theory, there has been little empirical work documenting the response to in-kind transfers—the available evidence suggests a failure of the canonical model.
- The food stamp program (FSP) is closest thing the U.S. has to a universal safety net program
 - It is the largest cash or near cash means tested transfer program
 - In 2004: FSP \$27 B, TANF \$25 B, EITC \$33 B
- We develop a new quasi-experimental approach to test theoretical predictions and estimate the impact of the FSP on food consumption (and labor supply)
- The identification is based on county level FSP introduction which occurred from 1961-1975

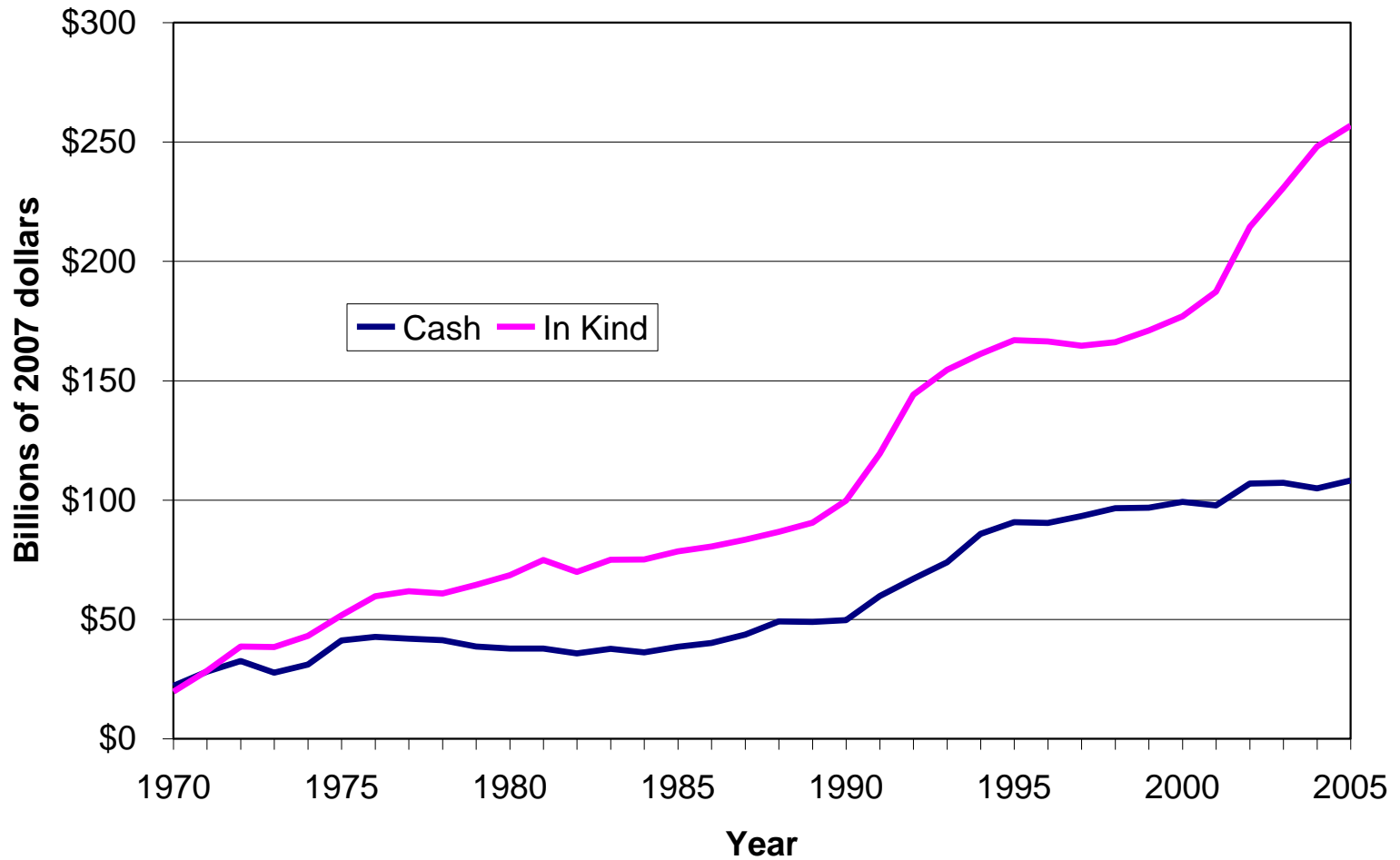
The paper is part of a larger research program that examines the impact of the great society programs on family and child well-being

- Food stamp introduction and infant health outcomes (birth outcomes, infant mortality); *joint with Doug Almond and Diane Schanzenbach*
- Childhood exposure to food stamps and adult health and economic outcomes; *joint with Doug Almond and Diane Schanzenbach*
- Using similar research design to examine impacts of WIC program; *joint with Marianne Page and Ann Stevens*

In-Kind versus Cash Assistance

- There is greater support for providing assistance to the poor through in-kind transfers rather than cash
- Supporters believe that policies providing voucher payments for certain goods (like food) will cause recipients to purchase more of these goods and recipients will not be able to use support to purchase other, less socially desirable goods
- However, if recipients are inframarginal, cash and vouchers should lead to the same outcomes
- We evaluate the impact of the FSP in the context of these predictions using the Panel Study of Income Dynamics (PSID)
- Our results show that food stamp benefits increase food consumption by a similar amount as an equivalent cash transfer consistent with the canonical model.
 - Further, households predicted to be “constrained” experience a larger increase in food consumption as predicted by the theory.

Spending on Cash and In-kind Public Assistance Programs



Overview of presentation

- Previous literature: why is the program hard to study?
- History of the food stamp program (program rollout)
- Expected effects of food stamps on consumption
- Data
- Methods
- Results

What is the food stamp program?

- Means tested in-kind assistance program
 - Income and asset tests determine eligibility
- Only U.S. means tested program that is not targeted; universal safety net program
- Federal program; no area variation
- Coupons issued which can be used in stores (recently most states use debit cards)
 - Can purchase all food items except prepared foods and alcoholic beverages
- Benefits phased out as income increases; in 2005 average monthly benefit per person was \$93

Previous Literature: why is the FSP hard to evaluate?

- FSP is a federal program with little cross area variation → little variation in program parameters that are typically exploited by researchers to measure program impacts
- Instead the literature has taken other approaches:
 - [main approach] Compare recipients to eligible non-recipients (with little accounting for selection into receipt). Models of program participation (Moffitt 1983, Currie 2006) suggest that take-up will be positively correlated with tastes for food consumption, leading to an upward bias.
 - Experimental evidence from cash-out experiments: finds that FS is close to cash (5% higher spending on food with voucher compared to cash)
 - Structural modeling
- Findings
 - FSP leads to increases in food consumption; larger (between 2 and 10 times as much) than if benefits are in cash (Fraker 1990 review)

An alternative identification strategy

- Since there is little *marginal* variation in food stamp benefits that leads to credible identification of the effect of the FSP, we use a different approach
 - The FSP was rolled out across the approx 3,000 counties over a relatively long period of time: 1961-1975
 - We use this variation to identify the effects of the FSP
- Using FSP implementation is largely untapped in the literature
 - Exception: Currie and Moretti (2006) examine impacts of FSP introduction on infant outcomes in California
- Part of a growing literature that exploits *program introduction* during the Civil Rights Act and Great Society period
 - Almond, Chay & Greenstone (Civil rights and infant mortality), Finkelstein & McKnight (Medicare introduction), Cascio et al (Title I), Ludwig & Miller (Head Start)
- It is important to establish that the timing of county adoption of the FSP is exogenous (come back to this later)

A Short History of the (modern) Food Stamp Program

- 1961 Pres. Kennedy executive order; established 8 county-level pilot programs; 1962-1963 expanded to 43 counties
- Food Stamp Act of 1964:
 - gave local areas the authority to start up FSP in their county
 - Federally funded
 - Voluntary adoption by counties
- Steady increases in county adoption; constrained by budgetary limits
- 1973 amendments to Food stamp act: mandated that all counties offer FSP by 1975
- *Goal of FSP*: promote nutritional well-being of low income persons
- Introduction and expansion of the FSP was (in part) addressing high rates of hunger and nutritional deprivation among the poor
 - 1968-70 survey of low-income families in four states (TX, LA, KY, WV) found 15% of whites and 37% of blacks had low hemoglobin levels (Eisinger 1998)

What existed prior to FSP?

- Commodity distribution program (CDP) was precursor to FSP
- *Goal of CDP*: support farm prices and farm income by removing surplus commodities from market
- The evidence shows that the FSP represents an important “treatment” over and above the CDP. The CDP:
 - not universally available: in 1967, 1/3 of the poorest 1,000 counties offered no food assistance program
 - limited range of products (most common items include flour, cornmeal, rice, dried milk, cheese, butter)
 - distribution centers that were difficult to reach
 - infrequent timing of distribution of goods
- Nonetheless, unfortunately there is sparse data on county participation in the CDP so we are unable to use this in our empirical work

Examining the timing of county introduction of food stamps

Implemented by 1962



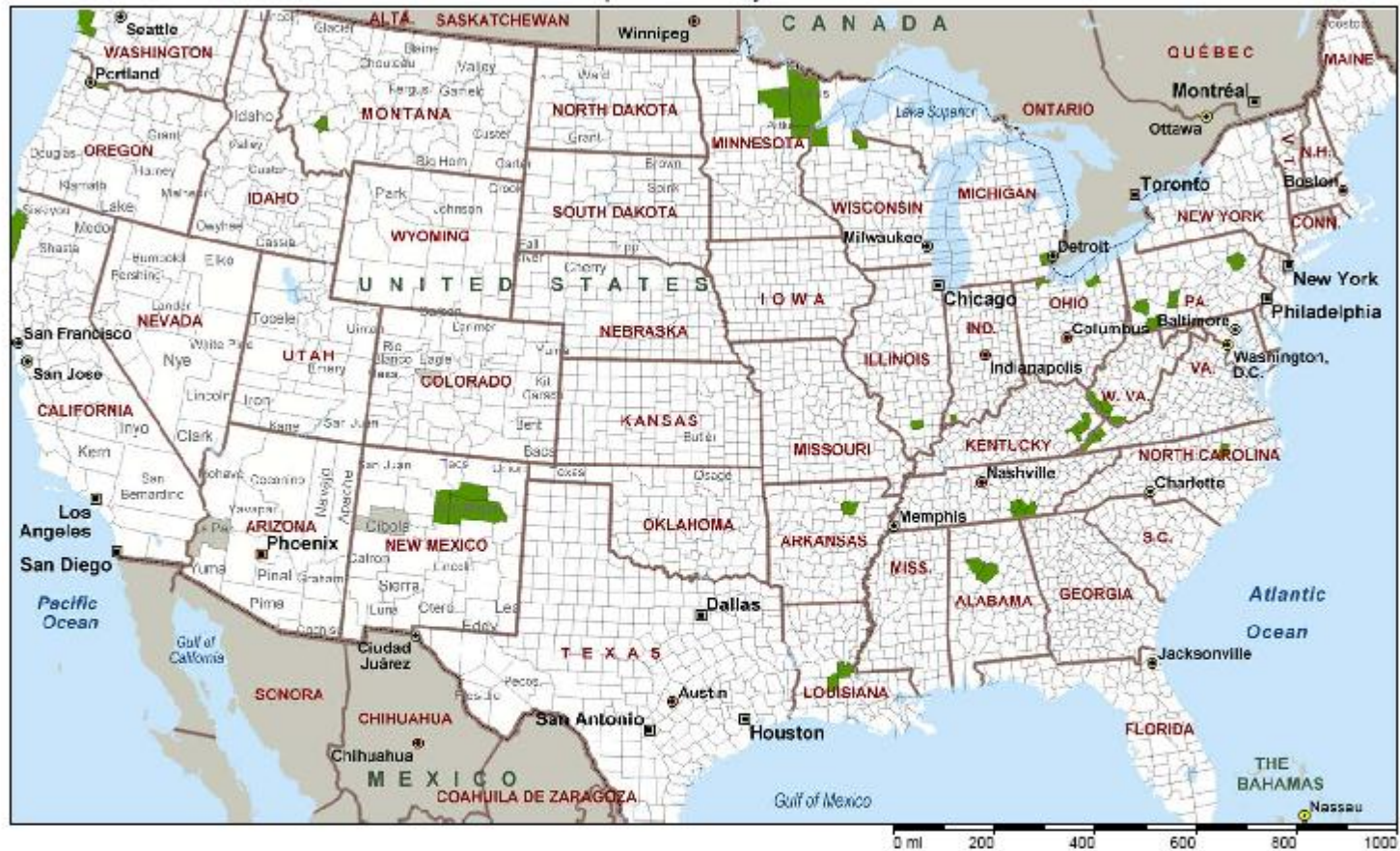
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Implemented by 1963



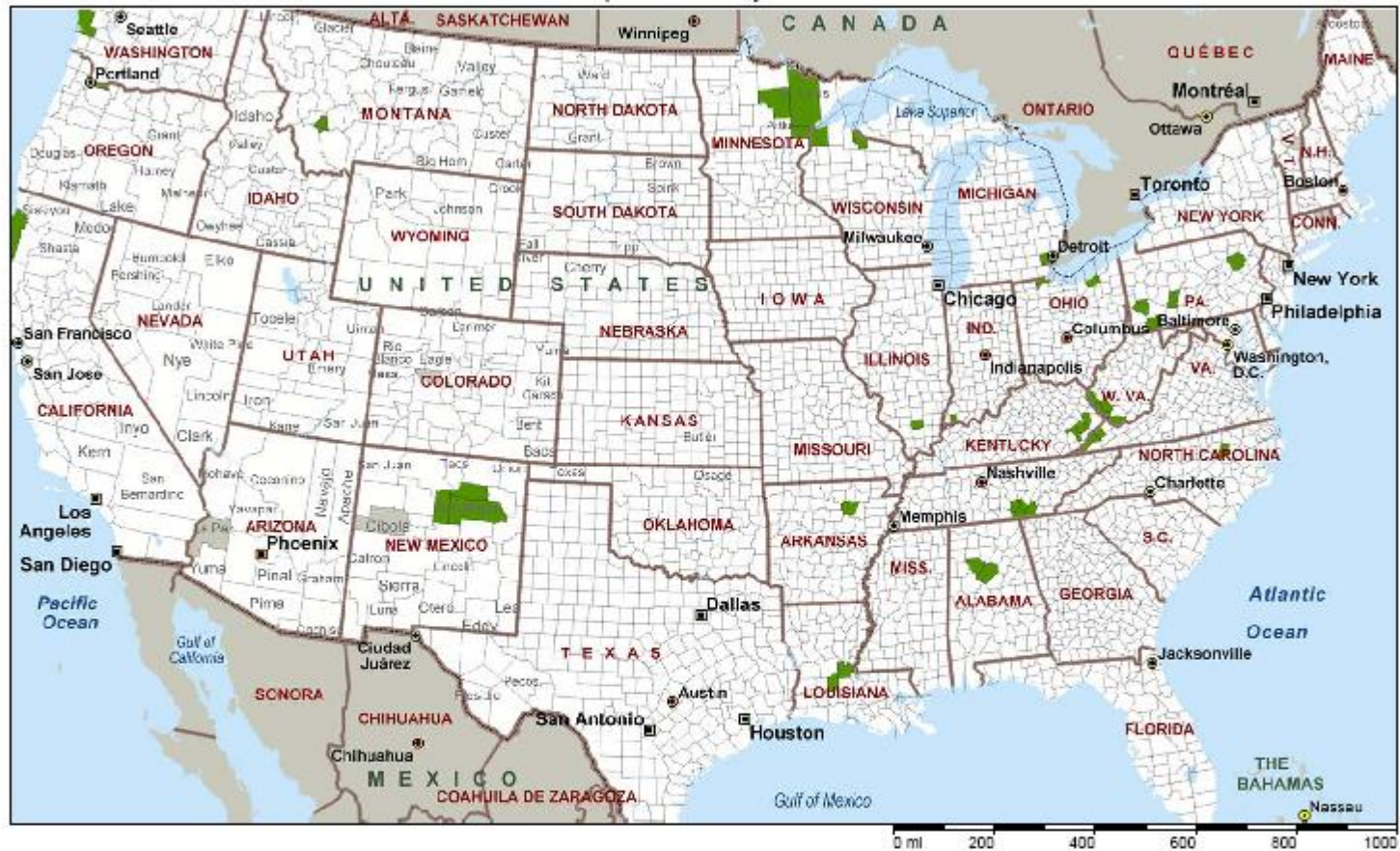
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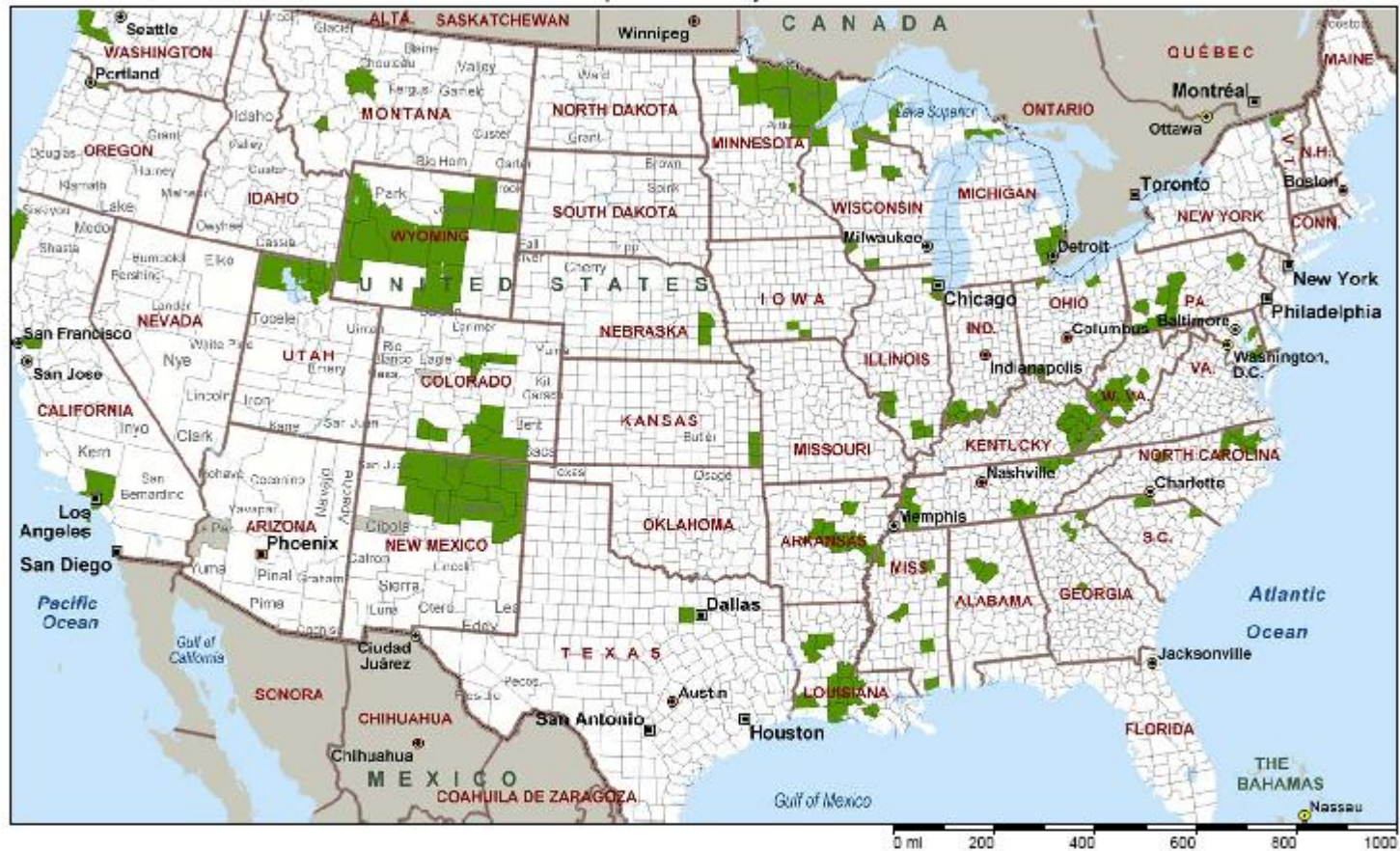
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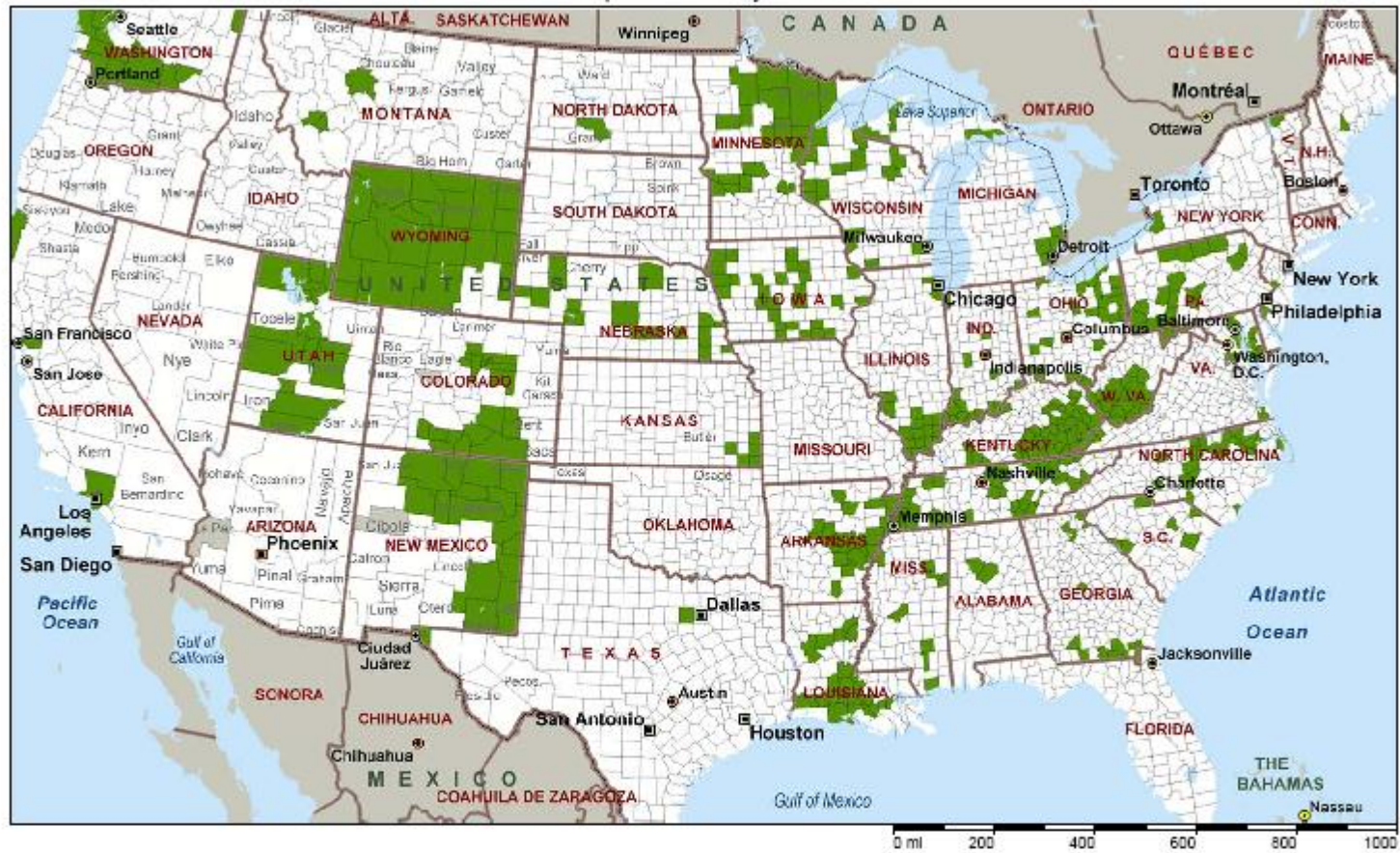
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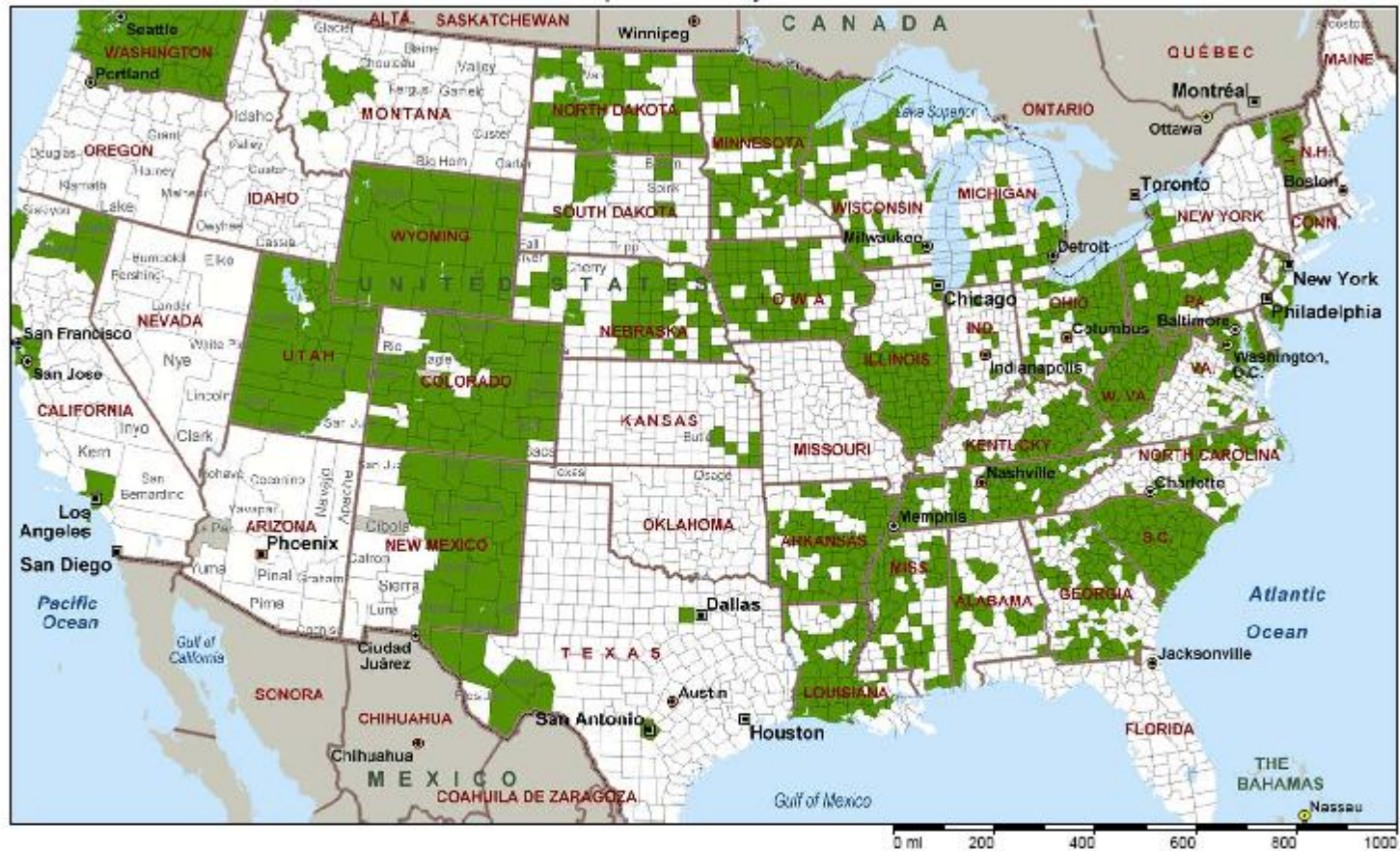
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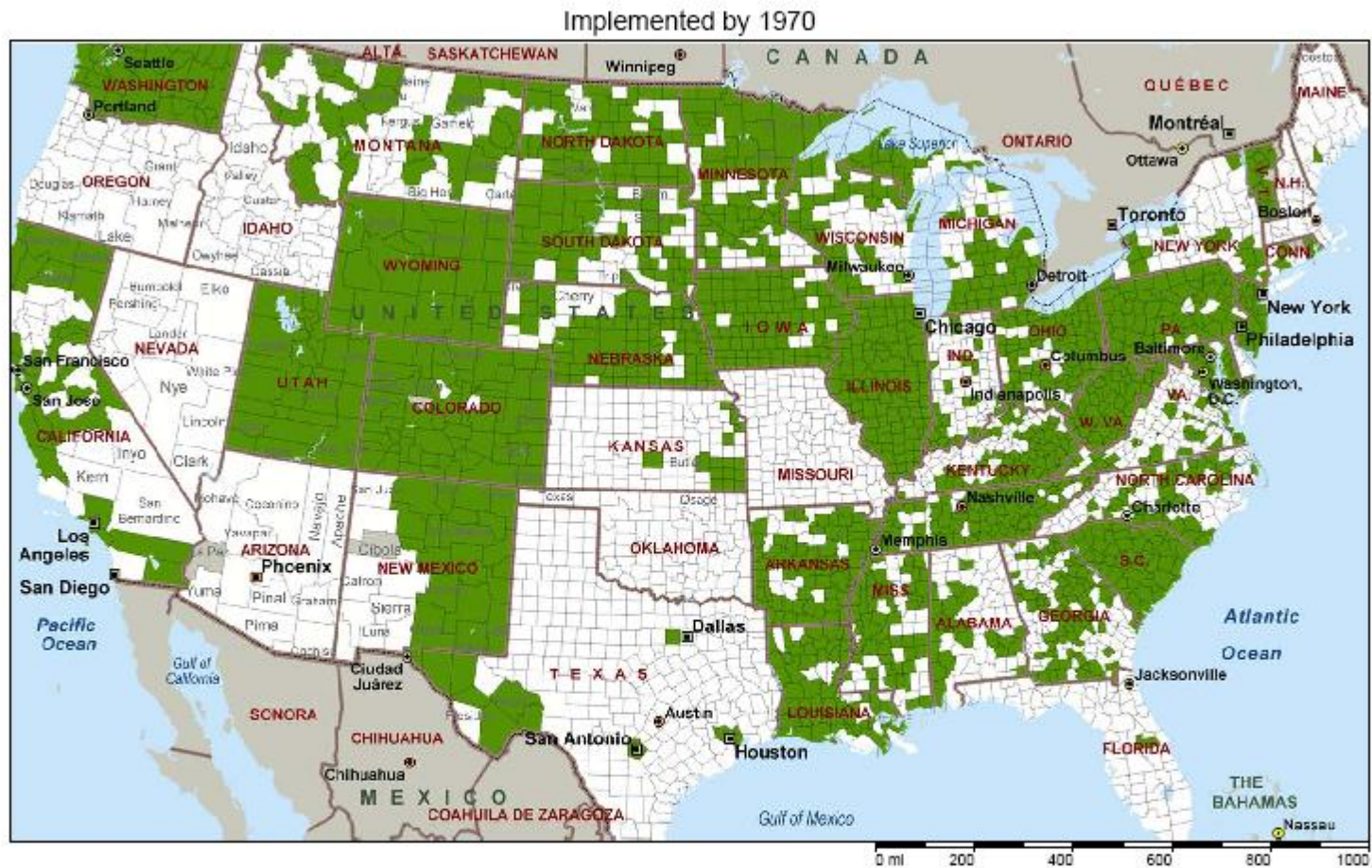
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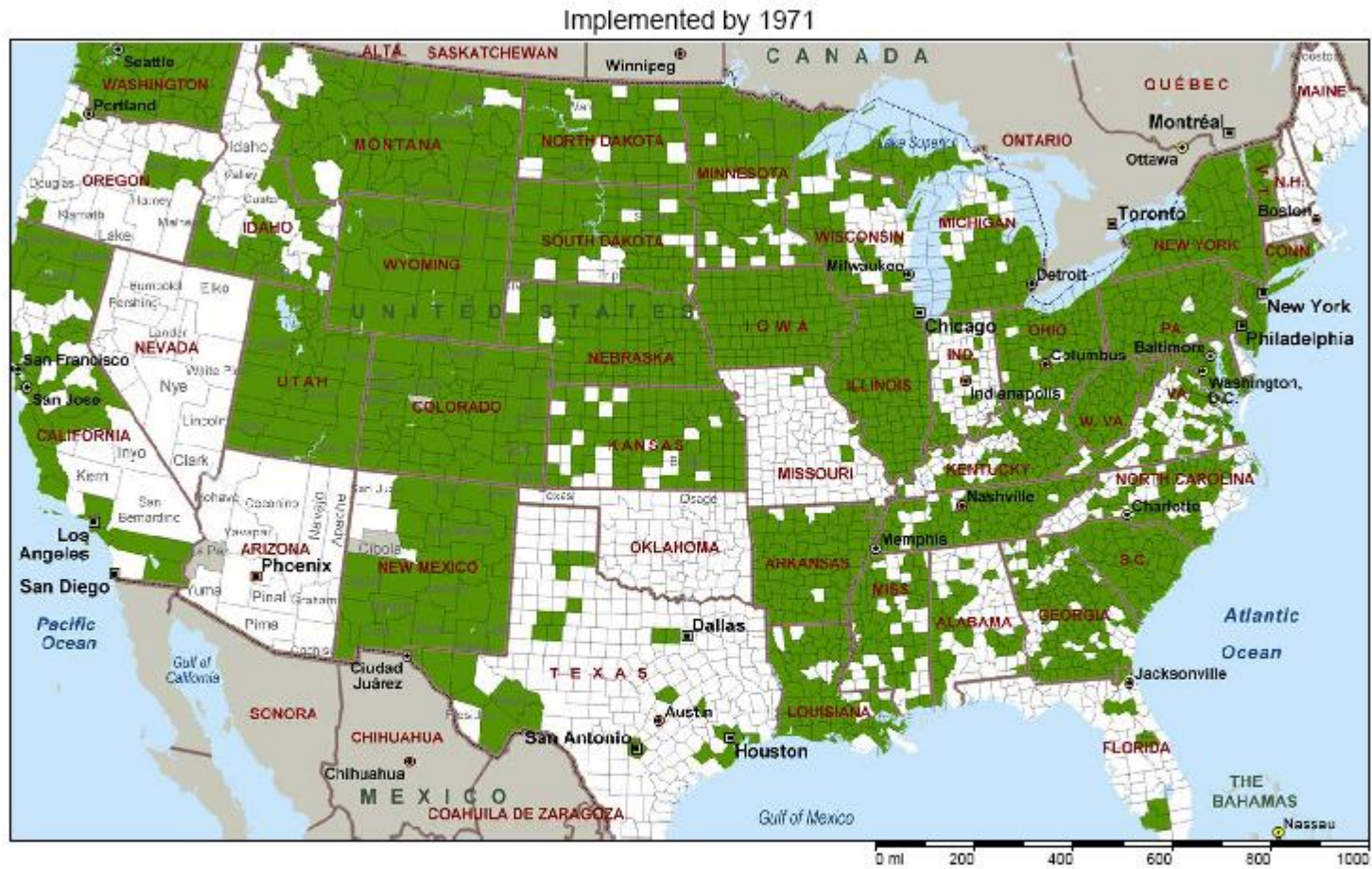
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Jan 1970



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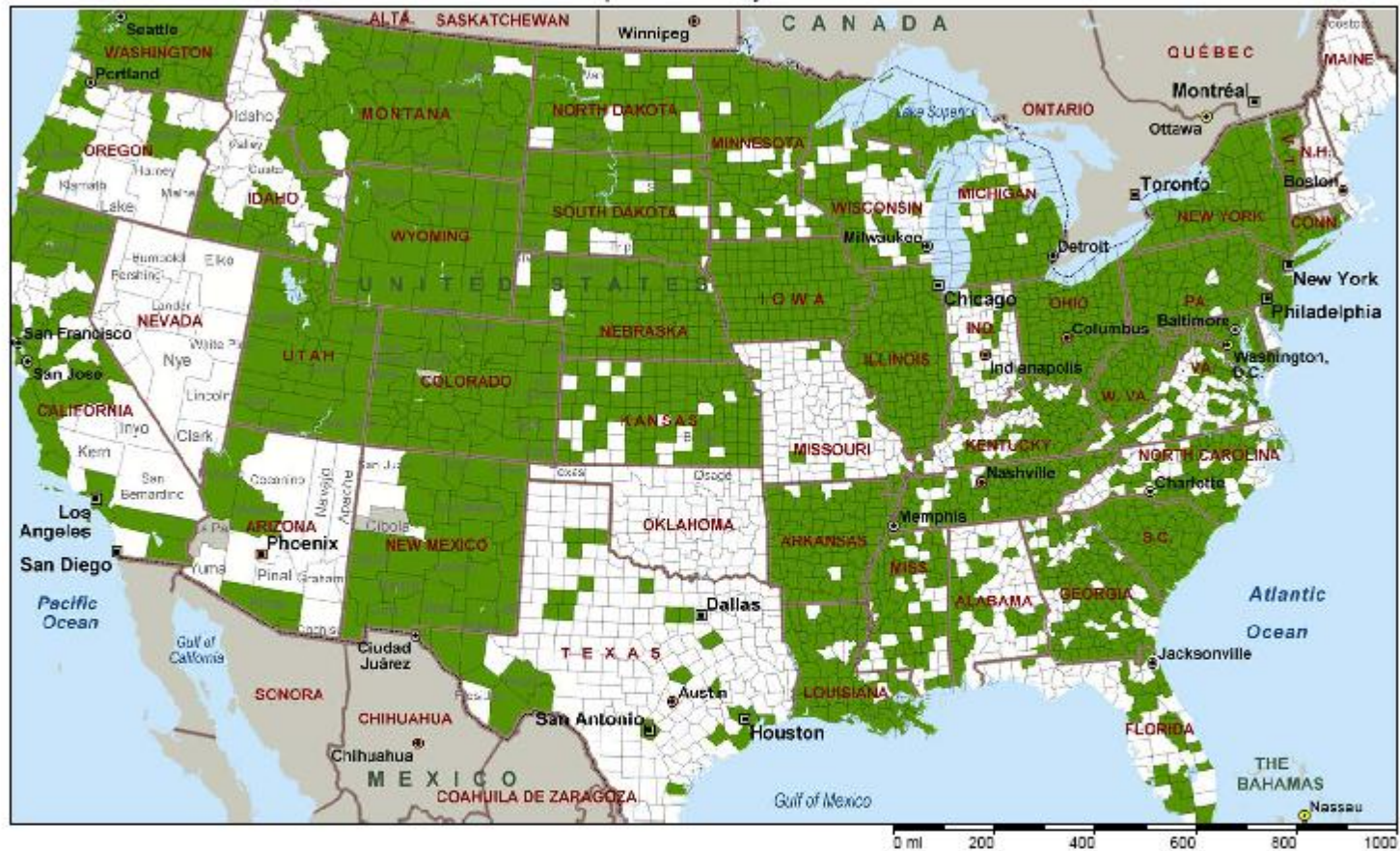
Jan 1971



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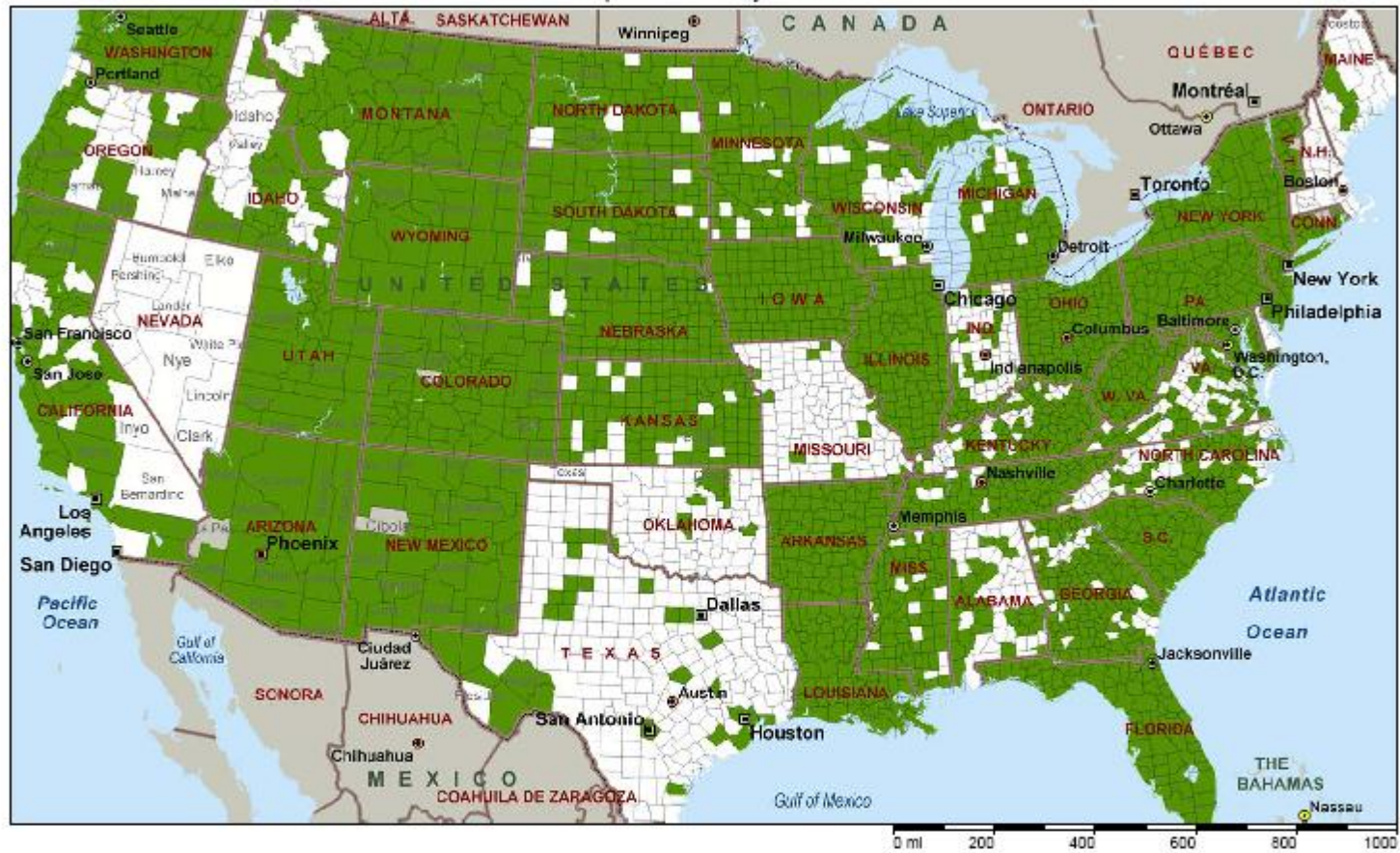
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Jan 1973

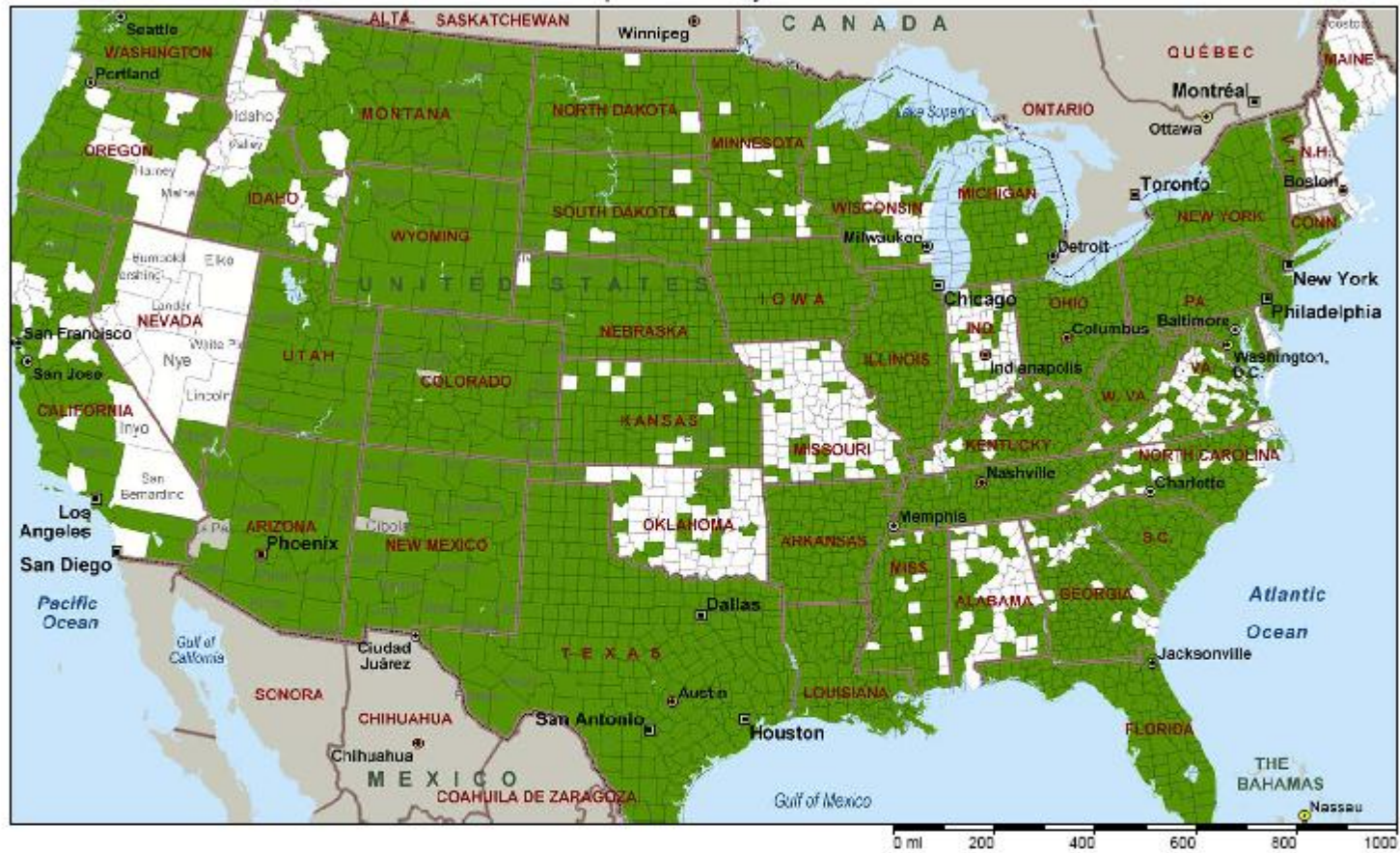
Implemented by 1973



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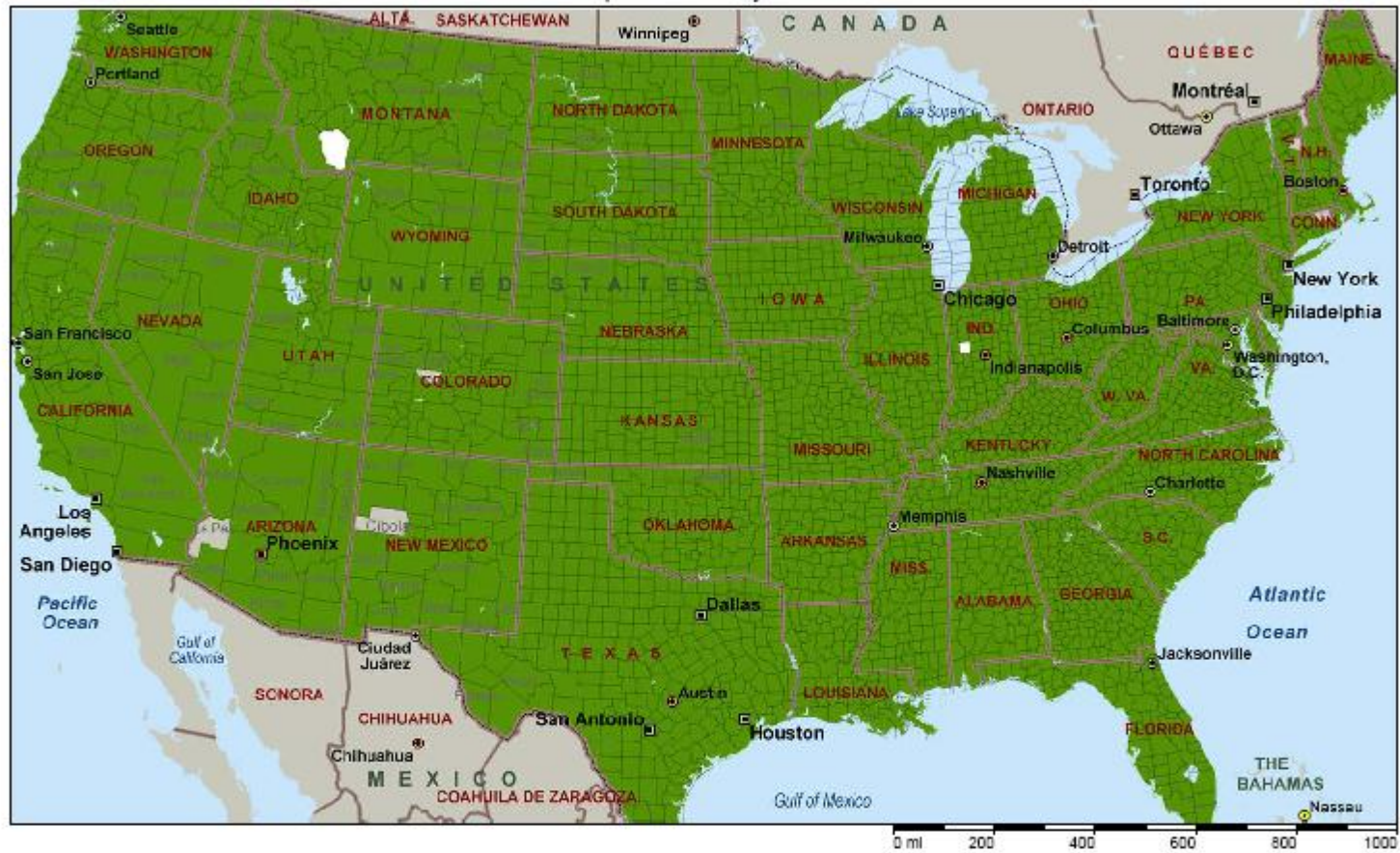
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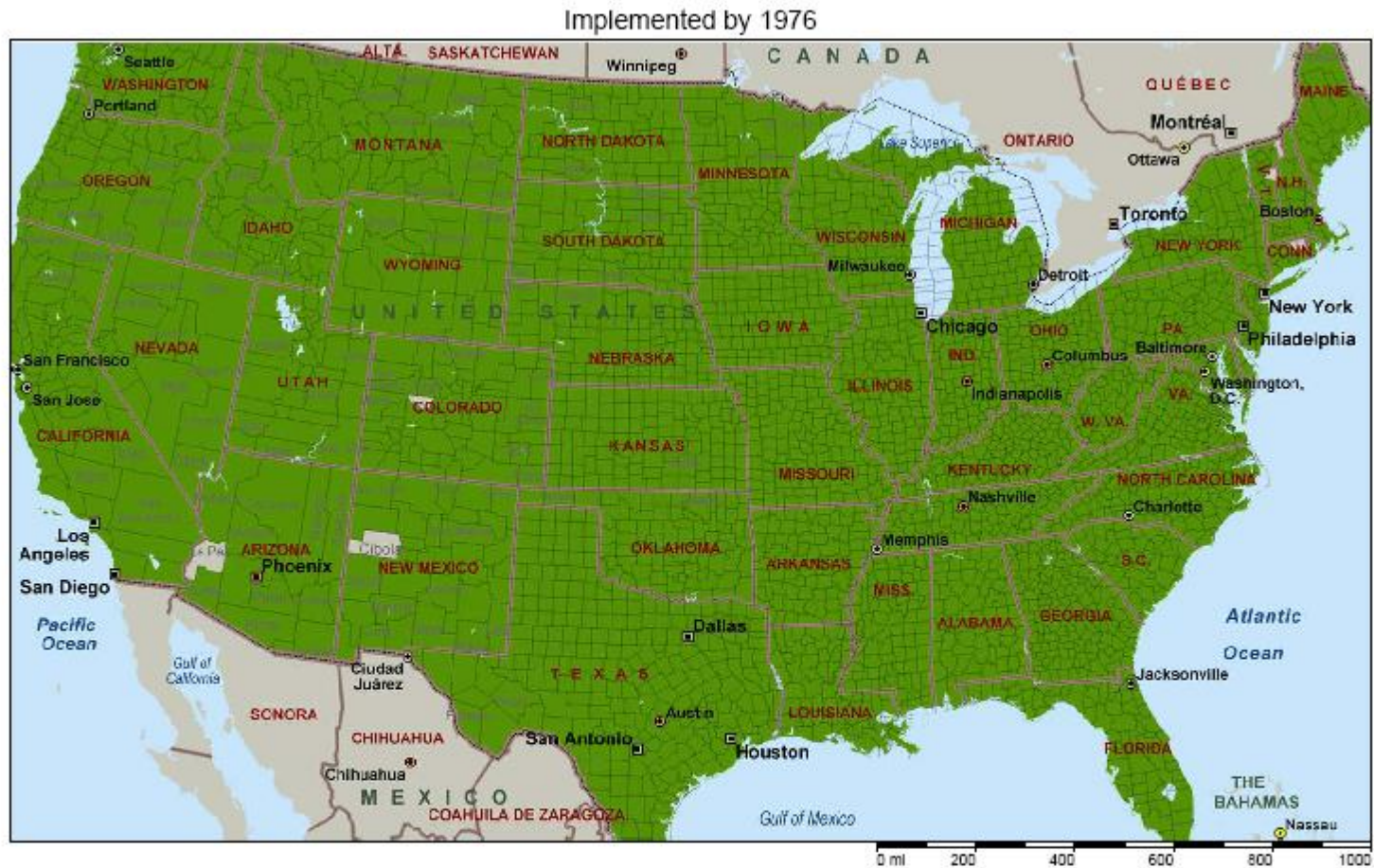
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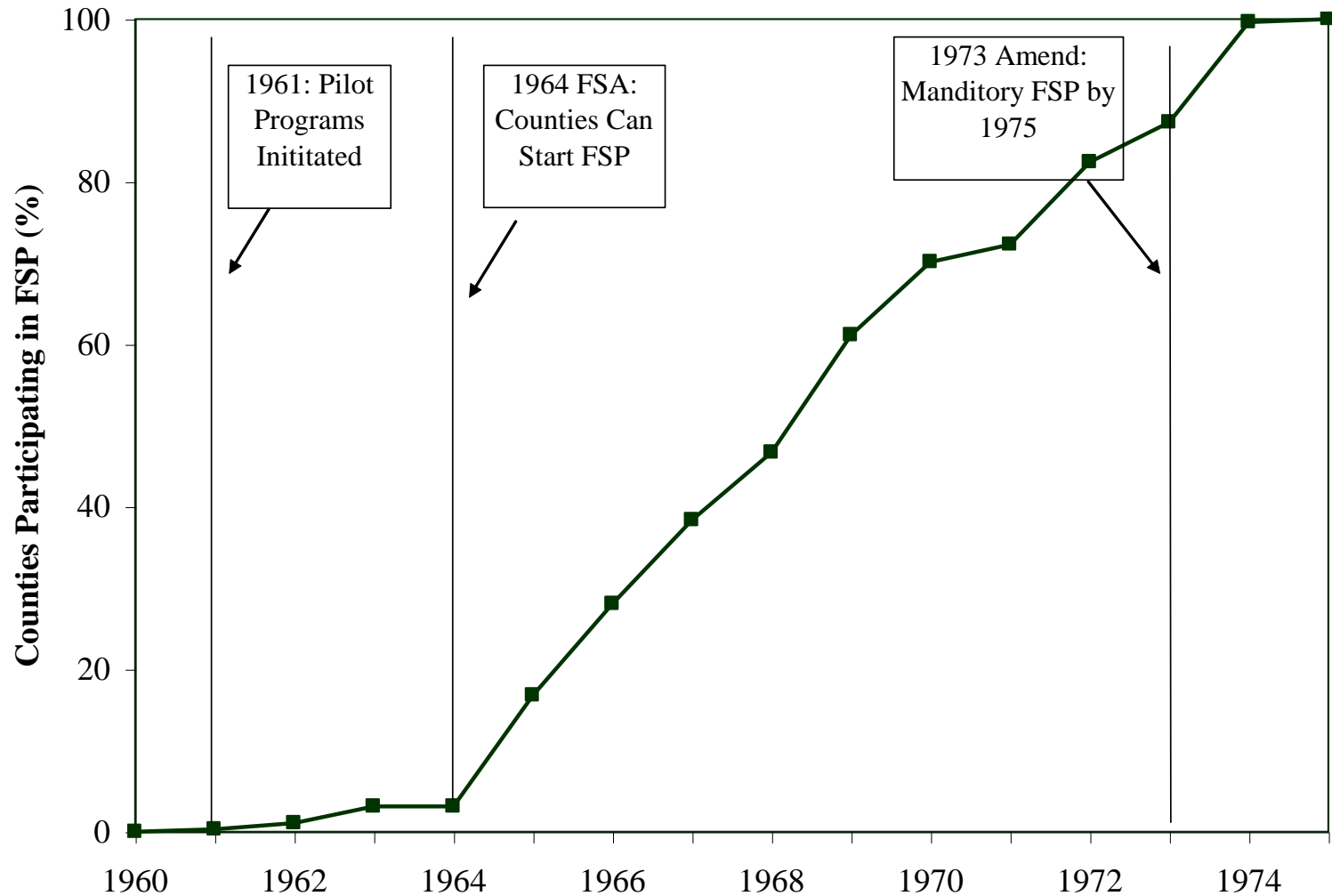
Jan 1976



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- Our basic identification strategy uses this county level variation in food stamp “treatment”

Percent of US population covered by FSP



Note: Figure shows the percent of counties participating in the FSP, weighted by the 1970 county population

Expected effects of introduction of FSP: Consumption

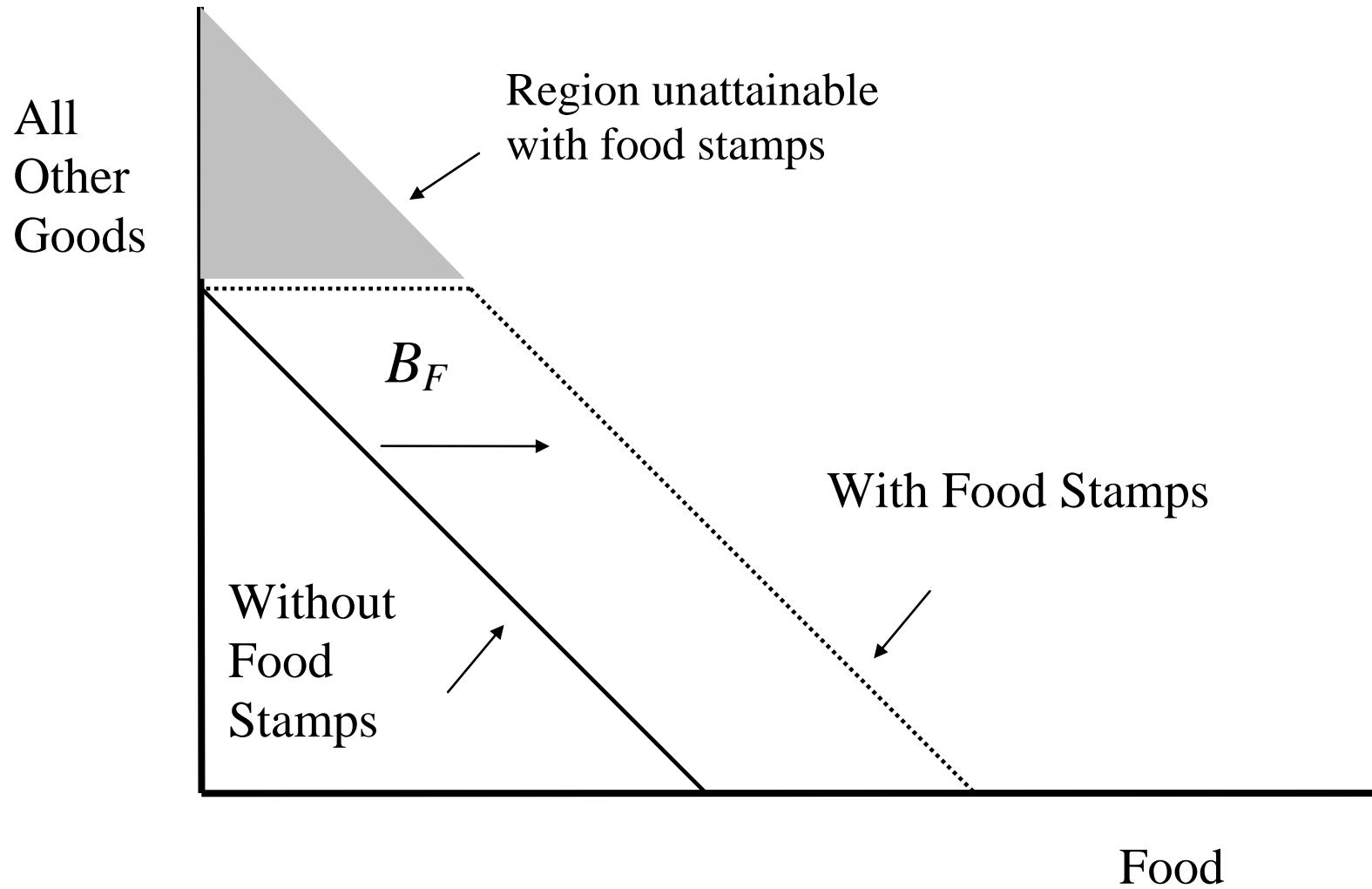
- Eligibility requirements: must satisfy income and asset tests
- Purchase requirement: household pays some amount out-of-pocket and then receives food stamps

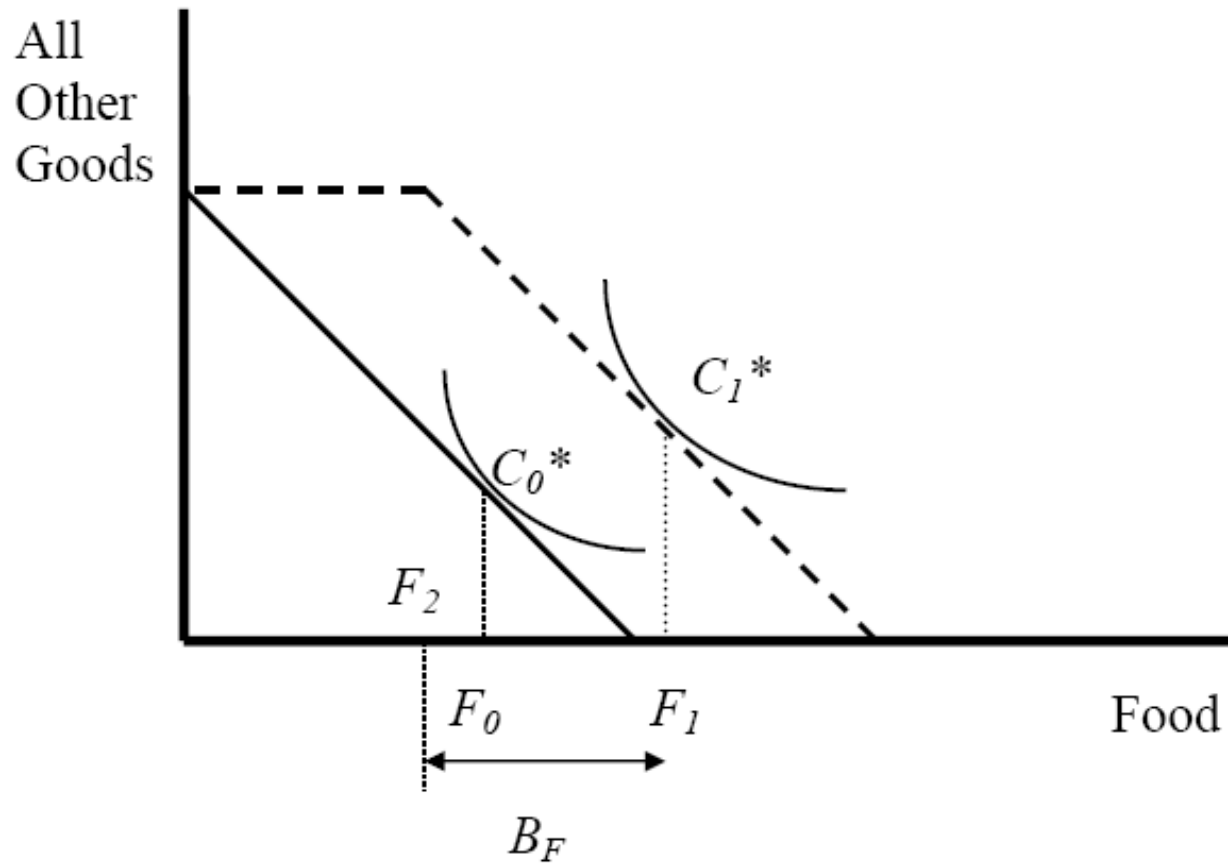
Food stamp “benefit” or *bonus coupons* (B_F)

= Face value of food stamps – Purchase requirement

- Analyze choice of food vs nonfood consumption
- This analysis (and its predictions) assume that the price of food is unchanged with the introduction of FSP. This is valid if the FS population is small relative to the full population (8% of families participate)
- Basic static model with food and nonfood as normal goods

Fig 5: Food Stamps and Food/Nonfood consumption: no purchase requirement





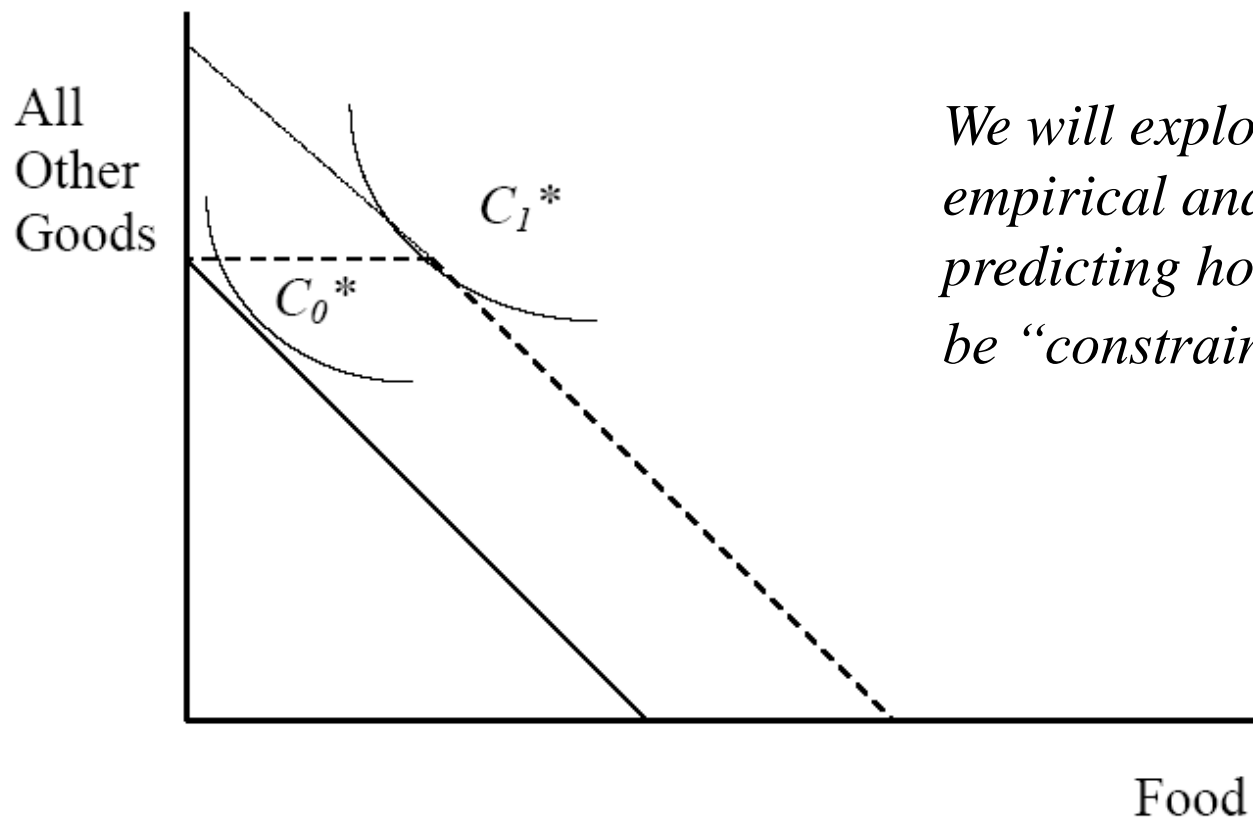
Predictions for inframarginal recipient:

Nonfood and food consumption increases, *pure income effect*

Out of pocket food spending decreases ($F_0 \rightarrow F_2$)

Overall food consumption goes up by less than food stamp benefit

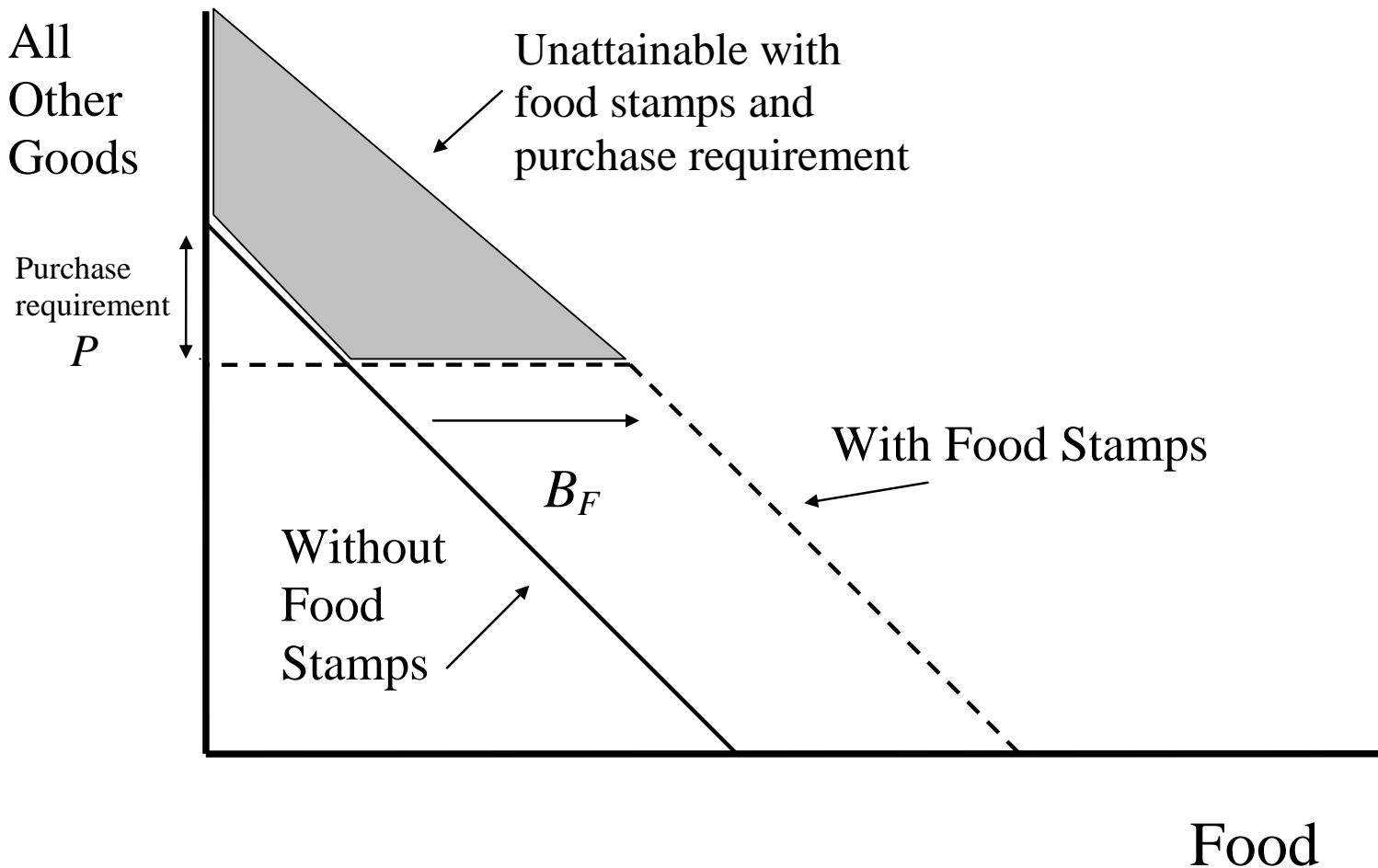
If desired food consumption is low relative to the food stamp benefit, then total food consumption increases more and out of pocket food costs decrease less.



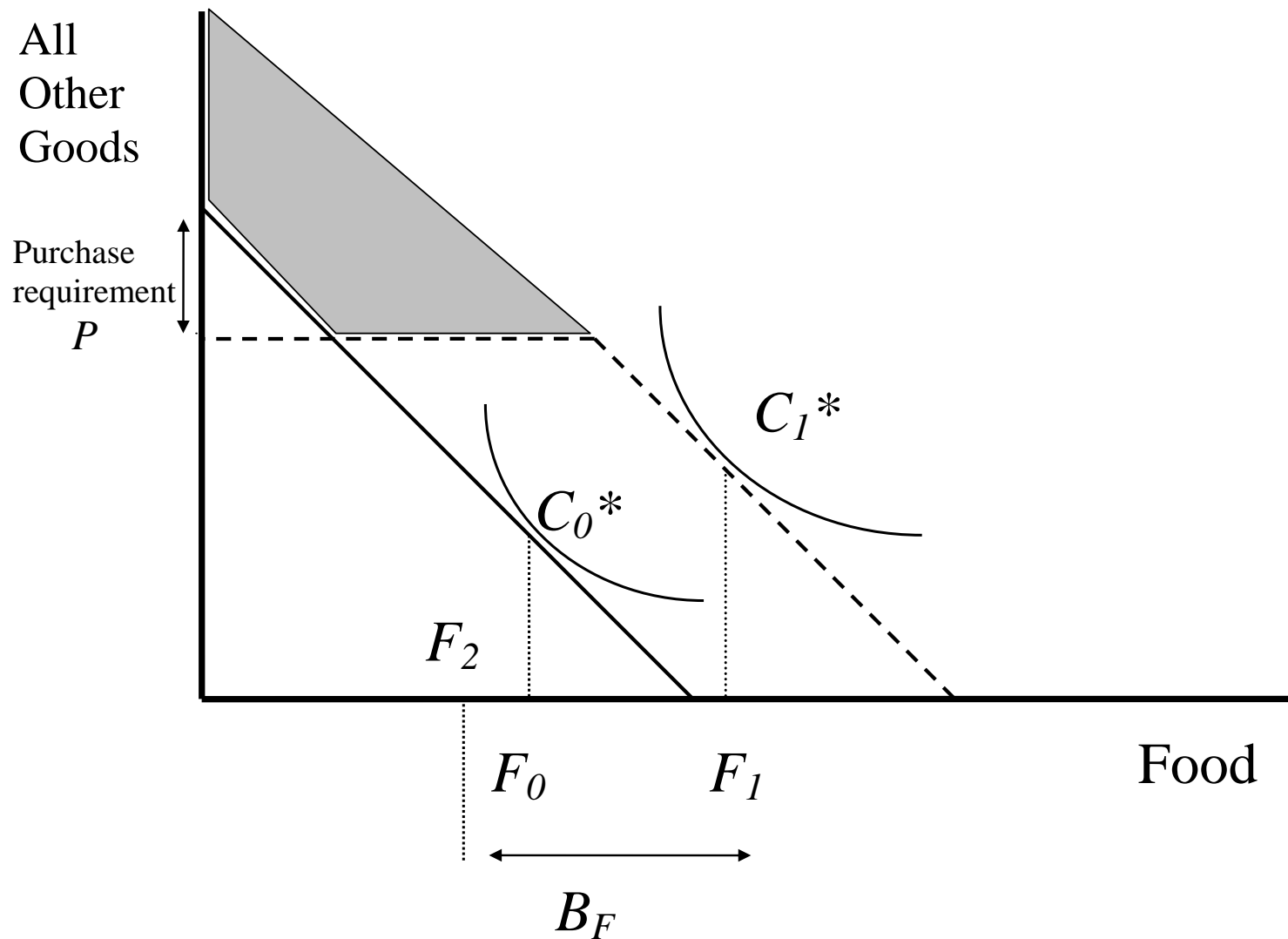
We will explore this in our empirical analysis by predicting households likely to be “constrained”

Support for food stamps as in-kind transfer (instead of cash) is partially derived from this prediction of a larger increase in food consumption. Only true for constrained families.

Figure 6: Incorporating purchase requirement



Prior to 1979 (and during our analysis period) families had to make a cash up-front payment to receive the food stamp benefits. This “purchase requirement” did not change the magnitude of the benefits a family received.



With the purchase requirement, more households may be constrained and therefore there may be larger overall impacts on food consumption.

Implications of the theory that are testable in the PSID

- Expected effects of food stamp introduction:
 - Out of pocket food spending: DECREASE
 - Total food spending (including value of FS): INCREASE
 - Larger increase for constrained households
 - Meals out: ambiguous effect (income effect +, substitution –)
 - [Unfortunately, the PSID does not allow us to test for the impact on nonfood expenditures]
- Equivalence of food stamps and cash income
 - If most households are inframarginal, then food stamps and cash should lead to same impact on food spending
 - We compare our estimates of the MPC_f out of food stamps and cash

Methodology

- Use variation across counties in difference-in-difference model:

$$y_{ict} = \alpha + \delta FSP_{ct} + X_{it}\beta + \gamma_1 Z_{c60} * t + \gamma_2 TP_{ct} + \eta_c + \delta_t + \lambda_s * t + \varepsilon_{ict}$$

- Observations are families i living in county c in time period t
- Identification comes from variation across counties over time in adoption of FSP (FSP_{ct})
- Fixed effects for, county, time and state*linear year (or state*year)
- We control for possible confounders:
 - 1960 county characteristics interacted with linear time (Z_{c60})
 - Per capita annual county expenditures on other government transfer programs (TP_{ct})
- All regressions are weighted using the PSID family weight; standard errors clustered on county

Table 2: Food Stamp Participation Rates (1976-78 PSID, all races)

| | <u>Education Group</u> | | | |
|-------------------------------|------------------------|--------------|------|--------------|
| | All | Less than HS | Grad | More than HS |
| <u>A. All Races</u> | | | | |
| All family types | 0.08 | 0.14 | 0.06 | 0.02 |
| Single with children | 0.32 | 0.46 | 0.23 | 0.15 |
| Married with children | 0.07 | 0.14 | 0.06 | 0.01 |
| Single, no children | 0.07 | 0.14 | 0.05 | 0.03 |
| Married, no children | 0.02 | 0.04 | 0.01 | 0.01 |
| Single, no children elderly | 0.07 | 0.10 | 0.03 | 0.01 |
| Married, no children elderly | 0.03 | 0.05 | 0.00 | 0.00 |
| Nonwhite single with children | 0.51 | 0.56 | 0.44 | 0.43 |

- Despite universal eligibility, the highest participation rates are for female headed households (highest for nonwhite female heads)
- Consequently, we also estimate models for subgroups: all female heads, nonwhite female heads

Exogeneity of FSP adoption

- County adoption was voluntary until mandated in 1975
- Political battle between farm interests (supporting CDP) and advocates for the poor (supporting FSP)
- If differences between counties affected the timing of FSP adoption AND if the trends in outcomes are correlated with this timing, then our identification is not valid

What we do:

1. Control for predictors of county FSP introduction (interacted with linear time trend)
2. Control for contemporaneous measures of county public transfer spending (on health, welfare, retirement and disability)

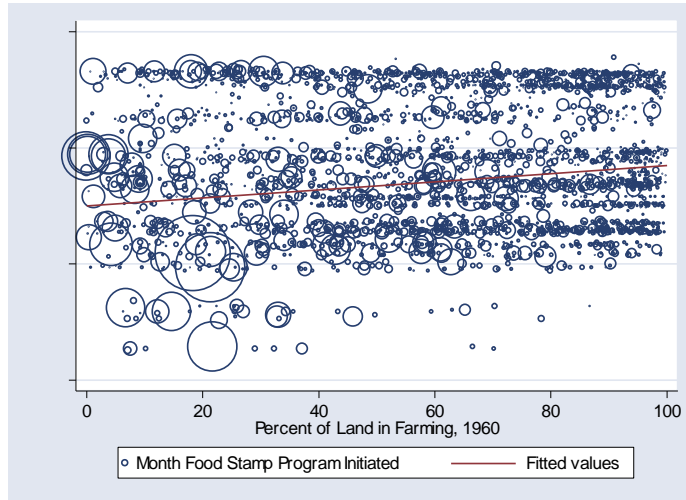
(Results are not changed substantively by these controls)

Concern 1: Endogenous policy adoption

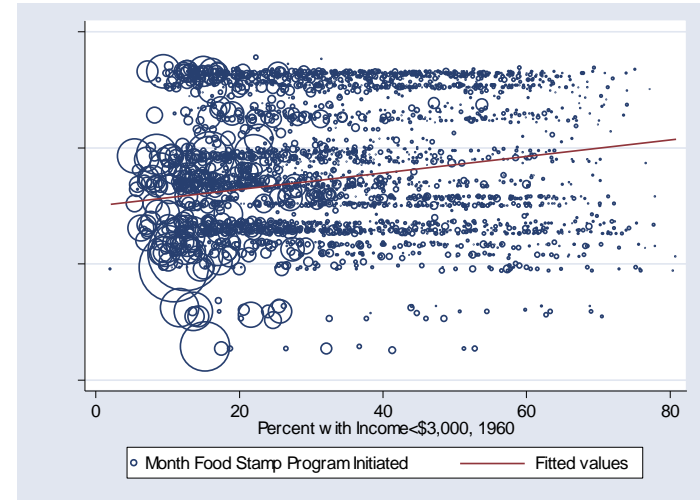
- Explore determinants for FSP adoption
- Regress a continuous measure of month of FSP start date (=1 in January 1961) on county pre-treatment variables (from 1960 City and County Data Book) and state fixed effects.
- We find (see Table 1) that consistent with political accounts, earlier county food stamp adoption occurs for counties with:
 - Larger % of population black, poor, urban
 - Larger population
 - Smaller % of land used in farming
 - Significantly smaller impacts for counties in the South

While this analysis shows statistically significant impacts of the county characteristics, overall most of the variation remains unexplained.

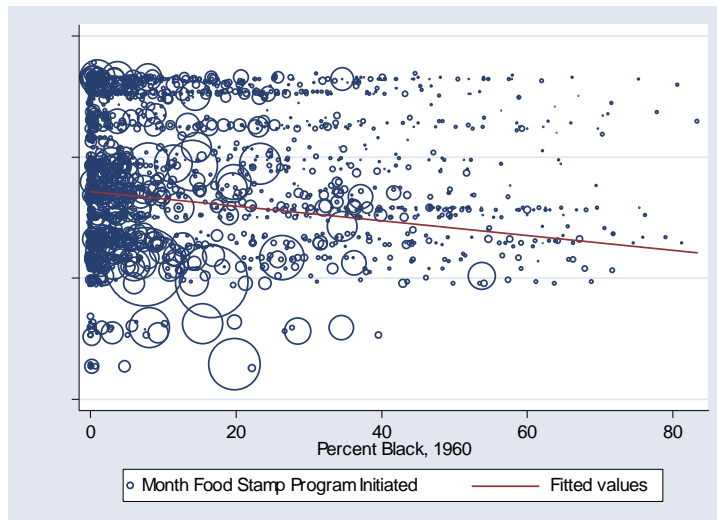
(a) % land in farming



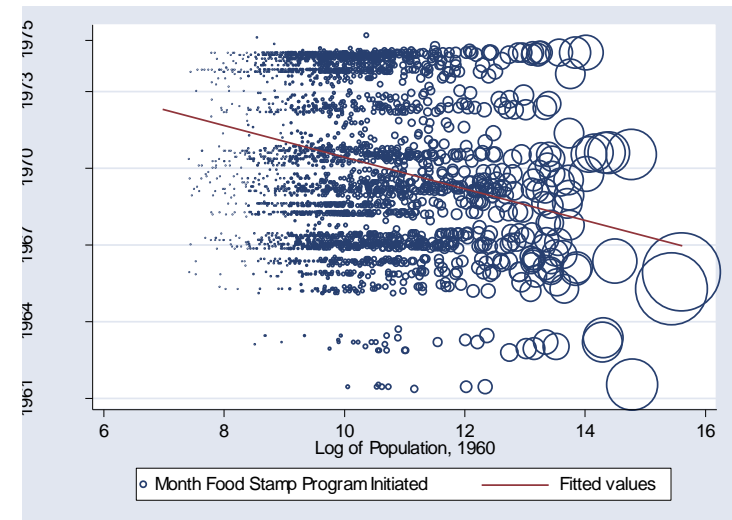
(b) % income < \$3,000



(c) % black



(d) log of population



“The program was quite in demand, as congressmen wanted to reap the good will and publicity that accompanied the opening of a new project. At this time there was always a long waiting list of counties that wanted to join the program. Only funding controlled the growth of the program as it expanded.”

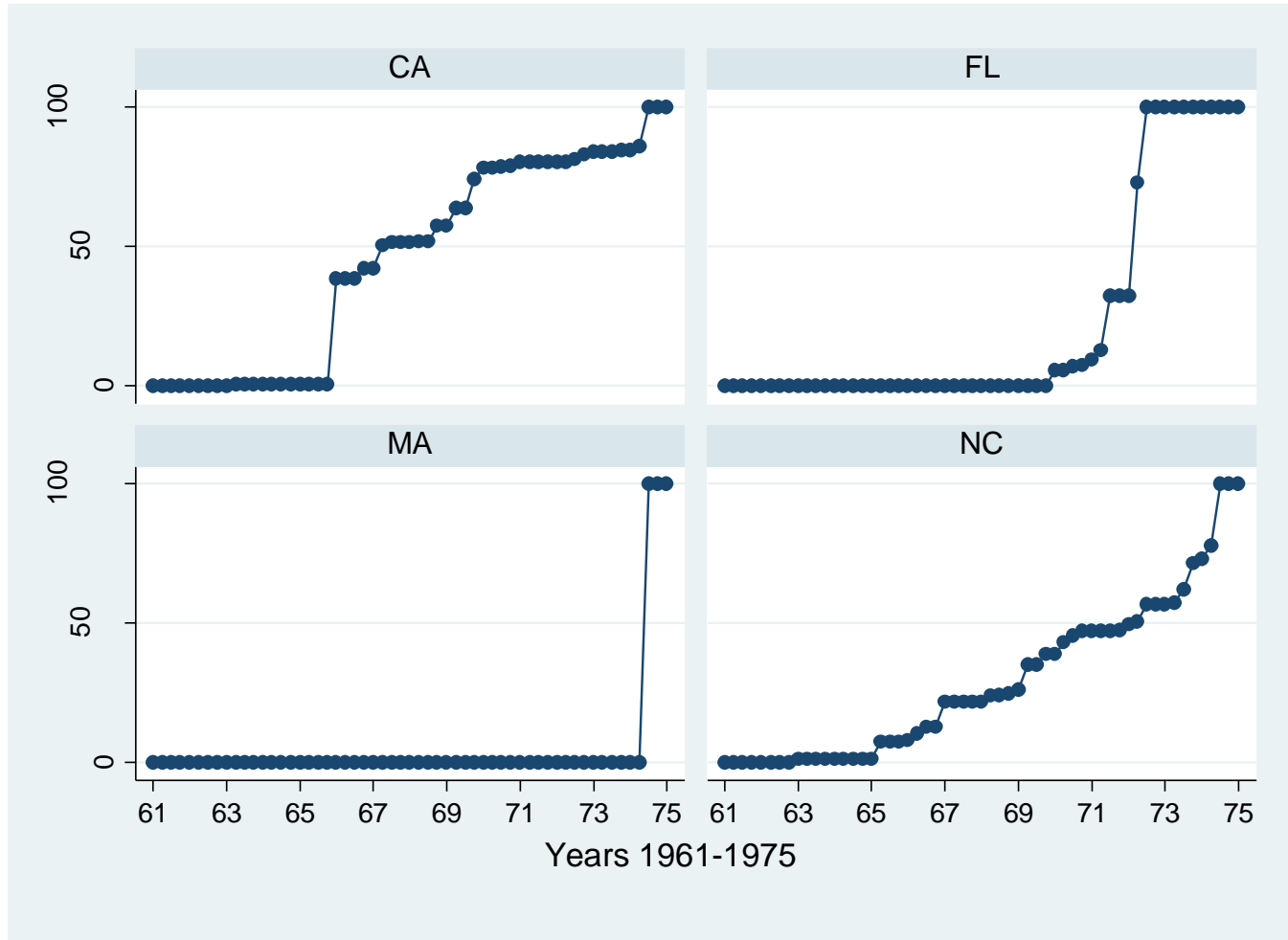
(Berry 1984, p. 36-37)

Nonetheless, we add controls for the interaction between these determinants of the FSP adoption and time to the main models to control for the possible (observed) predictors of adoption (as in Acemoglu, Autor and Lyle 2004).

Concern 2: Correlation with other program expansions during the great society period

- The expansion of the food stamp program took place during a period of expansion of government programs
- If the expansion in these programs is correlated with county FSP adoption, then our results may be biased
- Most likely the state/year fixed effects will absorb most of this variation
- We also include measures of annual per capita real government transfers at the county level (Source: BEA REIS data):
 - Welfare programs (AFDC, SSI, General Assistance)
 - Health programs (Medicare, Medicaid, Military programs)
 - Retirement and Disability programs

Is there sufficient across county variation within states?



Data and outcomes: PSID

- Panel data; we use 1968-1978
 - End in 1978 so that entire period is during purchase requirement
- Outcome variables—Food Expenditures
 - Log of (out of pocket expenditures for food at home)
 - Indicator for meals eaten out
 - Indicator for food stamp receipt
 - Log of (total food expenditures): includes food stamp benefits and meals eaten out
- We estimate weighted regressions; standard errors clustered on county
- Assign county level FSP availability (county codes available in PSID with access to *geocode* file)

Results for Food Expenditures using PSID

Table 3: Impact of FSP on Consumption in Diff-Diff model

| | All nonelderly households (1) | Nonelderly, Head Educ<=12 (2) | Female Heads (3) |
|--|-------------------------------------|-------------------------------------|------------------------------------|
| <u>A. Any Food Stamps (0/1)</u> | | | |
| County FSP Implemented | 0.035 (0.007)*** | 0.050 (0.009)*** | 0.194 (0.040)*** |
| <u>B. Log of Cash (non food stamp) Food Expenditures at Home</u> | | | |
| County FSP Implemented | -0.006 (0.016) <i>-0.081</i> | -0.008 (0.019) <i>-0.078</i> | 0.042 (0.055) <i>0.116</i> |
| <u>C. Any Meals Out (0/1)</u> | | | |
| County FSP Implemented | -0.005 (0.015) <i>-0.068</i> | -0.003 (0.019) <i>-0.029</i> | -0.055 (0.048) <i>-0.152</i> |
| <u>D. Log of Total (including food stamp) Food Expenditures</u> | | | |
| County FSP Implemented | 0.007 (0.013) <i>0.095</i> | 0.016 (0.016) <i>0.157</i> | 0.102 (0.042)** <i>0.282</i> |
| Demographics | X | X | X |
| 1960 Cty Vars * Linear Time | X | X | X |
| Year and County Fixed Effects | X | X | X |
| Per Capita Cty Transfers | X | X | X |
| State x Linear Time | X | X | X |
| Number of Observations | 39,623 | 30,905 | 6,002 |

Numbers in italics divide the treatment effect by the average FSP participation rate⁴⁷
This converts to impacts of treatment on treated.

Table 4: Placebo effects, Diff-Diff model

| | All high income households (1) | High Income Married w/Children (2) | White High Income Married w/Children (3) |
|--|--------------------------------------|--|--|
| <u>A. Any Food Stamps (0/1)</u> | | | |
| County FSP Implemented | 0.005 (0.003) | 0.004 (0.004) | 0.003 (0.003) |
| <u>B. Log of Cash (non food stamp) Food Expenditures at Home</u> | | | |
| County FSP Implemented | 0.006 (0.015) | -0.001 (0.019) | -0.036 (0.038) |
| <u>C. Any Meals Out (0/1)</u> | | | |
| County FSP Implemented | -0.029 (0.018) | -0.009 (0.021) | -0.017 (0.038) |
| <u>D. Log of Total (including food stamp) Food Expenditures</u> | | | |
| County FSP Implemented | -0.004 (0.015) | -0.021 (0.020) | -0.067 (0.038)* |
| Demographics | X | X | X |
| 1960 Cty Vars * Linear Time | X | X | X |
| Year and County Fixed Effects | X | X | X |
| Per Capita Cty Transfers | X | X | X |
| State x Linear Time | X | X | X |
| Number of Observations | 16,786 | 9,807 | 1,947 |

Event Study Models

- Trace out the years pre and post FSP introduction.

Allows for:

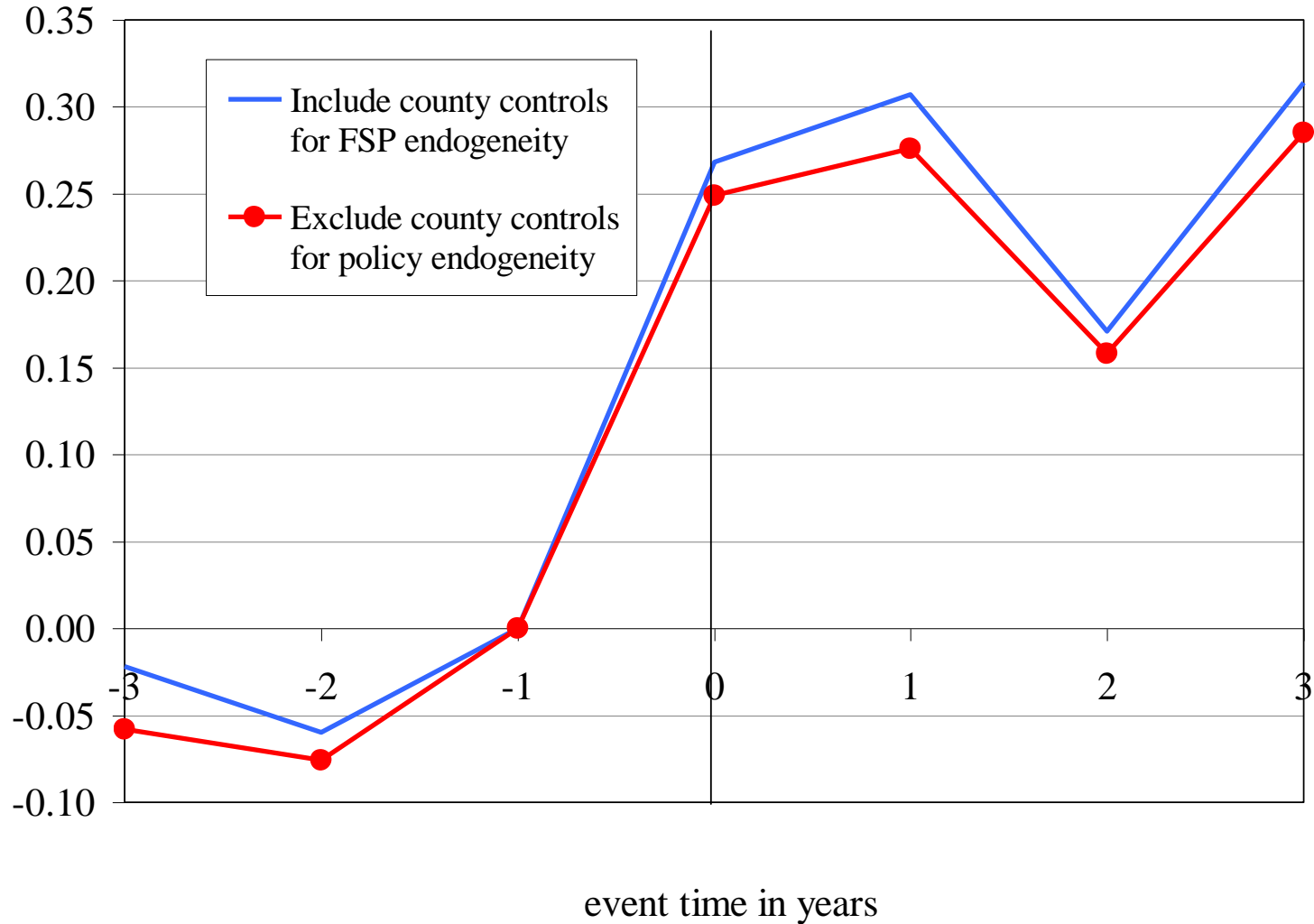
- Testing for differences in pre-trends
- Testing for changes in treatment effect with time since implementation

- Equation:

$$y_{ict} = \alpha + \sum_{j=-3}^3 \pi_j 1(\tau_{ct} = j) + X_{it} \beta + \gamma_1 Z_{c60} * t + \gamma_2 TP_{ct} + \eta_c + \delta_t + \lambda_s * t + \varepsilon_{ict}$$

- Control variables are the same as the main specification
- We do this for the subsample of female heads of household

Figure 7b: Event Study Estimates of Impact of FSP on Total Food Expenditures, Balanced Panel



Triple difference results

- In the prior estimates we face a tradeoff between sample size (using large sample with lower average FSP participation) and targeting (using the smaller FHH subsample)
- Here we pool all nonelderly families but use group probability of treatment to construct a triple difference specification:

$$y_{ict} = \alpha + \varphi FSP_{ct} + \delta FSP_{ct} P_g + X_{it} \beta + \gamma_1 Z_{c60} * t + \gamma_2 TP_{ct} + \theta_g + \eta_c + \delta_t + \lambda_s * t + \varepsilon_{ict}$$

- P_g is group specific FSP participation rate—16 groups defined by education, marital status, children, and race (as in Banerjee et al 2007, Bleakley 2007)
- Identification: no differential trends for high and low participation groups

Table 5: Impacts of FSP on Consumption (triple difference)

| | Nonelderly, Head Education <=12 | | | |
|--|---------------------------------|-------------------|-------------------|-------------------|
| | (1) | (2) | (3) | (4) |
| <u>A. Log of Cash (non food stamp) Food Expenditures at Home</u> | | | | |
| County FSP Implemented x Pg | -0.043 (0.105) | -0.073 (0.108) | -0.081 (0.101) | -0.114 (0.115) |
| <u>B. Any Meals Out (0/1)</u> | | | | |
| County FSP Implemented X Pg | 0.101 (0.101) | 0.109 (0.099) | 0.079 (0.101) | 0.084 (0.099) |
| <u>C. Log of Total (including food stamp) Food Expenditures</u> | | | | |
| County FSP Implemented X Pg | 0.208 (0.096)** | 0.187 (0.101)* | 0.169 (0.090)* | 0.143 (0.097) |
| Demographics | X | X | X | X |
| 1960 Cty Vars * Linear Time | X | X | X | X |
| Per Capita Cty Transfers | X | X | X | X |
| Log(Real Family Income) | | | X | X |
| Year, Group, and county Fixed Effects | X | X | X | X |
| State x Linear Time | X | X | X | X |
| Pg x Other Covariates (except area fixed effects) | | X | | X |
| Number of Observations | 30,905 | 30,905 | 30,905 | 30,905 |

Estimates are scaled, and represent the impact of the treatment on the treated. Although not shown here, coef on main effect for FSP is 0 (represents treatment effect for group with participation rate of 0).

Interpretation

- Remember the treatment dummy is interacted with a group specific FSP participation rate.
- Therefore, the results are interpretable as the impact on the average “treated” family—one that takes up the program when it is offered in the county.
- Interestingly, the estimates are similar to but more precisely estimated than the diff-diff estimates
- Overall, results are consistent with predictions of theory but not always statistically significantly so. Strong robust finding of increase in total food expenditures.

Equivalence of cash and food stamps

- An additional test of the theory is that if households are mostly inframarginal, then an additional dollar of cash income and an additional dollar of food stamp income should lead to the same increase in food expenditures.
- We use the model estimates to calculate implied marginal propensity to consume food (MPC_f) out of food stamps and cash income
- These estimates may shed light on the puzzling finding in the non-experimental literature that that the MPC_f out of food stamps $\gg MPC_f$ out of cash income
- Note, we are cautious in interpreting these findings because our experiment does not create a *marginal* change in food stamps. Further, we do not have an instrument (or quasi-experiment) to identify the impacts of income on food spending.

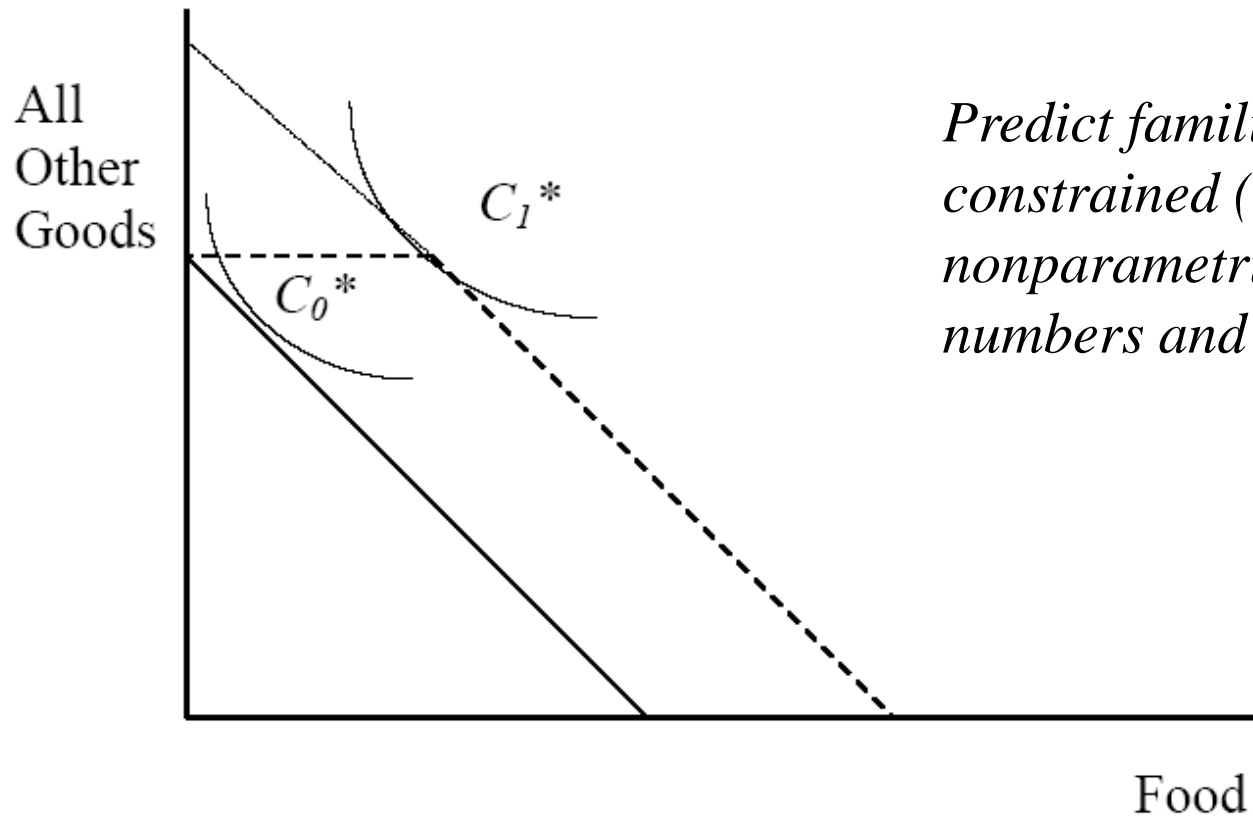
Table 6: Marginal Propensity to Consume Food, Cash vs Inkind

| | Nonelderly, head≤12 yrs of ed | | Female headed households | |
|--|-------------------------------|------------------------|--------------------------|-----------------------|
| | Table 5 | Table 5 | Table 3 | |
| | Column (1) | Column (3) | Column (3) | |
| <u>Parameter Estimates</u> | | | | |
| County FSP Implemented | 0.208 (0.096)** | 0.169 (0.090)* | 0.102 (0.042)** | 0.095 (0.042)** |
| | | | 0.282 | 0.262 |
| Log of real family income | -- | 0.290 (0.009)*** | -- | 0.289 (0.019)*** |
| | | | | 0.798 |
| <u>Estimated Marginal Propensity to Consume Food</u> | | | | |
| MPC _f out of Food Stamps | 0.200 [0.02, 0.38] | 0.163 [-0.01, 0.33] | 0.318 [0.05, 0.58] | 0.296 [0.04, 0.55] |
| MPC _f out of Cash Income | -- | 0.087 [0.08, 0.09] | -- | 0.098 [0.08, 0.11] |
| Ratio of MPCs | -- | 1.9 [-0.11, 3.83] | -- | 3.0 [0.33, 5.71] |
| Observations | 30,905 | 30,905 | 6,002 | 6,002 |

- In contrast to the prior literature, our quasi-experimental evidence suggests that the MPC_f out of food stamps is quite similar in magnitude to the MPC_f out of cash income
- Nonetheless, some differences remain. Why might the MPC_f out of food stamps exceed the MPC_f out of income?
 - FSP more permanent source of income compared to earnings (?)
 - mental accounting; FS benefits provides a marker for food expenditures
 - intrahousehold bargaining; who has control over food stamps compared to cash income (Lundberg and Pollak 1993)
 - constrained

Consumption among families predicted to be “constrained”

- Constrained households should experience larger increases in food consumption than inframarginal households.
- We predict constrained status (because observed constrained status is endogenous and only measureable for food stamp recipients)
 - Predict food expenditures in auxiliary regression; rich nonparametric controls for numbers and ages of family members, cubic in income, state and year fixed effects
 - Compare predicted food expenditures to food stamps that the family is eligible for (given income and family size)
 - Interact the treatment effect with constrained dummy
- Results show that total food consumption increases by 21-22 percent for (those predicted to be) constrained compared to 15 for inframarginal.
- Consistent with predictions of the theory. Confirms the experimental results in Schanzenbach (2007)



Predict families likely to be constrained (using nonparametric regression with numbers and ages of children)

Table 7: Impact of FSP on Food consumption, adding interaction for families predicted to be constrained

| | Nonelderly, Head Education <=12 | | |
|------------------------------------|---------------------------------|-------------------|-------------------|
| | (1) | (2) | (2) |
| FSP Treatment | 0.180 (0.093)* | 0.151 (0.077)* | 0.148 (0.077)* |
| FSP Treatment x PREDCONSTR | | 0.059 (0.059) | 0.073 (0.058) |
| Demographics | X | X | X |
| 1960 Cty Vars * Linear Time | X | X | X |
| Per Capita Cty Transfers | X | X | X |
| Group Fixed Effects | X | X | X |
| Year Fixed Effects (main and x Pg) | X | X | X |
| Year Fixed Effects x constrained | | | X |
| County Fixed Effects | X | X | X |
| State x Linear Time | X | X | X |

Specification tests

- Robust to using
 - state by year fixed effects (Table 8),
 - different sample selection (appendix),
 - different functional forms for the consumption function (Table 8)
- One concern is whether FSP introduction is correlated with expansion of other transfer programs. The results show no significant impact of the FSP on other sources of income support—AFDC, other welfare income, social security (appendix)

Work disincentive effects of the FSP

- We used same design to look at impacts on various measures of labor supply
- FSP has structure of traditional income support program
 - Guaranteed benefit at 0 income
 - Benefit reduced as income/earnings/hours increase
- Usual prediction: work disincentive of combined benefit and tax rate.
- This is important because a fall in income may offset the positive impacts of the program

Results for work disincentive effects of FSP

- Outcomes: head's hours, employment and earnings; family income
- Across outcomes and samples, all point estimates are consistent with the expected work disincentives; however few are statistically significant.
- Results suggest that the FSP leads to a 12-16% reduction in annual hours
- These overall modest estimated work disincentive effects are consistent with the relatively low benefit reduction rate in food stamps (30%).
- Simulations using elasticities from the negative income tax experiments show similar magnitude results to the ones estimated here.

Conclusion

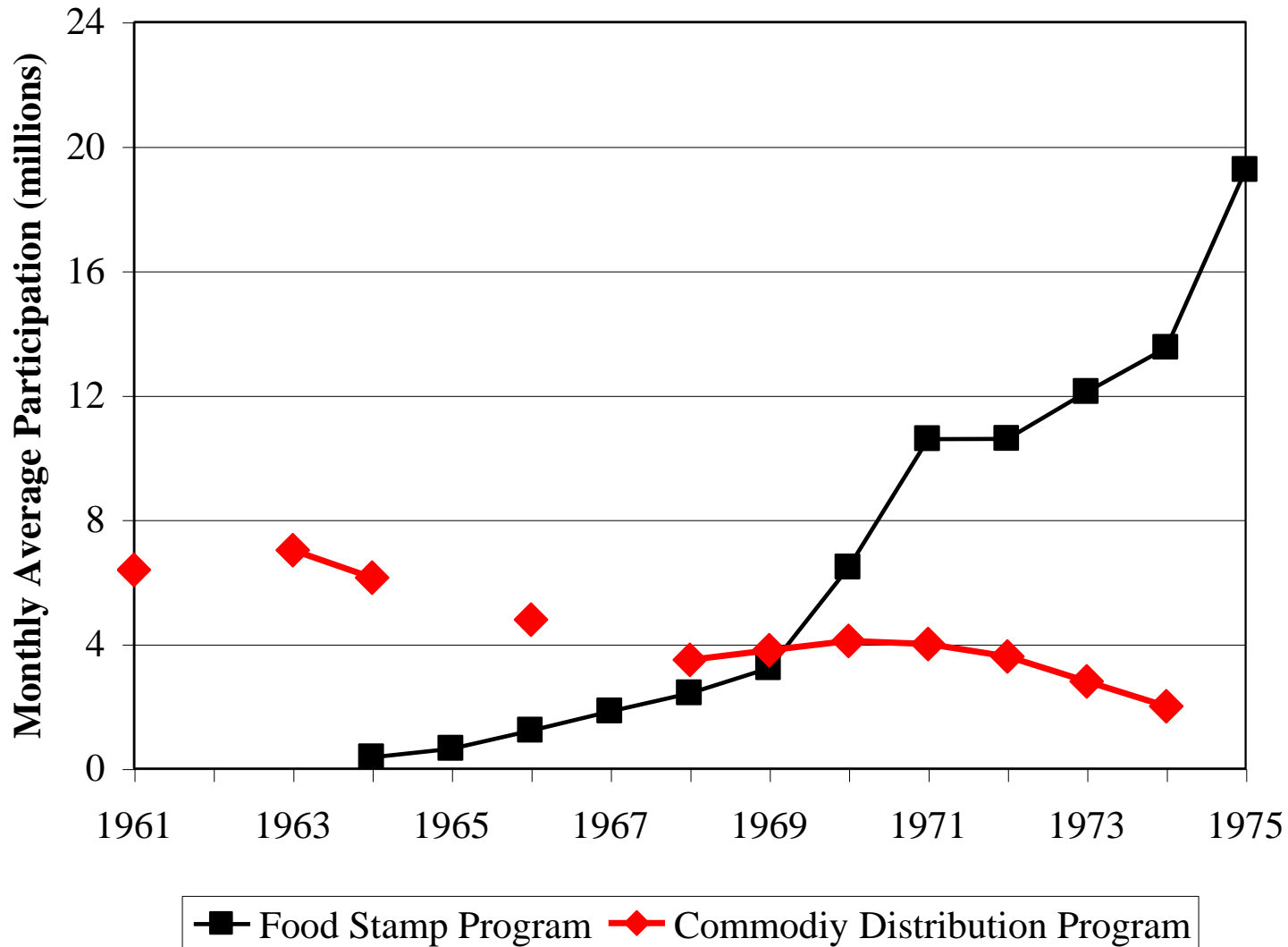
- The paper presents evidence using a new research design, evaluating the impact of the food stamp program on food consumption (and labor supply)
- Perhaps more importantly, we test the theory of in-kind transfers (an area that has had little empirical work) and find that people behave as theory predicts:
 - FSP introduction leads to a decrease in out of pocket spending, an increase in overall food expenditures and a decrease in the propensity to eat out
 - The results are precisely estimated for total food spending, with less precision in the other outcomes
 - The implied *MPC* food out of food stamps is close to the *MPC* food out of cash income → implying little distortion with providing aid in voucher form (relative to cash)

What we are doing now

- This paper establishes that FSP is an important “income support” program; and that its introduction leads to an exogenous increase in family income (income effect of program introduction)
- We are using the same research design to examine the impact of the FSP on infant health, using rich county-level vital statistics on birth outcomes and infant mortality
 - We find that FSP leads to increases in birthweight and decreases in low birthweight births
 - We find no evidence that the FSP leads to improvements in infant mortality
- We are also just starting a project that links childhood exposure to FSP to adult health outcomes (e.g. obesity, BMI, disability). The introduction of the FSP leads to exogenous variation in early life exposure.

SUPPLEMENTAL SLIDES – Tables and figures

Participation in CDP and FSP, 1961-1975



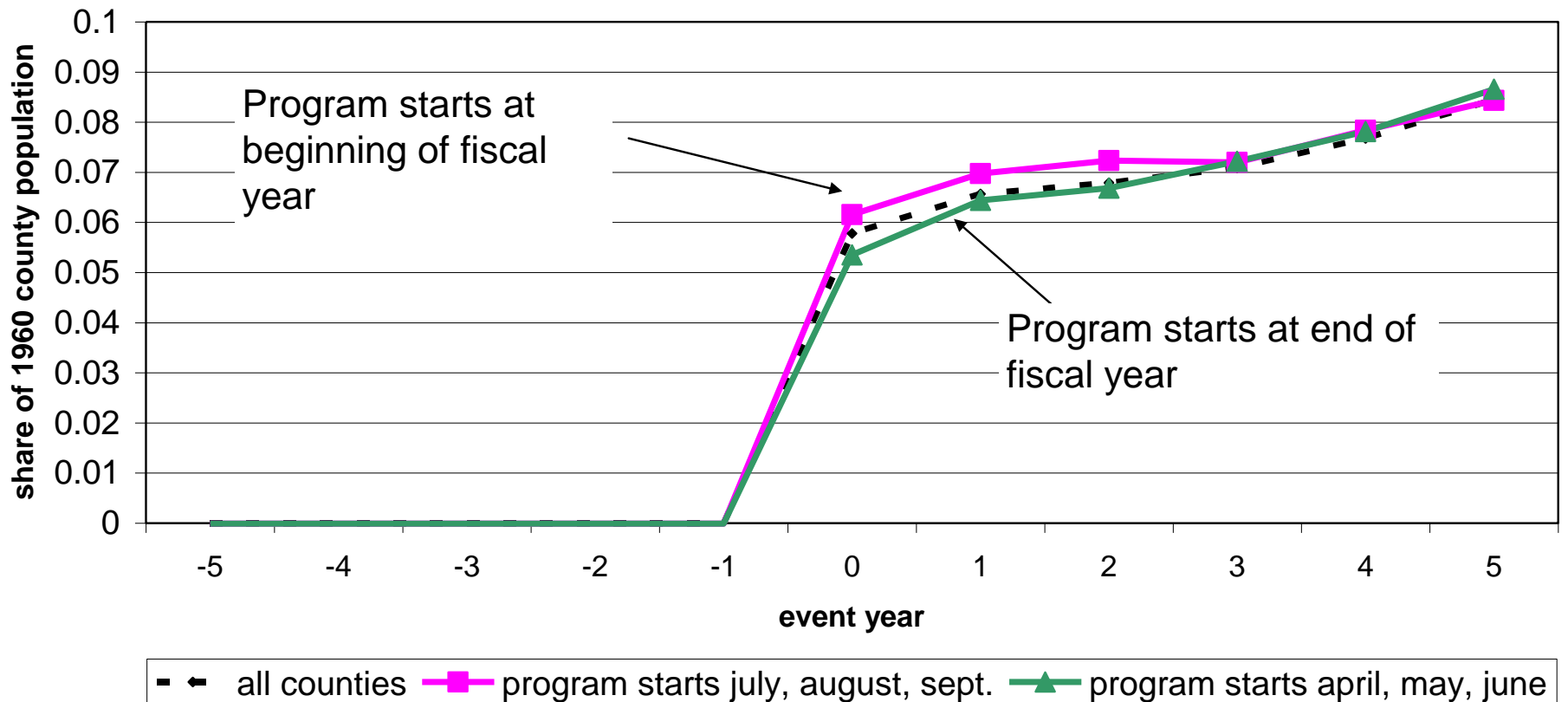
Source: Berry 1984, MacDonald 1977

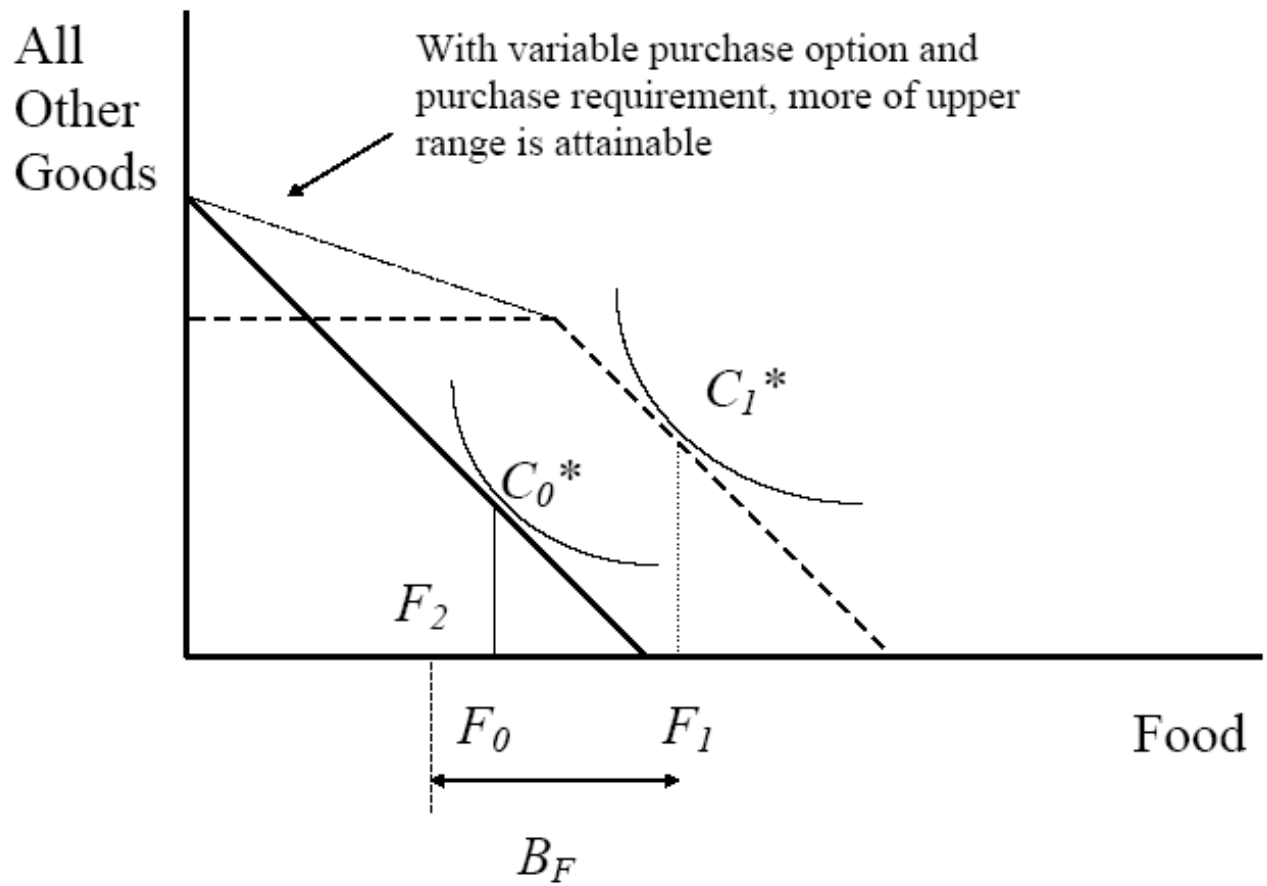
Descriptive statistics exploring likelihood of being constrained

| | <u>All Nonelderly Singles and Families</u> | | <u>Female Headed Households</u> | |
|---------------------------------------|--|-----------------------|---------------------------------|-----------------------|
| | All | Food Stamp Recipients | All | Food Stamp Recipients |
| (1) Out of pocket food at home, real | \$6,737 | \$4,855 | \$5,902 | \$4,407 |
| (2) Meals out, real | \$1,317 | \$451 | \$634 | \$323 |
| (3) Food stamps, real | \$125 | \$1,899 | \$660 | \$2,225 |
| Total food spending, real (1)+(2)+(3) | \$8,179 | \$7,205 | \$7,197 | \$6,955 |
| Food at home ,real (1)+(3) | \$6,862 | \$6,755 | \$6,562 | \$6,632 |
| All food / Income | 0.179 | 0.392 | 0.312 | 0.446 |
| Food at home / Income | 0.171 | 0.257 | 0.259 | 0.269 |
| Family Income (real) | \$59,645 | \$24,601 | \$32,625 | \$20,554 |
| Any food stamps | 0.067 | 1.000 | 0.297 | 1.000 |
| Food stamps / All food | - | 0.323 | - | 0.385 |
| Food stamps / Food at home | | | | |
| Mean | - | 0.346 | - | 0.407 |
| % 0-0.25 | - | 0.485 | - | 0.369 |
| % 0.25-0.50 | - | 0.275 | - | 0.318 |
| % 0.50-0.75 | - | 0.119 | - | 0.164 |
| % 0.75-0.99 | - | 0.048 | - | 0.064 |
| >=0.99 | - | 0.072 | - | 0.085 |
| Number of Observations | 39,623 | 5,188 | 6,002 | 5,188 |

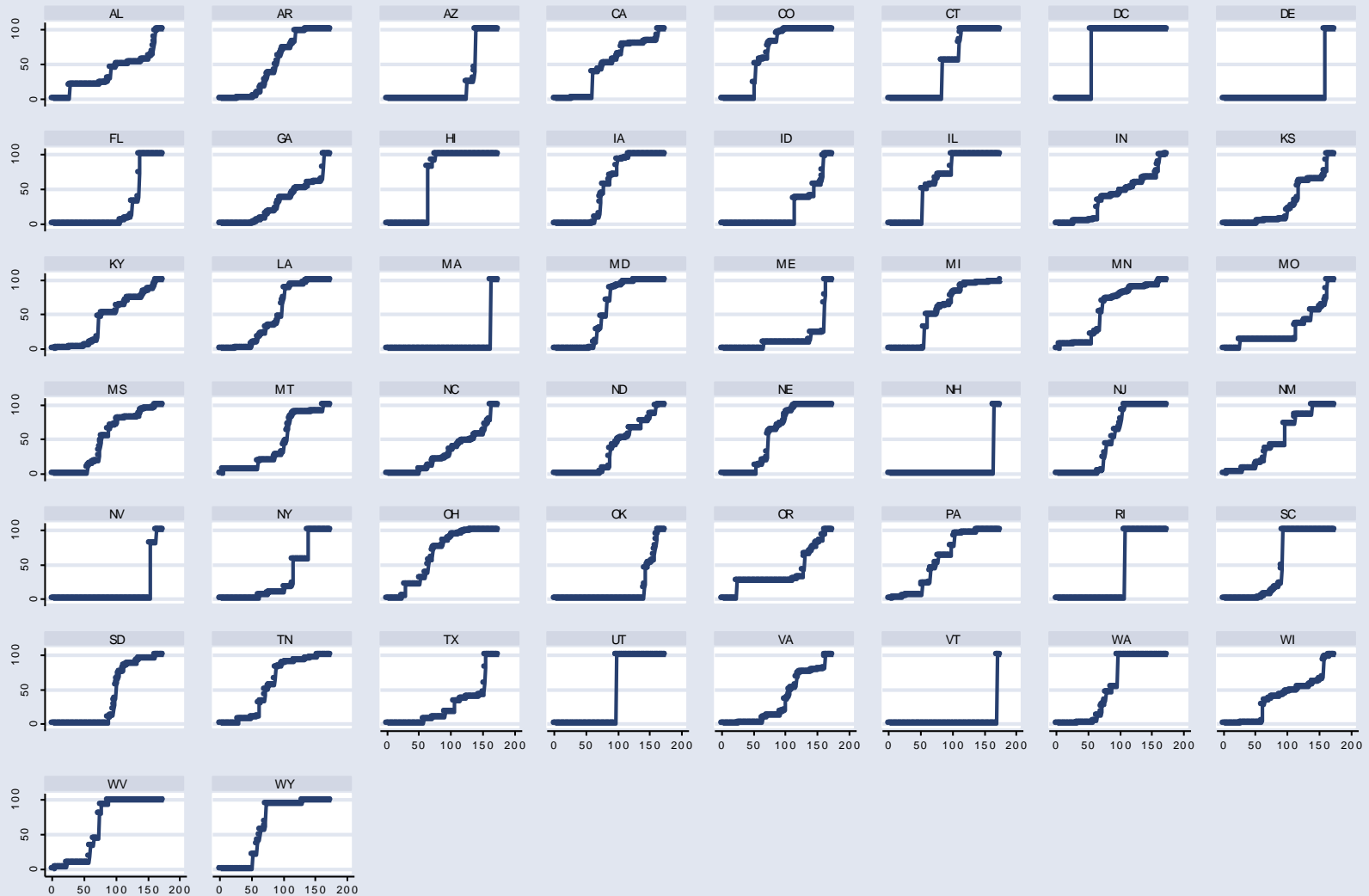
How quickly do FS Programs ramp up?

Share of 1960 County Population on Food Stamps by Number of Years from Program Start





Is there sufficient across county variation within states?



Years 1961-1975

Graphs by State

SUPPLEMENTAL SLIDES – Labor supply results

Impact of FSP introduction on labor supply and income (Table 11)

| | Head any work now (0/1) | Head annual hours | Head annual earnings (2005\$) | Log Family income (2005\$) |
|--|-------------------------------|----------------------|-------------------------------------|----------------------------------|
| <u>All Nonelderly Singles and Families</u> | | | | |
| County FSP Implemented X | -0.179 | -229 | -4716 | 0.017 |
| Group participation rate | (0.074)* | (156) | (4848) | (0.092) |
| Number of Observations | 48,168 | 48,168 | 48,168 | 48,168 |
| Mean of dependent variable | 0.86 | 1,947 | \$41,742 | 10.76 |
| <u>All Female Headed Families</u> | | | | |
| County FSP Implemented | -0.066 | -165.1 | -842 | -0.055 |
| | (0.043) | (69.3)** | (1001) | (0.040) |
| | -0.182 | -456 | -2326 | -0.152 |
| Number of Observations | 7,281 | 7,281 | 7,281 | 7,281 |
| Mean of dependent variable | 0.58 | 1,068 | \$14,187 | 10.19 |
| <u>Nonwhite Female Headed Families</u> | | | | |
| County FSP Implemented | -0.018 | -136 | -590 | -0.023 |
| | (0.052) | (71.2)* | (946) | (0.052) |
| | -0.033 | -249 | -1083 | -0.042 |
| Number of Observations | 5,465 | 5,465 | 5,465 | 5,465 |
| Mean of dependent variable | 0.48 | 863 | \$10,008 | 9.94 |

All models include controls for: demographics, year and county fixed effects, 1960 County variables * linear trend, REIS county per capita transfer income, and state * linear time trends..

- Across outcomes and samples, all point estimates are consistent with the expected work disincentives; however few are statistically significant.
- Results suggest that the FSP leads to a 12-16% reduction in annual hours
- These overall modest estimated work disincentive effects are consistent with the relatively low benefit reduction rate in food stamps (30%).
- Simulations using elasticities from the negative income tax experiments show similar magnitude results to the ones estimated here.

Work disincentive effects using 60/70/80 Census (Table 12)

- Census data: STF file provides county average for select outcomes. Advantage is longer time frame for analysis. Disadvantage is that data is not available by education or income level.

| | Labor Force Participation Rate | | | |
|------------------------|--------------------------------|----------------------|----------------------------|--------------------------------------|
| | Females 16 and over | Males 16 and over | Females with children<6 | Family Income < \$10,000 (1979\$) |
| <u>All Races</u> | | | | |
| County FSP Implemented | -0.002 (0.001) | -0.003 (0.001)** | 0.004 (0.008) | 0.009 (0.002)*** |
| Number of Observations | 7,898 | 7,898 | 7,898 | 7,898 |
| Mean of dep variable | 0.396 | 0.762 | 0.337 | 0.238 |
| <u>B. Nonwhites</u> | | | | |
| County FSP Implemented | 0.002 (0.004) | -0.004 (0.003) | n/a | 0.027 (0.006)*** |
| Number of Observations | 7,443 | 7,321 | | 7,093 |
| Mean of dep variable | 0.457 | 0.703 | | 0.455 |

Models also control for county fixed effects, decade fixed effects, 1960 county characteristics interacted with decade dummies, and county per capita transfers.

Sample selection

- Drop 1968 because of changes in variable definitions; drop 1973 because food questions were not fielded
- Drop elderly-headed families due to much lower participation rates (Currie 2003, Haider et al 2003)
- Drop observations from Alaska (missing data on FSP implementation) and observations with unusual expenditure data (annual total food expenditures less than \$100, annual family income less than \$500, or income share on food greater than 0.85)
- Samples:
 - All families/singles [39,623 person-year observations]
 - Female heads of household with children [6,002 person-year observations]
 - Nonwhite female heads of household with children [4,501 person-year observations]
- Demographic controls: education, race, urban location, dummy variables for number of children and number of adults (nonparametric controls for food needs)