

VOLUNTARY HEALTH INSURANCE

Country case study: Brazil

WHARTON IMPACT CONFERENCE

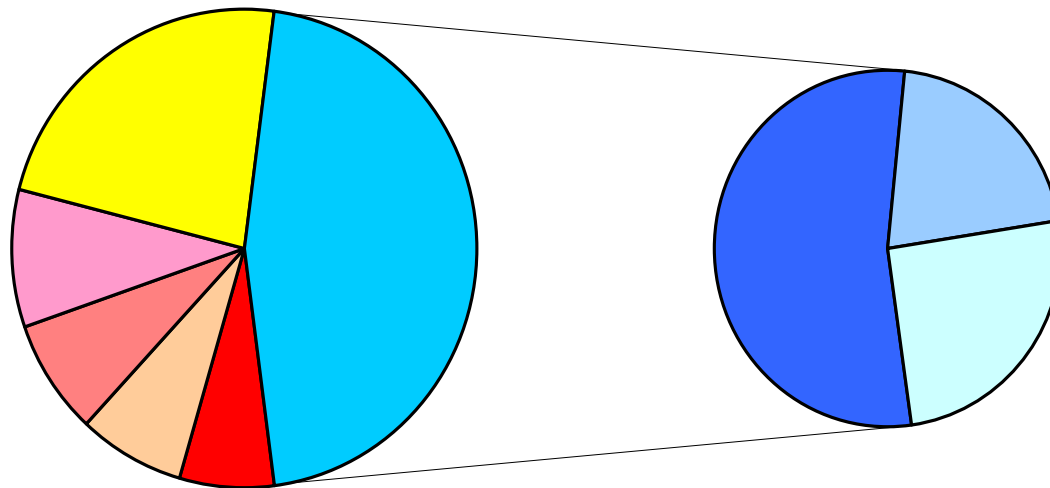
March 15-16 2005

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Background on Brazil

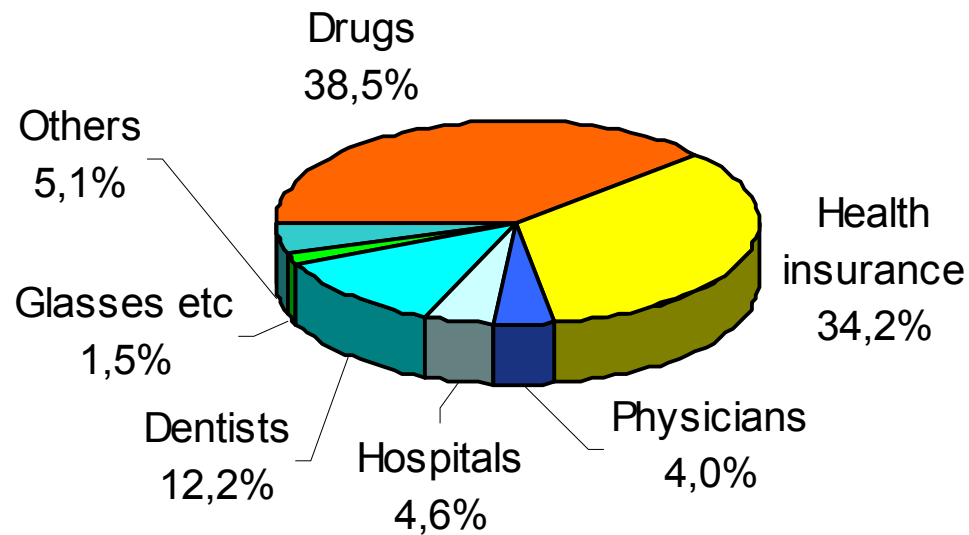
- Large MIC:
 - ◆ Population: 174 millions
 - ◆ GNI per capita: US\$ 2.830 (US\$ 7.450 at PPP)
- Complex and dual health system
 - ◆ Large Social Insurance system (SUS)
 - ◆ Large private insurance market: 38 millions
 - ◆ Household expenditure, sizeable OOP
- National health expenditure: US\$ 99 bil (565pc)

National Health Expenditure



- Federal Government
- State Governments
- Municipal Governments
- Group Medicine (HMOs)
- Medical Cooperatives
- Insurance Plans
- Self-Managed Plans
- Out-of-Pocket

Household health expenditure



Objectives

- Explore the characteristics of VHI in developing countries
- Evaluate the impact of Voluntary Health Insurance (VHI) in developing countries
 - ◆ Financial protection against the cost of illness and Household consumption patterns
 - ◆ Access to health care
 - ◆ Insurance coverage
 - ◆ Labor markets

Methods - I

- Qualitative analysis: Characteristics of the health insurance sector
 - ◆ Policy framework
 - ◆ Institutional/regulatory environment
 - ◆ Organizational structures/arrangements
 - ◆ Management attributes
- Definition of VHI: any private insurance
 - ◆ Employer-based or directly purchased by HH

Methods - II

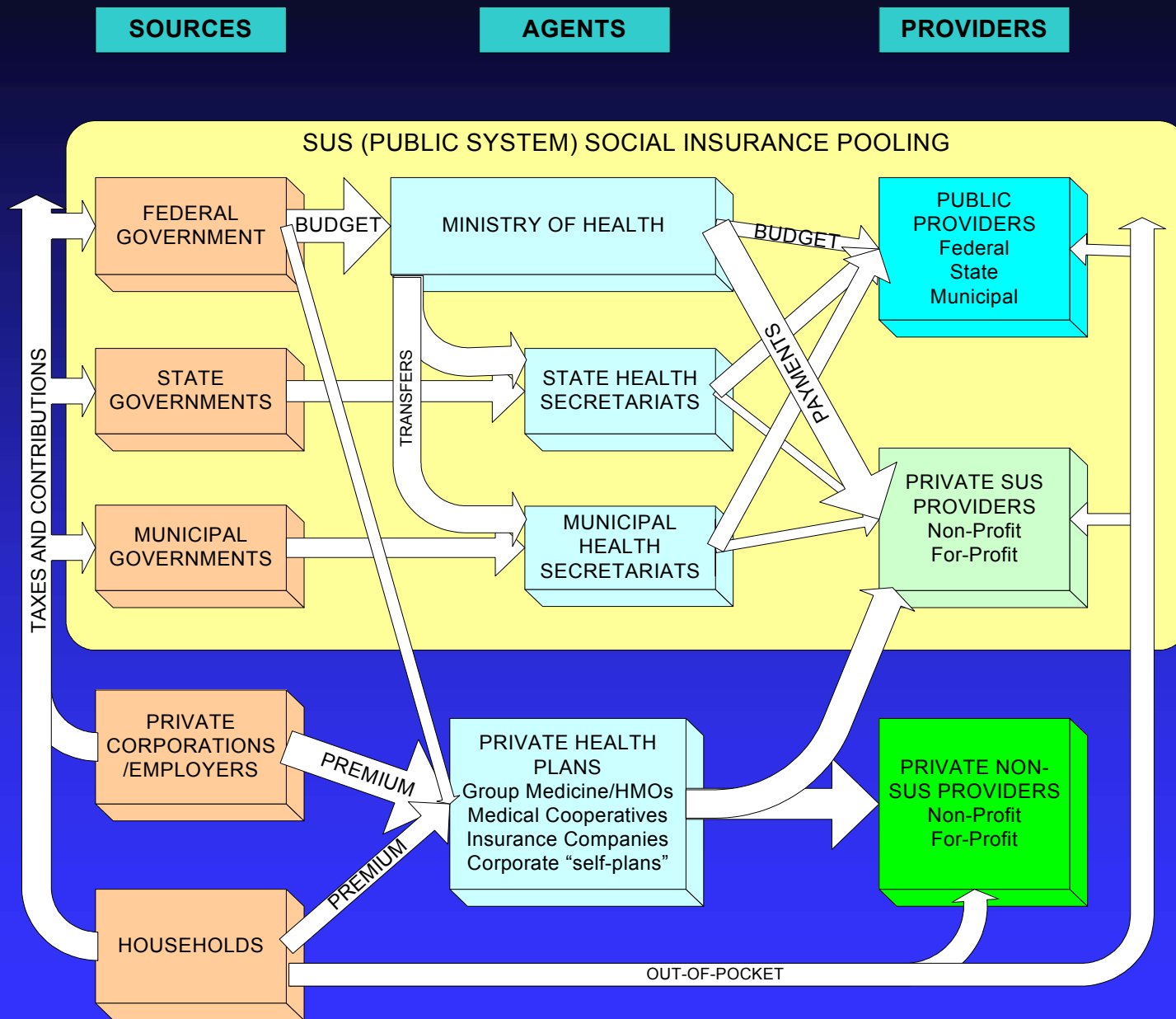
- Quantitative analysis: evaluate impact of VHI
 - ◆ Financial protection: non-medical consumption
 - ◆ Access to health care: utilization
 - ◆ Labor market: productivity
- Sources
 - ◆ Micro-level household data (PNAD 1998)

Private health insurance sector

- SUS: universal & free, but used by 55% of population as main source of care
- VHI: covers 38 million, 22% of population
- Financial revenue: US\$ 13 bil (27,4 PPP), 28-30% of sector expenditure
- Employer-based plans: 73 %
- Recent regulation (1988)

Organization & characteristics

- 4 main organizational arrangements
 - ◆ Group medicine/HMOs: 15,9 million
 - ◆ Medical cooperatives: 11,8 million
 - ◆ Insurance companies: 4,9 million
 - ◆ Corporate “self-plans”: 5,6 million
- All prepayment plans with some reimbursement
- Most except Insurance cos: variable mix of staff/own providers and referenced list
- Cost control: pre-authorizations & use restrictions
- Little use of co-payments or coinsurance



Model 1: Financial protection

■ Dependent variable:

- ◆ Variation in Non-Medical Consumption (1/CV)
 - ◆ Household level
 - ◆ Individual level
 - ◆ Household Y and NMC, per capita
 - ◆ Controlling for income: Quintiles & Budget shares

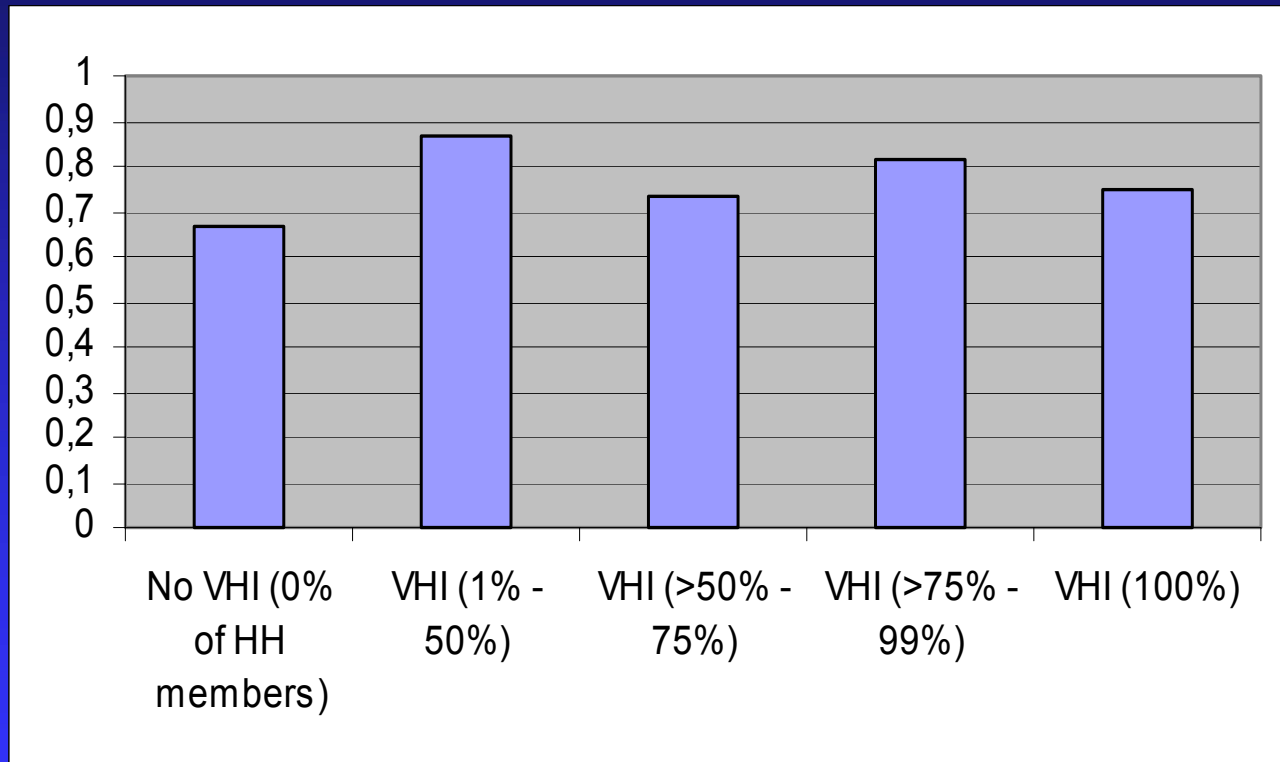
■ Analytical technique:

- ◆ Comparison of group means: VHI x No VHI

Results 1: Financial protection

- HH level: > % coverage within HH >> FP
 - ◆ 0,58 to 0,76
- Individual level: coverage >> FP, esp public plans
 - ◆ 0,42 to 0,54
- Individual (mean HH NMC): coverage >> FP
 - ◆ 0,56 to 0,76
- But: when controlling for income, no >> FP
 - ◆ Income quintile: coverage >> FP in the middle quintiles (2nd-4th); strong << in the lowest Q
 - ◆ Budget shares: strong << in FP: 1,07 to 0,75

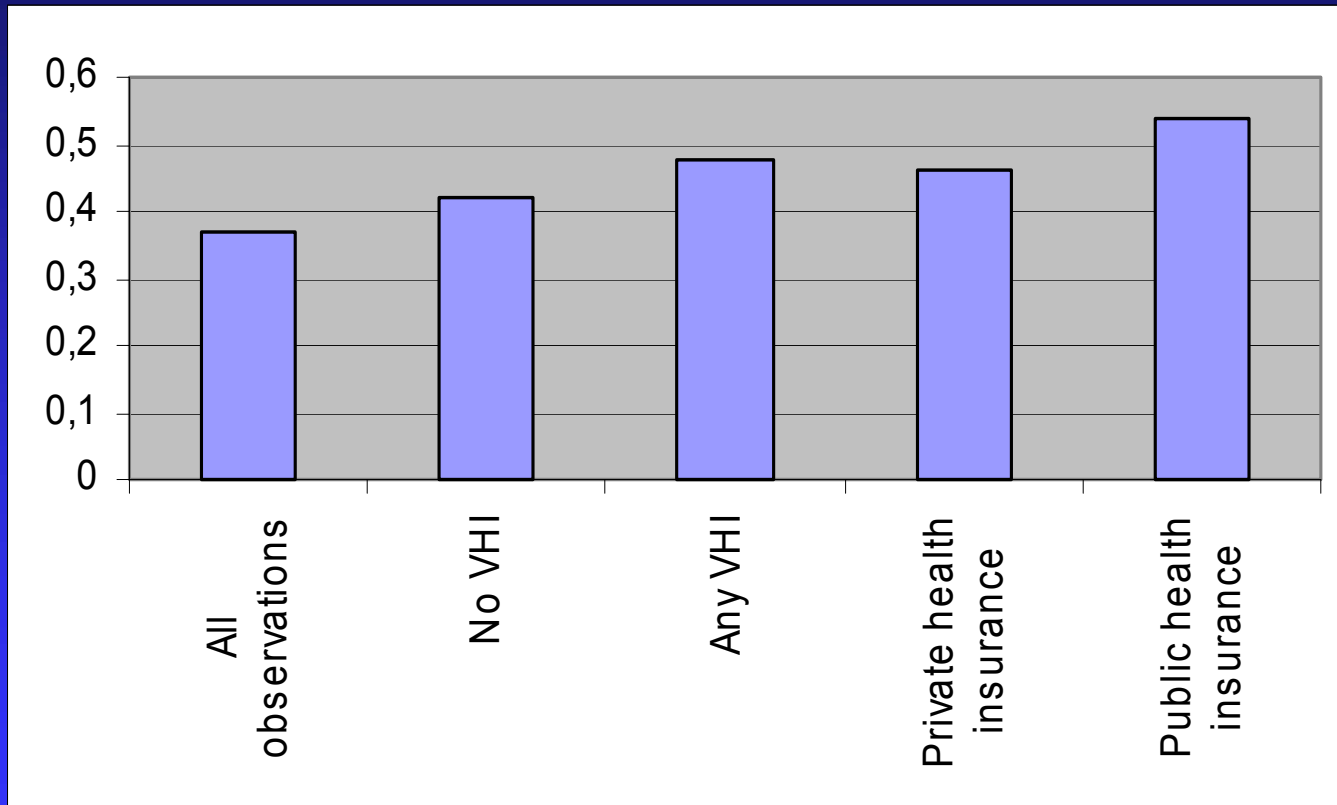
A – Household level



A - Household level

	N	NMC	SD σ	FP γ
All HH	90,907	877.06	1,510.10	0.5808
0% coverage	60,420	496.04	740.38	0.6694
1-50% cov	7,287	1,131.40	1,302.74	0.8685
50-75% cov	3,622	1,589.23	2,164.47	0.7342
75-100% cov	1,302	2,211.51	2,703.06	0.8181
100% coverage	18,276	1,799.07	2,412.43	0.7457

B – Individual level



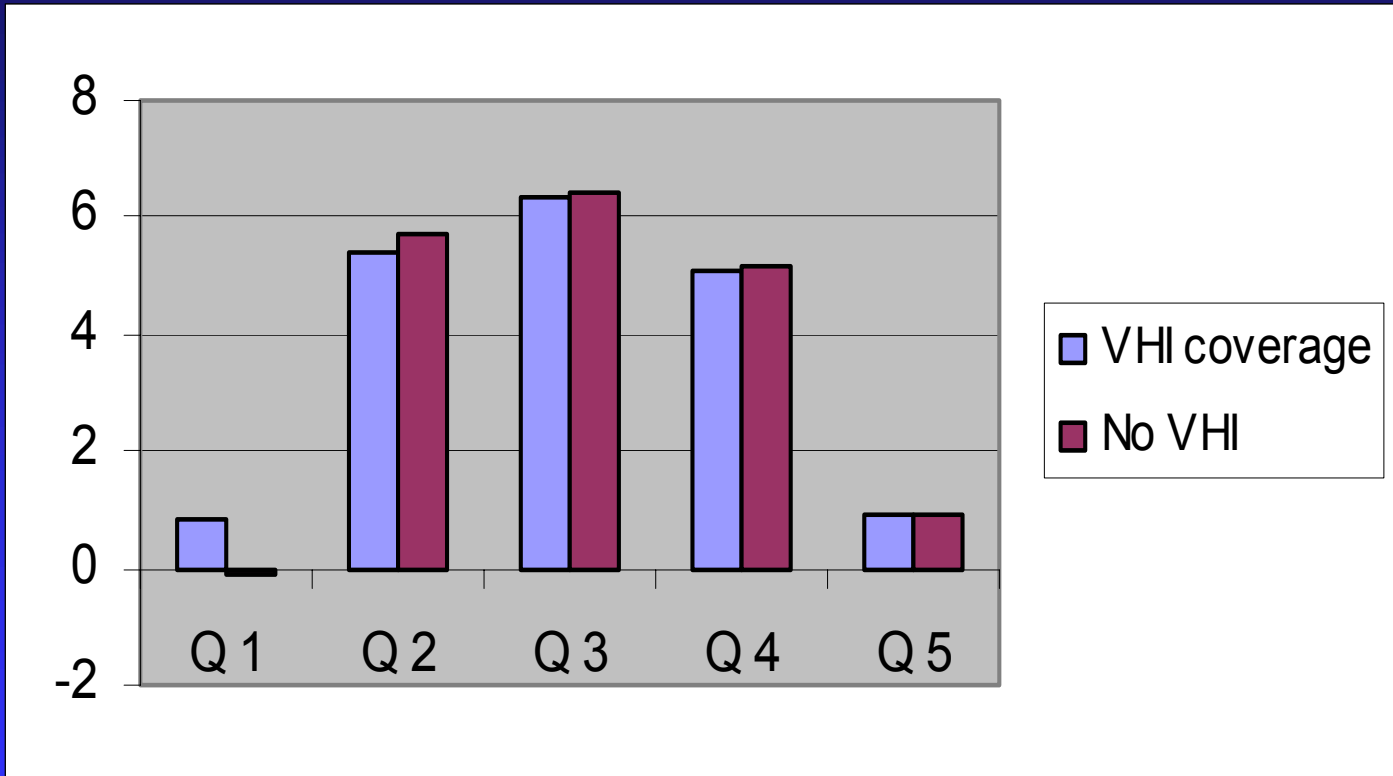
B – Individual level

	N	NMC	SD σ	FP γ
All indiv	274,968	290.96	783.33	0.3714
No VHI	205,466	175.92	420.32	0.4185
Any VHI	69,476	631.17	1,323.25	0.4770
Private VHI	49,306	659.00	1,420.86	0.4638
Public VHI	20,165	562.96	1,043.51	0.5395

C – Individuals w/ HH Y and X

	N	NMC/ cap	SD σ	FP γ
All sample	344975	261.80	525.65	0.4981
No VHI	260452	168.53	313.69	0.5372
VHI	84419	549.73	846.01	0.6498
Private VHI	60190	573.89	898.99	0.6384
Public VHI	24224	489.64	693.55	0.7060

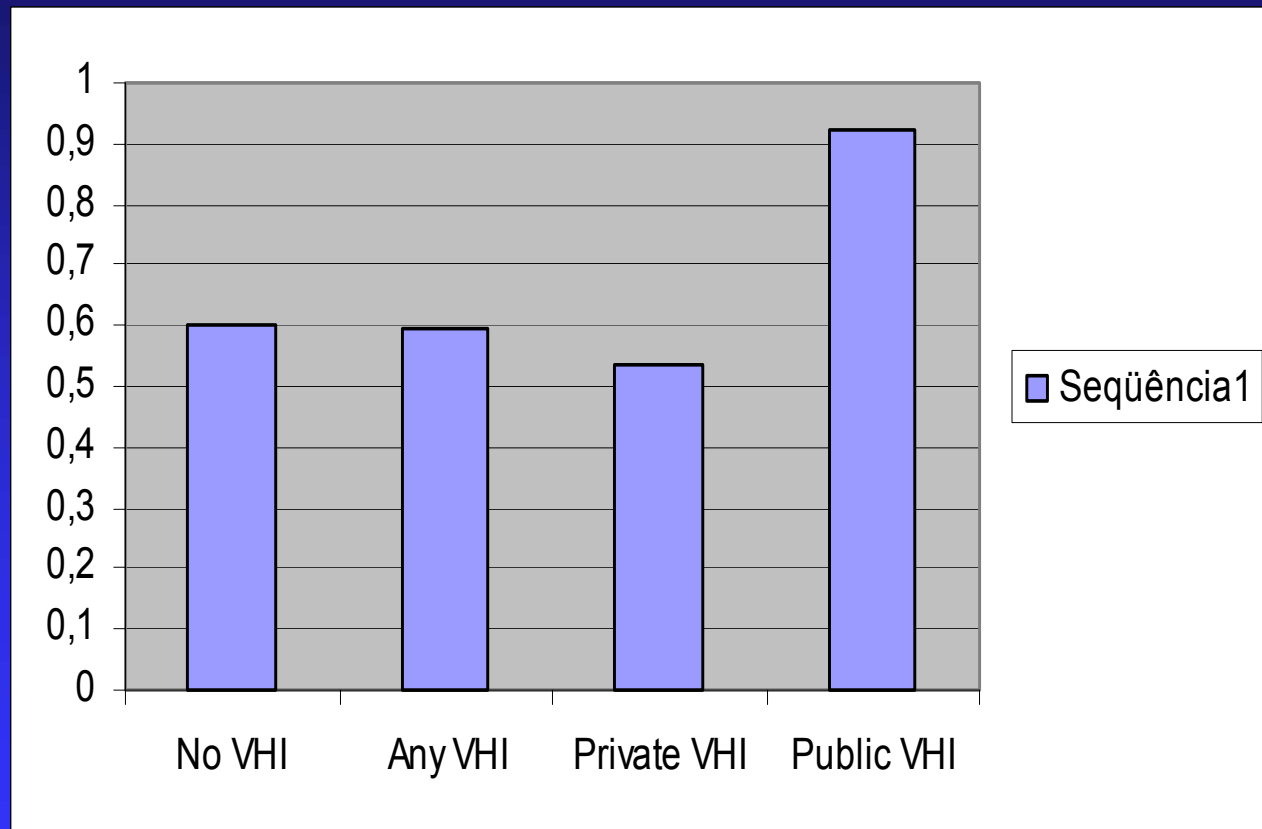
D - FP by Income Quintile



D - FP by quintile

Quintile	No VHI	VHI
20%	0.8163	- 0.0959
40%	5.3732	5.6863
60%	6.3663	6.4293
80%	5.1050	5.1337
100%	0.9503	0.9171

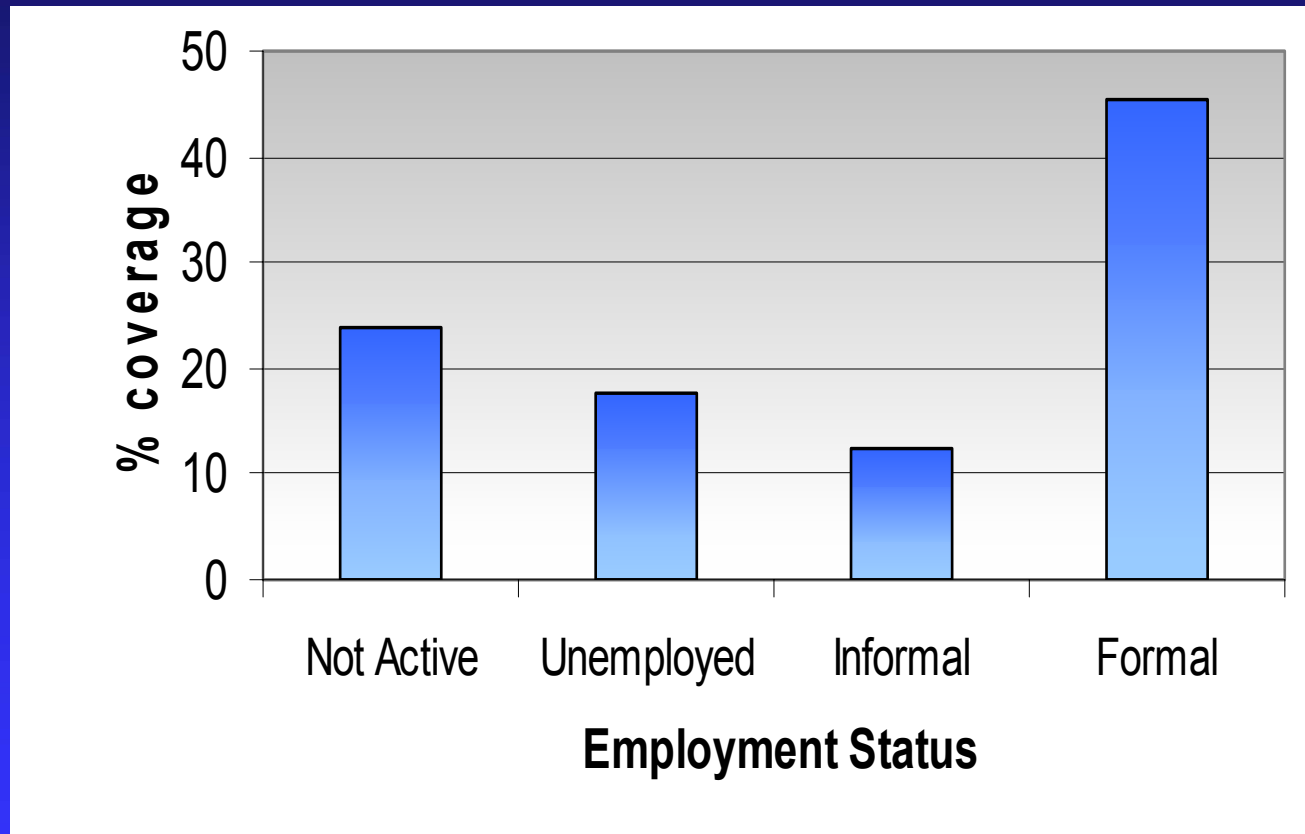
E – Budget share



Dental care insurance

- Why: alternative is usually OOP payment
- Result: VHI increases FP, in larger proportion

Employment effect



Model 2: Access to health care

- Dependent variable:
 - ◆ Utilization of health services (Consult, Hosp,..)
- Independent variables:
 - ◆ VHI, Age, Sex, Years of Education, HH Income pc, Employment status, Region, Urban/Rural, Health status, Race
- Analytical technique:
 - ◆ Probit regression for consultation, hospitalization
 - ◆ OLS & Tobit for No. of consultations

Results 2: Access to health care

Variable	Effect (dF/dx Consultations)
VHI	+ 0.068 (all), 0.206 (consult), 0.020 (hosp)
Income (HH pc)	+ 0.000
Sex = Male	- 0.042
Age	+ NS (all) + (other)
Education (years)	NS 5% (all); - 0.005 (consult), - (hosp)
Employment /Formal	Informal - 0.011 , NEA + 0,014, Unemp -/+
Region/Southeast	NO -0.012, NE - 0.010; SO & CW + 0.006
Urban/Rural	+ 0.005
Health status/Bad, VB	Good & Very Good: - 0.171
Race/White	All: - except indigenous

Model 3: Determinants of OOP

- Dependent variable:
 - ◆ OOP expenditure, conditional on seeking care
- Independent variables:
 - ◆ VHI, Age, Sex, Years of Education, HH Income pc, Employment status, Region, Urban/Rural, Health status, Race
- Analytical technique:
 - ◆ OLS, Tobit

Results 3: Determinants of OOP

Variable	Effect (OOP, OLS)
VHI	+ 21.84
Income (HH pc)	+ 0.108
Sex = Male	+ 56.85
Age	+ 2.861
Education (years)	+ 7.373
Employment /Formal	Inf - 17.97 ; NEA NS ; Unempl - 41.63
Region/Southeast	NE - 24.20 ; others NS
Urban/Rural	NS
Health status/Bad, VB	- 42.09
Race/White	All -

Model 4: Labor productivity

- Dependent variable:
 - ◆ Lost days of work due to illness
- Independent variables:
 - ◆ VHI, Age, Sex, Years of Education, HH Income pc, Employment status, Region, Urban/Rural, Health status, Race
- Analytical technique:
 - ◆ OLS
 - ◆ Heckman two-step

Results 4: Labor productivity

Variable	Effect (Heckman)
VHI	+ 0.0087
Income (HH pc)	NS
Sex = Male	- 0.0099
Age	+ 0.003
Education (years)	NS
Employment /Formal	- 0.005 but NS (5%)
Region/Southeast	All + except NE
Urban/Rural	NS
Health status/Bad, VB	- 0.1396
Race/White	NS for Black & Asian, + for mixed & indian

Model 4: Determinants of enrollment

- Dependent variable:
 - ◆ Prob (enrollment in VHI)
- Independent variables:
 - ◆ VHI, Age, Sex, Years of Education, HH Income pc, Employment status, Region, Urban/Rural, Health status, Race
- Analytical technique:
 - ◆ Logit model
 - ◆ Probit model

Results 4: Determinants of enrollment

Variable	Effect (Logit, OR)
Income (HH pc)	1.001
Sex = Male	0.725
Age	1.024
Education (years)	1.192
Employment /Formal	Informal 0.322/ NEA 0.545/ Unemp 0.322
Region/Southeast	All < 0.75
Urban/Rural	2.316
Health status/Bad, VB	1.050
Race/White	Black & Mixed 0.7, Asian 1.38, NS Indian

Conclusions

- Financial protection:
 - ◆ >> but not after controlling for Income
- Access to care: >> but moral hazard
- OOP: >> with VHI
- Labor productivity: no reduction
- Enrollment factors:
 - ◆ Urban, Education +, Male, no Formal empl, other Regions, Black -; Cream skimming (Health +)

Discussion

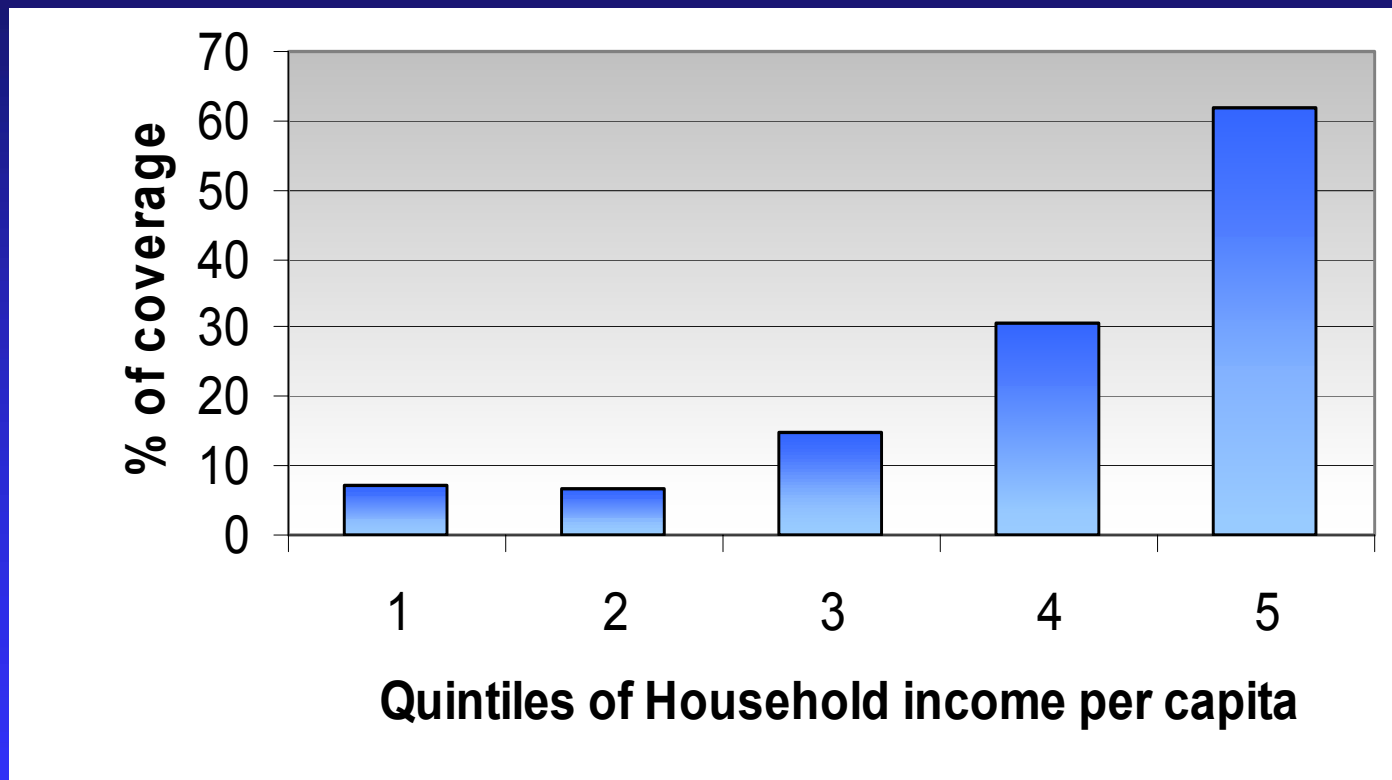
■ Brazil special context

- ◆ All citizens are covered by SUS: no VHI means using public system
- ◆ No copayment or coinsurance in most plans

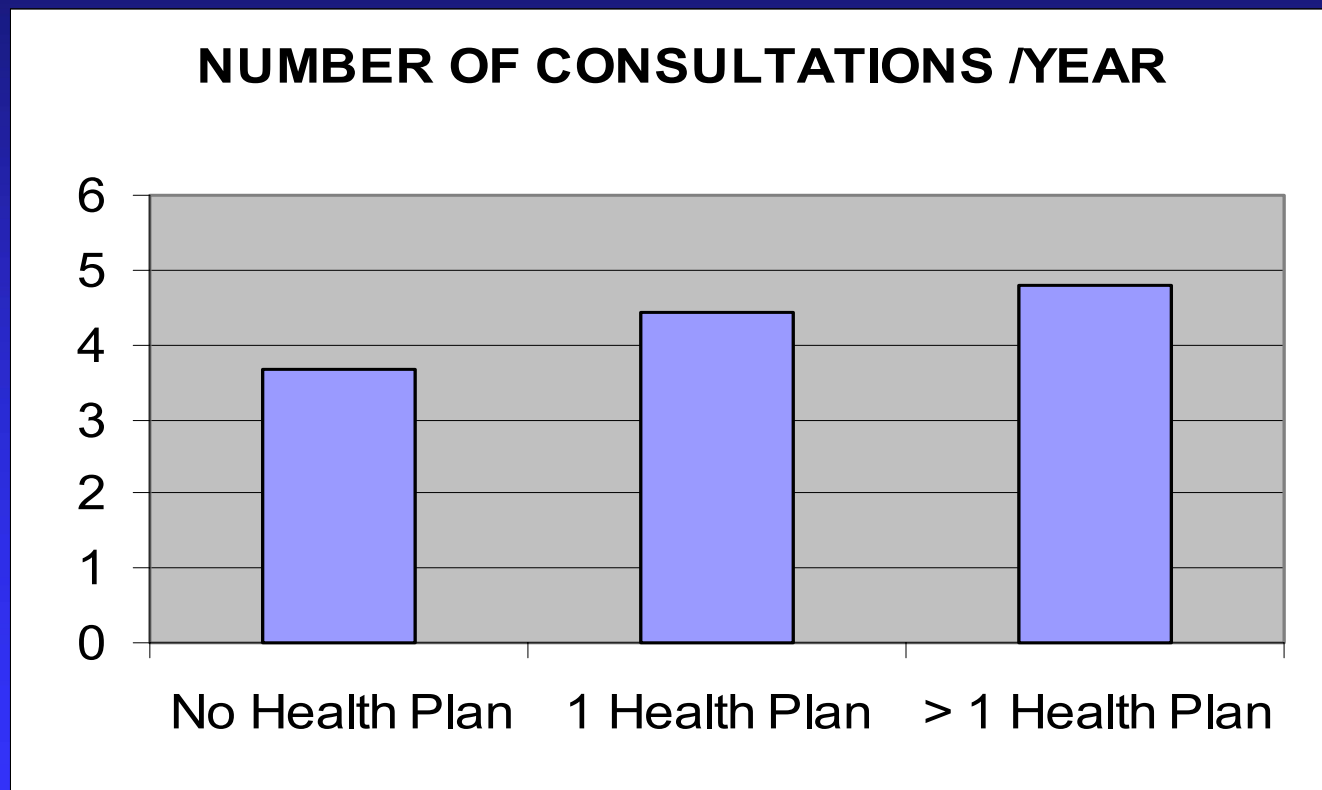
■ Assumptions for >> FP

- ◆ No Income effect: NOT
- ◆ No Moral hazard: NOT
- ◆ + Cream skimming: Yes

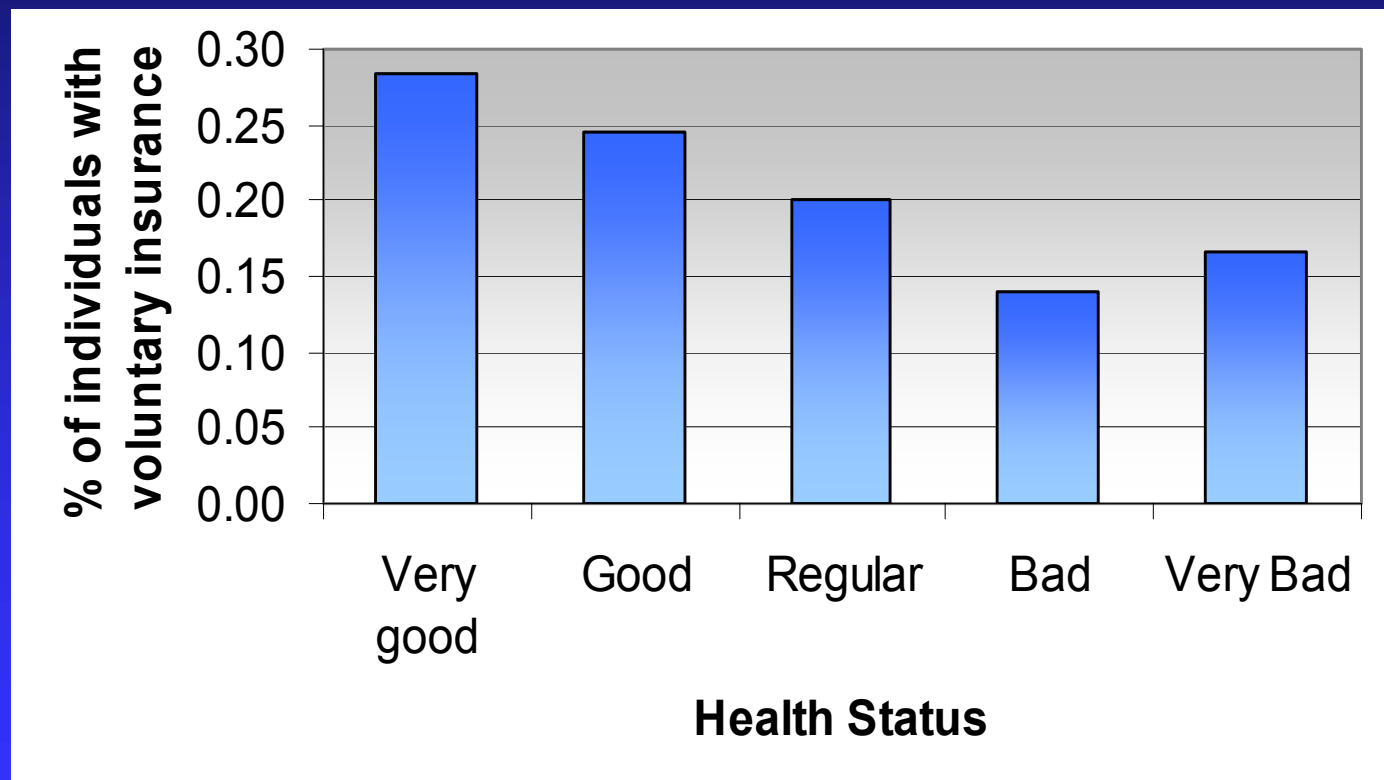
Income effect



Moral hazard



Adverse selection X Risk selection



Mean variable values across groups

	ALL	NO VHI	VHI	PRIV VHI	PUBL VHI
% Consultation (yr)	55,74	50,27	72,65	73,94	69,45
Nr consultations /yr	2,14	1,81	3,18	3,31	2,86
% Hospitalization (y	6,92	6,58	8,01	8,01	8,00
% HC use (2w)	13,22	11,31	19,12	19,41	18,39
Last dentist visit	3,63	3,96	2,62	2,62	2,61
HH Income	942,278	621,735	1.930,845	2.010,301	1.729,690
Family Income	869,796	556,492	1.836,080	1.910,616	1.651,255
HH Income /capita	244,407	146,991	544,901	569,862	482,992
Health Expenditure	19,377	8,324	53,490	57,727	42,964
NMC	225,030	138,667	491,411	512,135	440,028
VHI premium	6,520	0,204	26,016	29,132	18,274
OOPS	12,857	8,120	27,474	28,595	24,690
Drugs	6,975	4,741	13,867	14,202	13,036
MD Consultations	0,803	0,603	1,421	1,287	1,755
Other Professionals	0,178	0,071	0,507	0,527	0,460
Hospitalizations	0,777	0,523	1,563	1,797	0,981
Nursing	0,099	0,044	0,268	0,304	0,178
Diag tests	0,465	0,391	0,695	0,646	0,816
Dental Care	2,318	1,102	6,070	6,757	4,364
Glasses etc	0,856	0,424	2,189	2,166	2,245
Medical goods	0,062	0,029	0,165	0,152	0,198
Other health exp	0,325	0,194	0,729	0,758	0,658
% OOPS/Inc pc	5,261	5,524	5,042	5,018	5,112
% Health Ex/Inc pc	7,928	5,663	9,816	10,130	8,895