The Take-Up of Means-Tested Social Benefits: Evidence From a French In-Work Benefit

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Motivation

- **Significant fraction of eligible families do not receive the social benefits they are eligible to**
    - US: 78% to the EITC (IRS, 2021)
    - UK: 67% to the WTC (HM Revenue and Customs, 2019)
    - FR: 66% to the RSA (DREES, 2022)
    - DE: 44% to the Arbeitslosengeld II (Harnisch, 2019)

- **Major policy concern but complex problem to tackle**
    - $\rightarrow$ Hard to measure
    - $\rightarrow$ Hard to explain
    - $\rightarrow$ Non-trivial welfare implications

1. What types of policy interventions can increase take-up?

2. And what are the welfare implications of such interventions?

(1) **Magnitude:** Provide new estimates of non take-up rates
  - Focusing on one of the main social benefit in France
  - Using the universe of tax and social administrative data

(2) **Mechanisms**: Identify what causes non take-up and how to reduce it
  - Using a recent social reform as a quasi-experimental set-up

(3) **Welfare Implications**: Study the effects of policies increasing take-up

Related Literature

- **Large literature documenting non take-up** (Currie, 2004)
    - "*What we term incomplete take-up [...] is the rule rather than the exception*" (Ko and Moffit, 2022)
    - Take-up rates estimates sensitive to measurement error (Bruckmeier, Riphahn and Wiemers, 2021)

- **Mixed evidence about policy interventions effectiveness**
    - Information provision, simplification, reduction of compliance costs (Bhargava and Manoli, 2015; Linos et al., 2020, Homonoff et al., 2022)
    - Mostly based on RCTs on specific subpopulation

- **Increasing take-up has non-trivial welfare implications**
    - Whether imperfect take-up is part of a second-best optimum depends on who does not take-up and why (Nichols and Zeckhauser, 1982; Kleven and Kopczuk, 2011; Finkelstein and Nottowidigdo, 2019)

Outline

The *Prime d'activité* Benefit (PPA)

- **Monthly means-tested cash transfer**
  - In-work benefit targeting low-wage workers
  - One of the largest programs in France ($\sim 10\%$ of the population)

- **Eligibility**
  - Assessed at the family level
  - Based on family total resources but also individual labor earnings

- **Administration**
  - Fully online self-declarative application (~ 15mn)
  - Re-certification every 3 months

- **Why focusing on this program?**
  - Take-up rate estimated only once (73% in 2016)
  - Recent large reform of the schedule never studied yet

Budget Constraint   Formula

The 2019 Reform
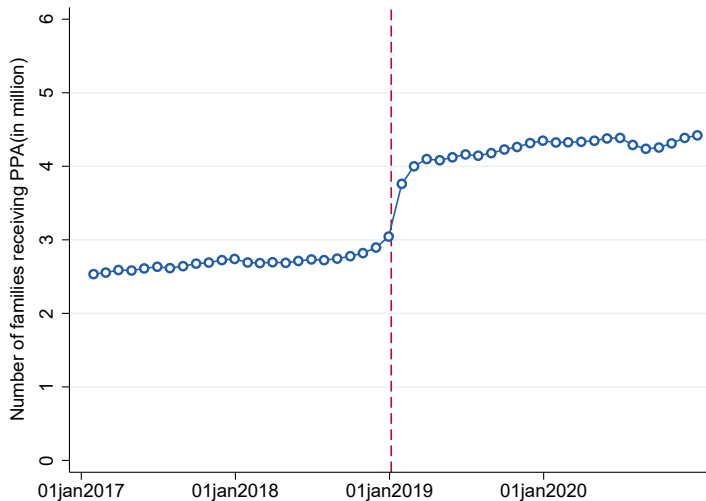
① Large increase in the benefit (by up to +60%)
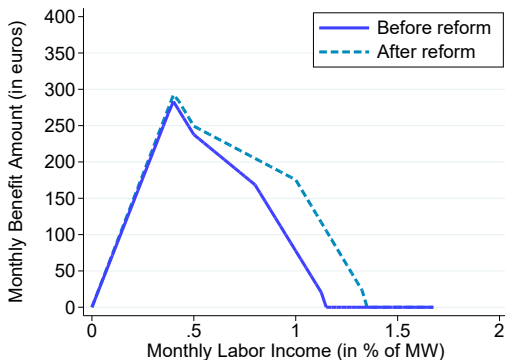
② Could also have acted as a salience/information shock due to the large media coverage `TV & Google Trends` `Facebook Groups`

The 2019 Reform

Outline

Definition of Take-up

- Take-up occurs when a household is eligible to a positive benefit amount ($\tilde{B}$) and receives a positive actual benefit (B)

- Take-up by household i at time t is denoted by p_{it}

	$B_{it} = 0$	$B_{it} > 0$
$\tilde{B}_{it} = 0$	$p_{it} = .$	$p_{it} = .$
	(not relevant)	(fraud/β-error)
$\tilde{B}_{it} > 0$	$p_{it} = 0$	$p_{it} = 1$
	(non take-up)	(take-up)

- The take-up rate is $\mathbb{E}\left[B > 0 | \tilde{B} > 0\right]$

Measuring Take-up

- **Main empirical challenge: measurement error**
  - Misreporting of B in survey data
  - Eligibility $\tilde{B}$ unobserved and need to be simulated

- **This project: Builds a novel dataset to measure take-up**
  - By linking three exhaustive administrative sources
    - Tax return data
    - Social records data
    - Payroll tax data
  - No common identifier but identifying characteristics
    - E.g. zipcode, birth year, family composition, income, annual benefit amount..
  - $\hookrightarrow$ Data linkage will introduce some measurement error

Data Sources

- **Main data source: the tax data (FIDELI)**
  - Exhaustive admin data on all French households
  - Variables: incomes and benefits received, household composition...
  - Main limitation: yearly data

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  - $\hookrightarrow$ Match FIDELI with the social records data (ALLSTAT)
  - Exact matching on characteristics when possible
  - Nearest neighbor otherwise
    Matching Results

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- **To impute the monthly wages** (needed to simulate eligibility $\tilde{B}$)
  - $\hookrightarrow$ Match FIDELI with the payroll tax data (DADS-BNS)
 - Nearest neighbor matching
    Matching Results

- **Estimated take-up rate: 51%** in 2018

Take-Up Estimation

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- **Main caveats**
  - Significant β-error rate
  - Missing data due to unmatched households
  - $\Rightarrow$ Current preliminary estimate likely biased by measurement error

- **Future work to improve take-up measures**
  - (1) Refine matching procedure to achieve higher rates of exact matching
 - (2) Use probabilistic methods to estimate the uncertainty generated by the data matching

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  - (1) Refine matching procedure to achieve higher rates of exact matching
  - (2) Use probabilistic methods to estimate the uncertainty generated by the data matching

- Importantly, measurement error less likely to bias the trend in the take-up rate

Outline

Evolution of beneficiaries in sample
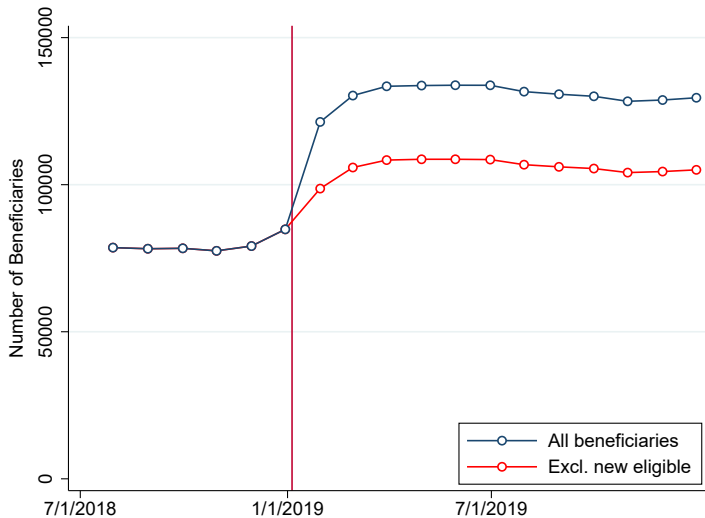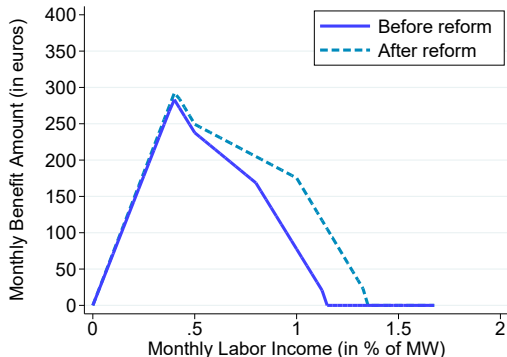
Evolution of the take-up rate
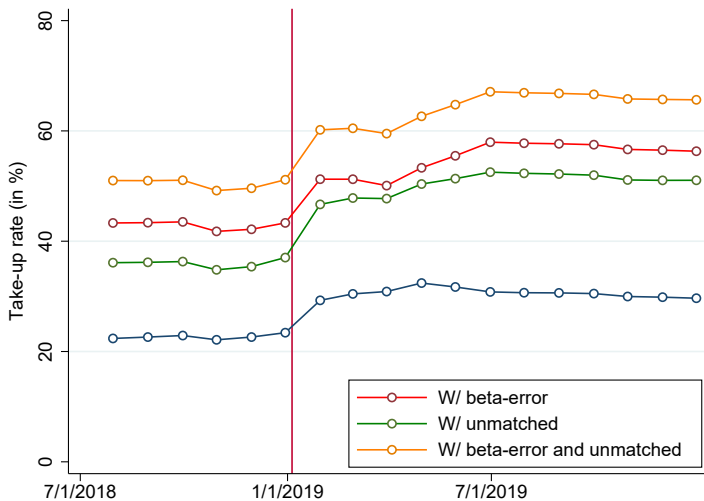
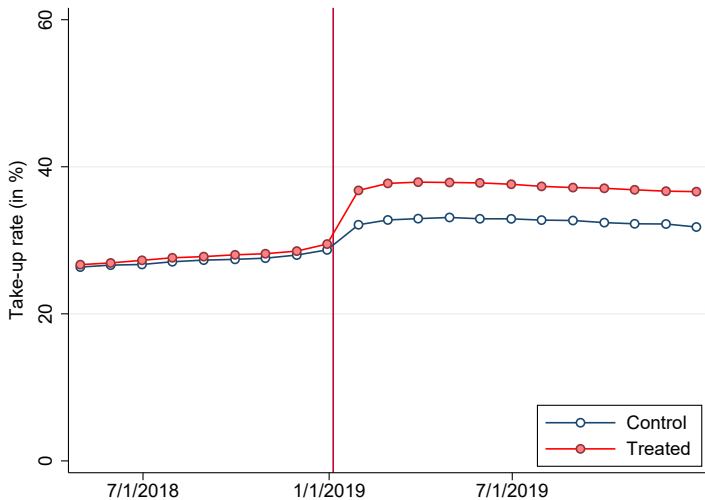# Did people react to the benefit increase?

- **Diff-in-diff strategy** Identifying assumptions
  - Treated = those experiencing a benefit increase
  - Control = those not experiencing a benefit increase
  - In the sample of households always eligible over the period

Did people react to the benefit increase?

Outline

Conclusion

- **In this project, I attempt to measure and explain take-up behaviors with respect to a social benefit in France**
    - By linking several administrative data sources together
    - And by exploiting a recent benefit increase reform

- **I estimate a take-up rate of about 50% in 2018**
    - More work to be done on the data linkage procedure to deal with measurement error bias

- **I document a take-up increase following the reform**
    - Take-up rate increased by 10 p.p.t
    - Larger response for those experiencing a benefit increase
    - But small increase among those not affected by it
    - Suggests a role for both costs and information as take-up mechanisms

Appendix

Legislation

The formula for the PPA benefit for a given month m is

$$PPA_m = \underbrace{MF_m}_{\text{Base amount}} + \underbrace{\tau_m W_m - \max\left(MF_m, R_m\right)}_{\text{Evaluated resources}} + \underbrace{\sum_i B\left(\overline{W}_{i,m}\right)}_{\text{Individual Bonuses}}$$

- $MF_m = MB_m(1 + \delta_m)$, where δ_m is a factor varying with the family composition and MB_m is the baseline amount for a single adult
- τ_m is the rate at which labor earnings can be cumulated with the benefit
- W_m the labor income of the household, $W_{i,m}$ the individual's labor income
- R_m is the total resources of the household
- $B(\bar{W}_{i,m})$ is the individual bonus of individual i

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	Base Amount (MB) in euros	Phase-in rate (τ)	Max. amount of indiv. bonus (τ_b) in % of MW	Income floor for indiv. bonus (s_{min}) in % of hourly MW	Income ceiling for indiv. bonus (s_{max}) in % of hourly MW
01/2016 - 04/2016	524.16	0.62	0, 12782	59	95
04/2016 - 04/2017	524.68	0.62	0, 12782	59	95
04/2017 - 04/2018	526.25	0.62	0, 12782	59	95
04/2018 - 08/2018	531.51	0.62	0, 12782	59	95
08/2018 - 01/2019	551.51	0.61	0, 12782	59	95
01/2019 - 04/2020	551.51	0.61	0, 29101	59	120
04/2020 - 04/2021	553.16	0.61	0, 29101	59	120
04/2021 - 09/2021	553.71	0.61	0, 29101	59	120

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# Media Coverage and Salience of the Reform

- Reform announced by President Macron on live national TV speech
  - 23 millions of viewers on television (33% of total population)
  - Higher than for France-Croatia finale in 2018 (20.9 millions)

- Large surge in the number of Google search associated with PPA
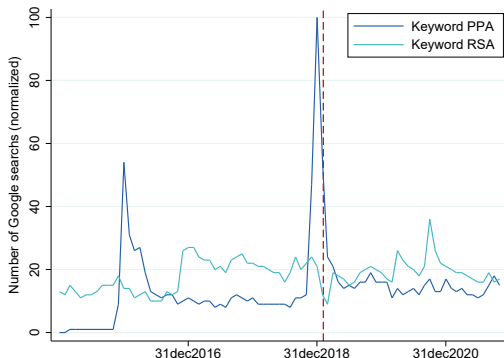
Sources: Google Trends. Go Back

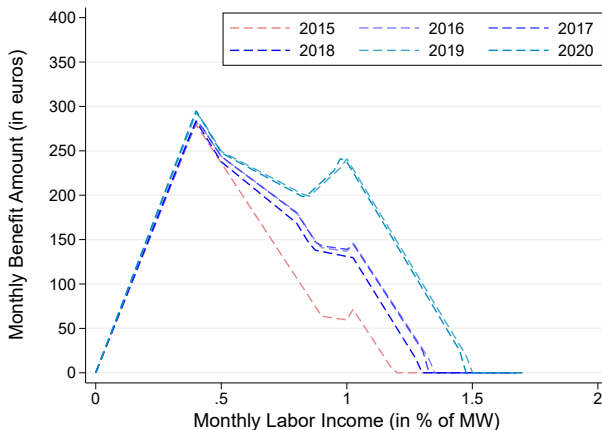# "Gilets Jaunes" Facebook Groups Discussion
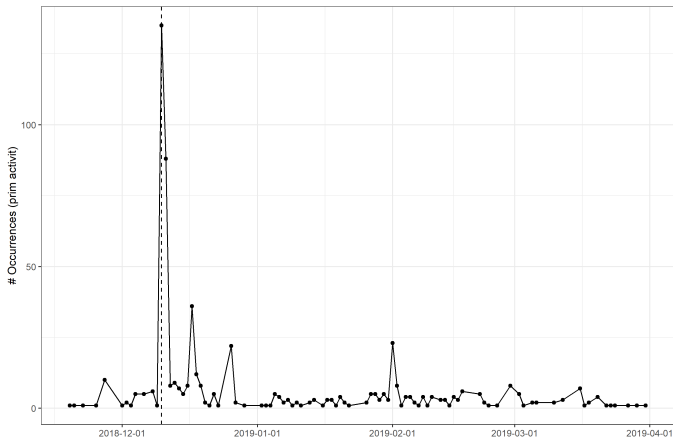
Sources: Boyer, Delemotte, Gauthier, Rollet and Schmutz (2020).
Lecture: Number of occurrences of the pair of adjacent words "prim" and "activit" in discussions on Facebook pages associated to "Gilets Jaunes".

2 Major Reforms

- 2016: benefit increase + simplification Details Reform
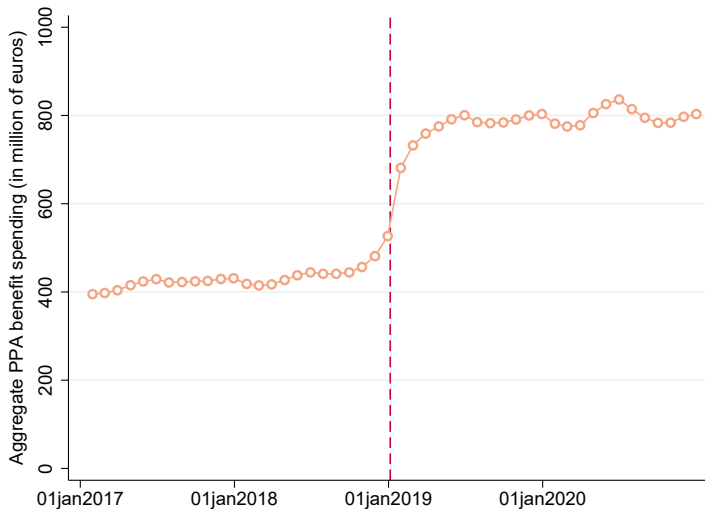- 2019: benefit increase + salience shock TV & Google Trends Facebook Groups
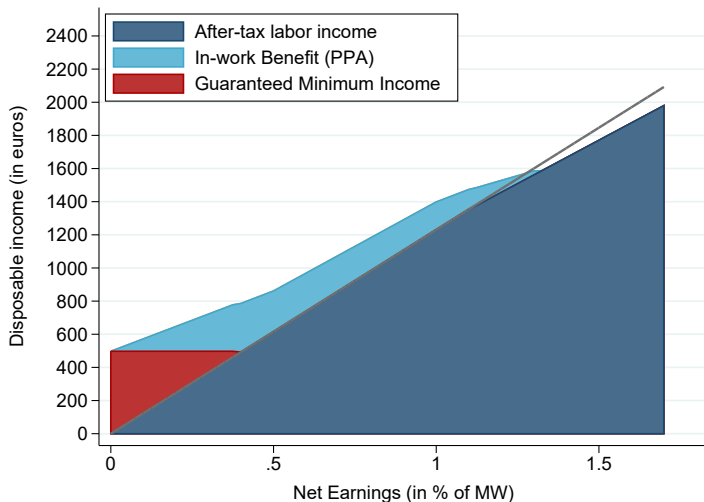
Note: Budget constraint for a single individual in 2021, non-tenant, with only labor income.
Source: French Social Ministry Statistical service (DREES).

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What the 2016 reform changed

- **Change of schedule**
    - Some winners (those benefiting from the new bonuses) experiencing a benefit increase and a MTR decrease
    - Few loosers to the reform (*PPE* beneficiaries not eligible to PPA)

- **Overall simplification (compared to *RSA activite*)**
    - Simplified schedule
        - Simplified formula with limited number of resources taken into account
        - Stabilization of the amount served (*"droit figés"*)
    - Simplified claiming procedure
        - Fully online, self-declared and dematerialized claiming procedure
        - Simulator to avoid claims by non-eligible

- **Possible reduction of the stigma**
    - *PPA* decoupled from the *RSA* (not a "*minima social*")

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Budget Constraint - 2015

Single adult, non-tenant, taking up RSA activite

Single adult, non-tenant, not taking up RSA activite
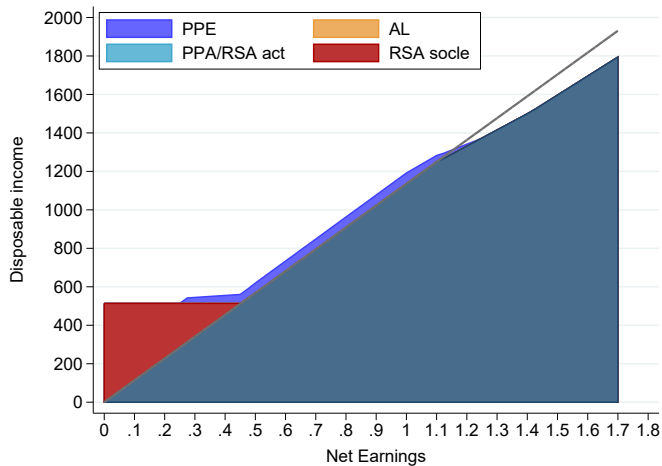
Single adult (18-24), non-tenant
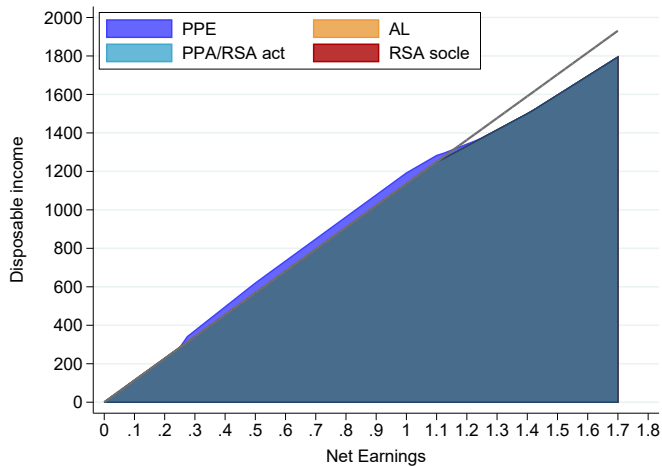
Single adult (18-24), tenant
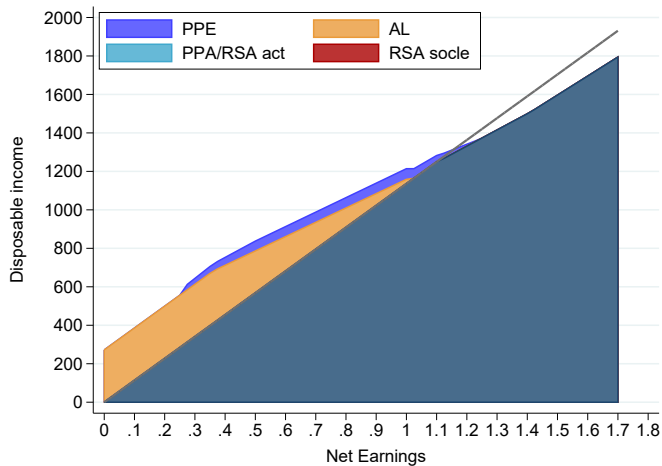
Linking FIDELI with the payroll tax data (DADS-BNS)

- Match of the panels based on characteristics in N and N-1
  - Wage income, self-employed income, city of residence location and age
  - Exact matching on provinces and gender

Province	Creuse (23)	Paris (75)
Number of individuals (FIDELI)	113,643	2,220,324
FIDELI subsample w/ labor income	46,830	1,165,036
DADS-BNS subsample w/ labor income	45,230	1,254,077
Matching rate (in %)	**90.3%**	**92.2%**

Methodology: Nearest neighbor matching without replacement based on Mahalanobis distance.

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Linking FIDELI with the social records data (ALLSTAT)

- Match of panel based on characteristics in N and N-1
  - Demographics: city of residence, family composition, gender and age
  - Income: types of income/benefits received, annual amount of social benefits

Province	Creuse (23)	Paris (75)
Number of households (FIDELI)	31,920	886,048
Households w/ social benefits (FIDELI)	10,569	117,339
Households w/ social benefits (ALLSTAT)	10,478	178,414
Matching rate (in %)	**81.1%**	**83.0%**
– exact matching rate	40.3%	34.7%
– nearest neighbor matching rate	40.8%	48.3%

Population: Households with both parents less than 60.
Methodology: A match is labelled as "exact" when there is perfect correspondence between two households for at least one subset of matching variables that uniquely identify them in their respective dataset. Nearest neighbor matching without replacement based on Mahalanobis distance.

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Social Benefits in France

	RSA socle (2008-now)	RSA act. (2008-2015)	PPE (2001-2015)	PPA (2016-now)
Type	Safety net	In-work benefit	In-work tax credit	In-work benefit
Periodicity	Monthly	Monthly	Annual	Monthly
Max. Amount	500€	300€	50€	300€
Complexity	High	High	Low	Medium
Stigma	High	Medium	Low	Low
Estimated Take-up	65%	32%	97%	63%

Aggregate evolution of PPA spending
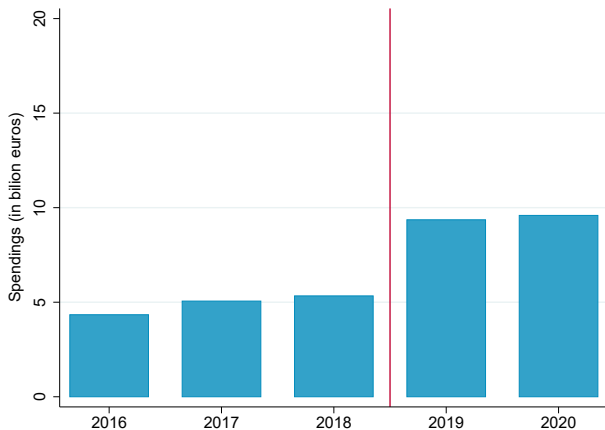
Overall transfer spending
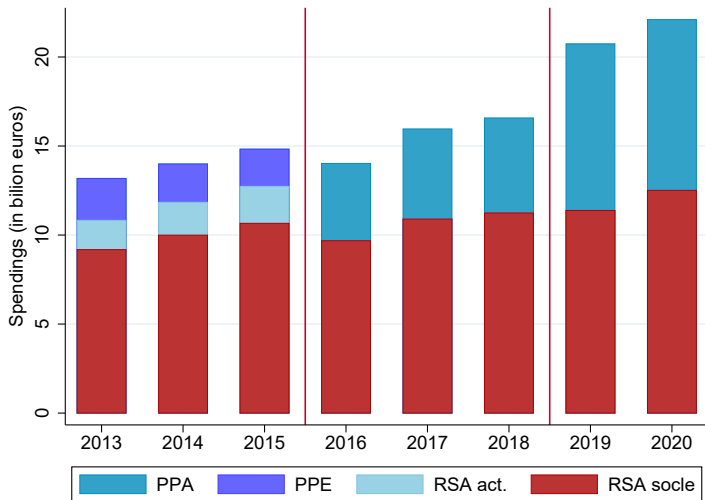
Aggregate Number of Beneficiaries

Estimating Take-Up
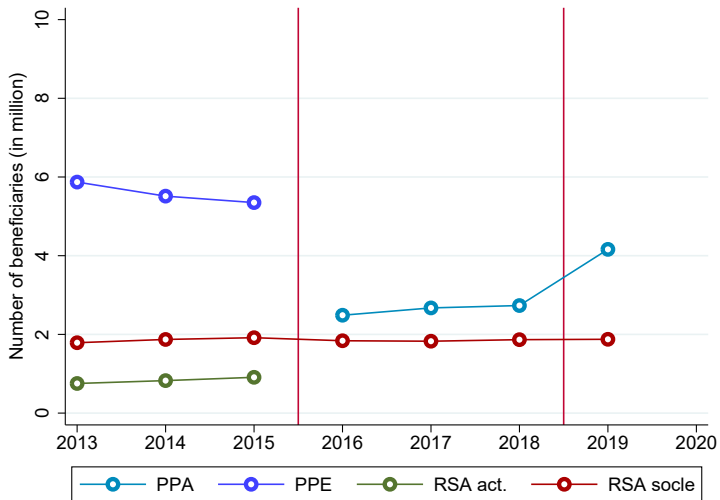
- **Goal: estimate the take-up rate** $\mathbb{E}[B > 0|E > 0]$

- The simplest and widely used estimate of the take-up rate is

$$\hat{p} = \frac{\sum_i p_i}{\sum_i \mathbb{1}_{E_i > 0}}$$

- This estimate might be biased because of **data limitations** that this paper tries to address

  1. Sample Selection $\Rightarrow$ Use exhaustive data
  2. Measurement Error $\Rightarrow$ Attempt to build better data

Take-Up Estimation

Table: Take-up rate in the whole population

	$B_{it} = 0$	$B_{it} > 0$
$\tilde{B}_{it} = 0$	$N_1 = 477,861$ (not concerned)	
$\tilde{B}_{it} > 0$	$N_4 = 52,621$ (non take-up)	$N_5 = 16,089$ (take-up)
Take-up rate - Raw estimate		23.4%

Note : December 2018. Creuse and Paris provinces. Households with both parents less than 60. Unmatched households with zero annual beneficiaries are classified as non-beneficiaries.

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	(non take-up)	(take-up)
Take-up rate		
- Raw estimate		23.4%
- Incl. β-error		43.3%

Note : December 2018. Creuse and Paris provinces. Households with both parents less than 60. Unmatched households with zero annual beneficiaries are classified as non-beneficiaries.

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$\tilde{B}_{it} = 0$	$N_1 = 477,861$	$N_2 = 24,138$	$N_3 = 11,527$
	(not concerned)	(fraud/β-error)	(unmatched)
$\tilde{B}_{it} > 0$	$N_4 = 52,621$	$N_5 = 16,089$	$N_6 = 3,778$
	(non take-up)	(take-up)	(unmatched)
Take-up rate			
- Raw estimate		23.4%	
- Incl. β-error		43.3%	
- Incl. unmatched benef.		37.0%	
- Incl. both		51.1%	

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Incl. β-errors	Take-up rate	
	No	Yes
All	.52	.68
Family Composition		
- Single women - no children	.68	.79
- Single men - no children	.63	.75
- Single women - children	.62	.74
- Single men - children	.31	.47
- Couple no children	.21	.50
- Couple with children	.23	.47
Age		
- Less than 30	.64	.79
- 30-40	.59	.73
- 40-50	.51	.67
- More than 50	.53	.68
Types of income		
- Has capital income	.42	.68
- Has self-employed income	.44	.56
- Has housing benefits	.57	.69
- Has family benefits	.48	.65

Sources: FIDELI 2019, ALLSTAT 2018, DADS-BNS 2018.
Households living in Creuse or Paris provinces. Subsample
of households matched "exactly" with ALLSTAT.

Table: Take-up rate in the subsample of households matched "exactly"

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Take-Up Heterogeneity   Go Back

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Take-Up Heterogeneity   Go Back

Identification Strategy for β^{T1}

- **Identifying assumptions**
  - (A1) Parallel trend assumption
  - (A2) Additively separable treatment effect β^{T1} and β^{T2}
  - (A3) β^{T2} homogeneous
  - (A4) Uncorrelated treatment assignment
    $E[T^2|T^1 = 1] = E[T^2|T^1 = 0]$
  - (A5) No intensive margin labor supply responses

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Results for β^{T1}

Next Steps: Identification Strategy of β^{T2}
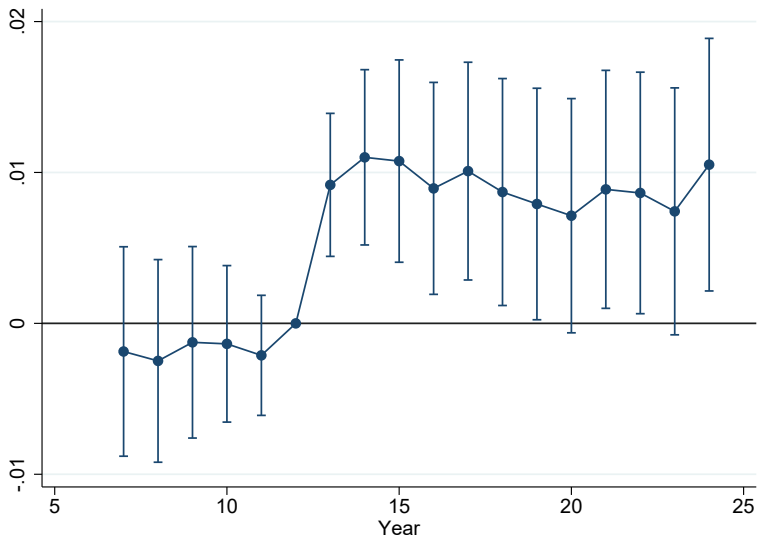
- **Strategy 1: Find a proxy for exposure to the salience treatment**
  - Local geographical variation in yellow vests protests intensity?
  - Local media coverage of the reform?
  - Other ideas?

- **Strategy 2: Find a control group for the salience treatment**
  - Control group possible: Individuals already well-informed
    - Ex: Those already in contact with the social administration
    - Ex: Those in areas with high take up or high bunching at the PPA kink (Chetty et al., 2013)
    - Identify an intent to treat effect