# Small is beautiful or bigger is better? An assessment of French Experiment of a New Mechanism of Remuneration for Multidisciplinary Group Practices in Primary Care

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- Health care delivery: productivity, equity, efficacy & efficiency issues => need for renforcement of Primary Care Organisations [Atun, 2004; Hofmacher, 2007; OMS, 2008]

- Is GP or <u>multidisciplinary group practice (GPGP, MGP)</u> more attractive & more effective [Tollen, 2008; Rittenhouse 2009; Cutler 2010] ?

- France:

  – a fragmented PCO (private practice, public funding, weak regulation): self-employed health care professional (HCP), paid on a FFS basis, working in solo practice, with strong prof. frontiers

  – with several signs of inefficiency in health care delivery [Robert, 2009]

  – a fragmentary understanding of GPGP/MGP: individual registration of self-employed health care professional (HCP), no systematic & specific funding from the sickness funds

# 1. Background : Multidisciplinary Group Practices (MGP)

- GPGP: more and more attractive (esp. for young GPs) prob. due to sharing costs (premises, equipment and staff) & improving the balance work/leisure [Audric 2004 ; Bourgueil & al 2010]

- But: less developed, less multidisciplinary & smallest than in other countries [Starfield 2005 ; Friedberg 2010; Bourgueil & al 2009]

- Recent (2008) increasing interest of public health policies (new skill-mix opportunities; funding for investment & running costs...)



% of GPs in Group

Legend: 1998 | 2003 | 2009

| Age | 1998 | 2003 | 2009 |
|---|---|---|---|
| <=40 | 49% | 62% | 77% |
| 40-50 | 40% | 49% | 59% |
| >50 | 39% | 41% | 45% |
| All | 43% | 49% | 54% |
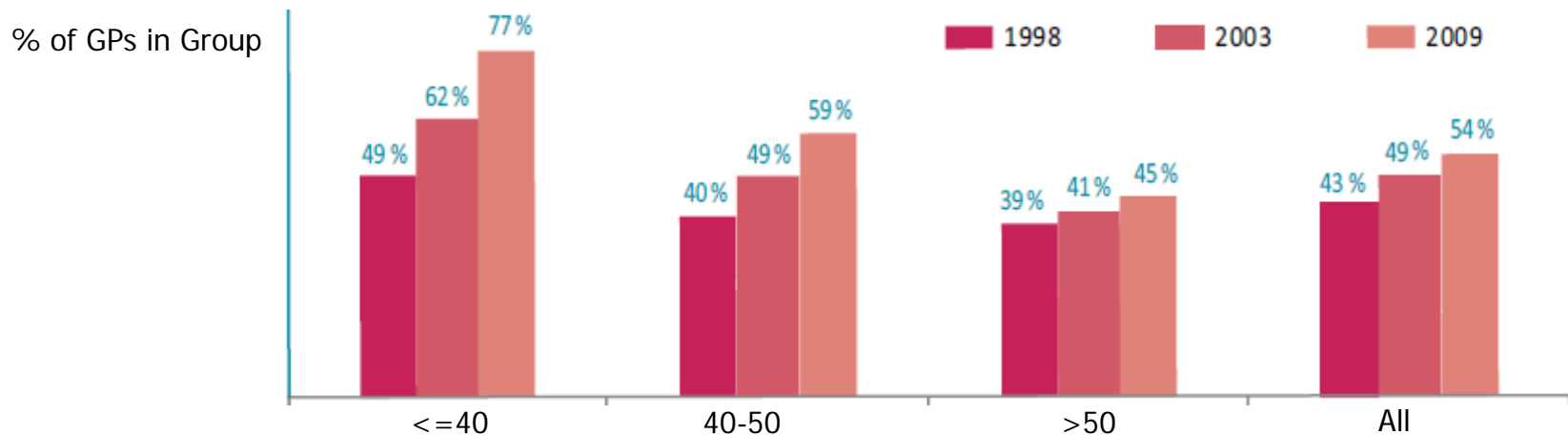
Baudier F., Bourgueil Y., Evrard I. & al, Gautier A., Le Fur P., Mousquès J. La dynamique de regroupement des médecins généralistes libéraux de 1998 à 2009. Questions d'économie de la santé Irdes n° 157. 2010/09.

- Firms, transaction costs and teamwork theories [Arrow, 1969; Williamson 1991; Holmstrom and Milgrom, 1991; Prendergast, 2002]

- Horizontal integration & economic of scope: minimize transaction costs (*e.g.* GPs-Nurses & home care) & production costs (sharing of equipment, material, human resources ; optimization of skill-mix)

- Horizontal integration, sustainability & visibility of efficacy (indeed efficiency) gains :

  – adaptation to new health needs with specific technology (IT), programs (Disease/Care management) & actions (patient registry; reminder ; audit/feedback…)

  – within specific framework (CCM, PCMH, PCT/QOF…)

  – and incentives (public reporting & P4P)

  => visibility for consumers ("brand name") and then sustainable [Getzen, 1994;  Cutler, 2010]

- Vertical integration & economic of scale: fixe price indivisible/invariant (e.g. waiting room); minimize knowledge cost for "specialization"
  [Rheinardt 1975; Gaynor & Gertler 1991; Rosenman & Friesner 2004]

- Changes of individual behavior patterns :

  – balance between risk sharing (costs, revenue) and efficiency (incentives for quality, productivity) [Gaynor & Gertler 1991]

  – vs. "group culture" :  selection & interaction => convergence (protection against: conflict, crowding out of intrinsic motivations...) [Town & al 2004; Encinosa & al 2007; Janus 2010]

- Framework/Design
  - survivor analysis [Marder & Zukerman, 1985]
  - production/cost function analysis: stochastic cost frontier [Rheinardt 1972 -> Sarma & al 2010] vs data envelopment analysis [Bradford & Martin, 2000; Rosenman & Friesner 2004]
- Group more productive (+5-20%): economic of scope (most of the time), various economic of scale
- Efficacy-efficiency:
  - MGP + DM/CM : improvement, efficiency gains depending on time perspective
  - MGP + skill-mix : ≈ nor improvement, efficiency gains depending on revenue & productivity gap, on substitution rate
- Behaviors: free riding & incentive, group culture, case mix,...

=> Identification (group, size, DM/CM, skill-mix); Dimension (few scope analysis) ; Control of selection bias

- Evaluation of Multidisciplinary group practice (MGP), Health Care Network (HCN), Health Care Center (HCC) involved in the ENMR:

  - More attractive, effective and efficient ?

  - Payment for the group (coordination, patient education & involvement, substitution between GPs & HCP), which complement FFS, with a P4P component (20%) => FFS = barrier ?

  - Managed by Social Security Agency, implement by Regional Health Authorities, for volunteers groups

  - 37 groups in the first wave (2010), 100 in the second (2011) => variability : geo. environment, group (nature/form, culture, incentive : revenue & cost), GPs & HCP (socio, practice), patients (case mix)

# 5. Evaluation design

- Identification of causal effect (ENMR, Group) & selection bias

- Before (2008, 2009) & after the experiment (2011, 2012, 2013)

- Cases groups : GPs, Physio. & nurses of group practices included in the experiment & patients (listed or encountered)

- Controls : GPs, Physio. & nurses in solo in the catchment areas & patients (listed or encountered)

- Analysis: first transversal (2008, 2009) then longitudinal (2008-2012), cluster analysis (patient/GPs/group/environment)

- Sources: claims data, ad-hoc survey (groups, HCP, patients), census data

- **Attractiveness**
  - Satisfaction of GPs & HCP
  - Evolution of supply & demand within the catchment area
- **Health care use (patient), activity & productivity (group/HCP)**
  - Group or HCP (GPs, Phys., Nurses) : Δ outputs (procedures, patients listed or encountered, €) depending on inputs (size, staff, equipment, €)
  - Patients ambulatory care expenditure (prob. utilization/categories -> €)
- **Efficacy & quality (group/HCP)**
  - Probability of adequate follow-up/procedures & efficiency of prescription
  - Patient satisfaction
- Controlling for : typo. geo. environment (census + adm. data => MCA+AHC), typo. of MGP (survey: organization, structure & process, funding…=>MCA+AHC), patient (age, gender, VHI, chronic condition…)

- Efficiency: distance to the production or cost frontier

| | Parametric | Non-Parametric |
|---|---|---|
| Determinist | DCF | DEA |
| Non determinist / Stochastic | SCF | DEA stochastic |

$$y_i = \beta_0 + \sum_{j=1}^{k} \beta_j x_{ji} + v_i - su_i$$

$$y_i = \ln(q_i)$$
$$y_i = \ln(c_i)$$

$$x_{ji} = \begin{cases} \ln(z_{ji}) \\ \ln(p_{ji}) \ \ln(q_i) \end{cases}$$

$$s = \begin{cases} 1 \\ -1 \end{cases}$$

| | | Constant eco scale | Variable eco scale |
|---|---|---|---|
| | Input | Min θ <br> s.t. θ$x_A$ - Xλ ≥ 0 <br> Yλ -$y_A$ ≥ 0 <br> λ ≥ 0 | Min θ <br> s.t. θ$x_A$ - Xλ ≥ 0 <br> Yλ -$y_A$ ≥ 0 <br> eλ=1 <br> λ ≥ 0 |
| | Output | Max η <br> s.t. $x_A$ - Xμ ≥ 0 <br> η$y_A$ -yμ ≤ 0 <br> μ ≥ 0 | Max η <br> s.t. $x_A$ - Xμ ≥ 0 <br> η$y_A$ -yμ ≤ 0 <br> eλ=1 <br> μ ≥ 0 |

IRDES  SFMG  Inserm

# 8. Cases population

§ GPs, Phys., Nurses of MGP-ENMR, patients listed or not & encountered between 2008-2012

§ First wave of inclusion : 28 MGP-ENMR (14 MGP, 6 HCN, et 8 HCCO for 16 HCC)

§ ≈ 458 HCP

§ ≈101 GPs

§ 151 076 patients

§ 2nd wave : still in progress



Site ENMR
● Vague 1
● Vague 2

Zonage en Aire Urbaine et en pôle d'Emploi de l'espace Rural
■ Pôles urbains
■ Couronnes périurbaines
■ Communes multipolarisées
■ Pôles d'emploi de l'espace rural
■ Couronnes des pôles d'emplois de l'espace rural
■ Autre commune de l'espace à dominante rurale

Sources : SNIIRAM, INSEE
Cartographie : IRDES, 2011
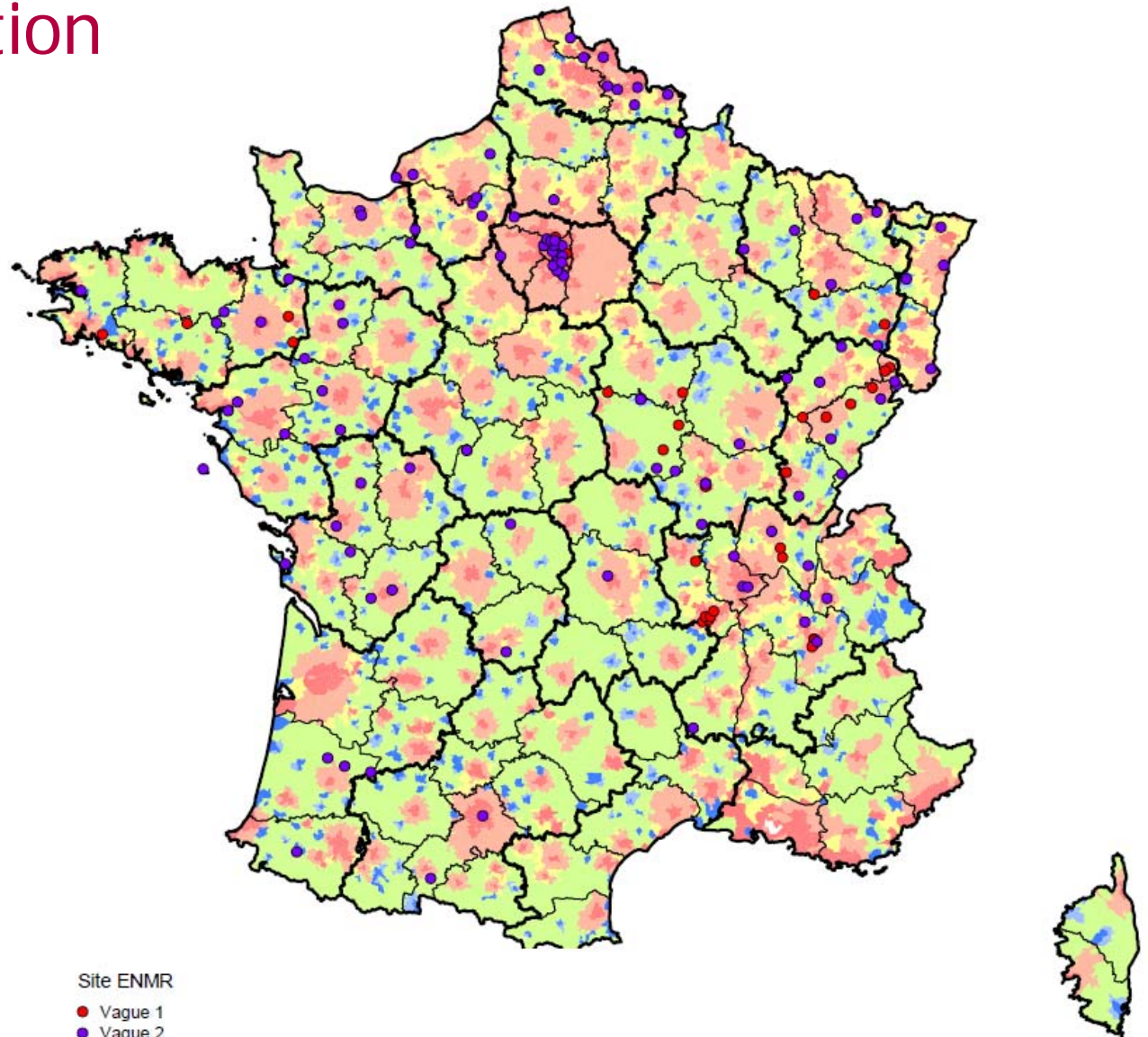
- **Control catchment area (CCA)**
  - GPs, Physio. & Nurses within the area of the MGP/HCN/HCC
  - Min= 10 & Max = 30
  - 594 GPs for 713 228 patients
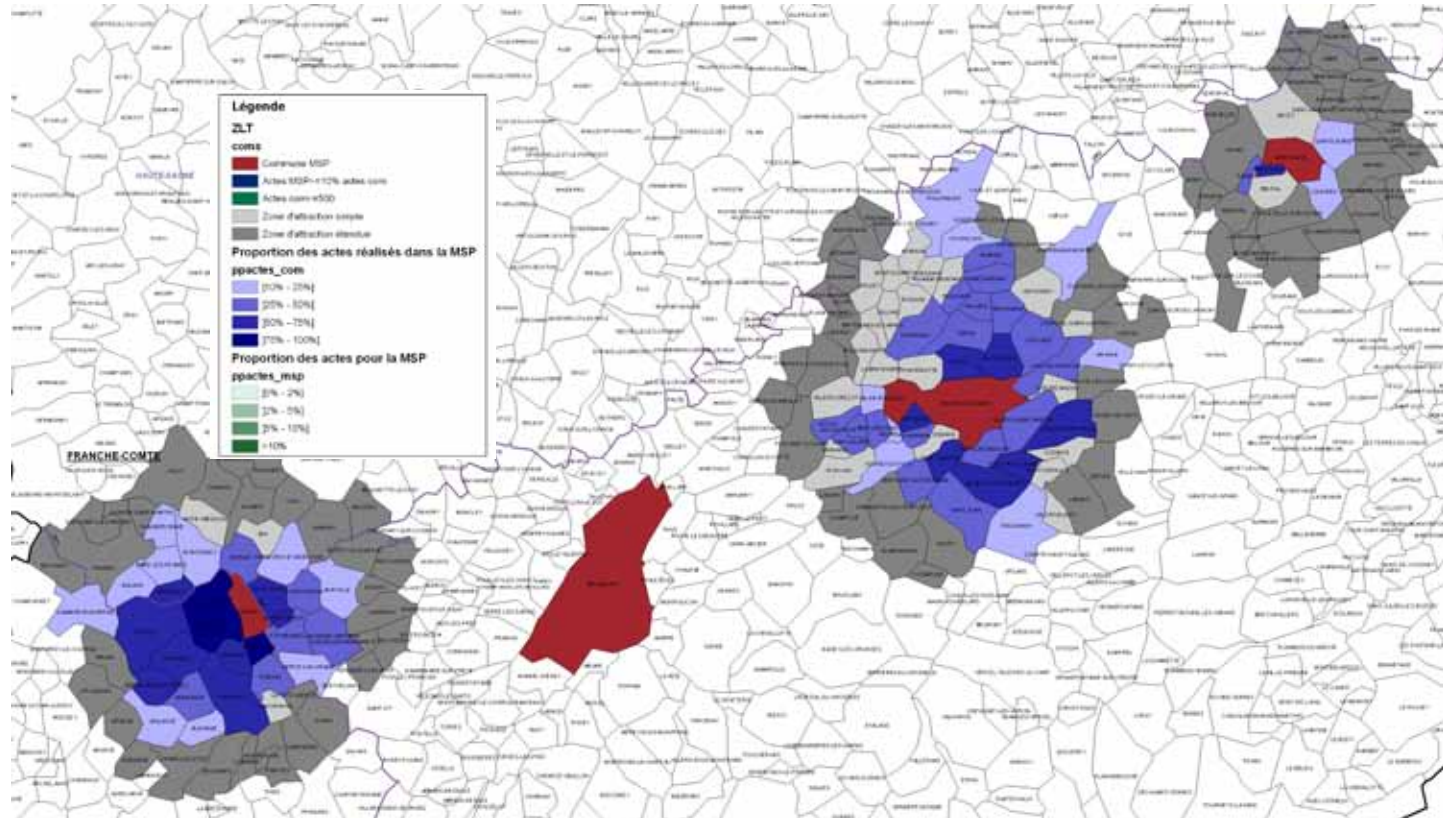
# 10. Agenda

- Design : October 2009 – March 2010

- Compulsory notification regarding « Information technology, files and liberties » : April-September 2010

- Extraction of claims data for 2008 & 2009: September-December 2010

- Data cleaning : January-April 2011

- Descriptive analysis: May 2011

- MGP survey : June 2011 (2008-2010)

- Multivariate analysis: July 2011-September

- GPs survey – October 2011 (satisfaction)

- Patients survey – February 2012

# 11. Descriptive results – sample of MGP/HCN/HCC vs CCA for 2008

| | Cas | | | CCA | | | All | | |
|---|---|---|---|---|---|---|---|---|---|
| | Nb. GPs or HCC | Nb. patients listed & enc. | Nb patient enc. | Nb. GPs | Nb. patients listed & enc. | Nb patient enc. | Nb. GPs or HCC | Nb. patients listed & enc. | Nb patient enc. |
| HCCO 1 | 5 | 8 279 | 14 694 | 31 | 11 917 | 35 800 | 36 | 20 196 | 50 494 |
| HCCO 2 | 2 | 765 | 1 870 | 32 | 15 810 | 44 209 | 34 | 16 575 | 46 079 |
| HCCO 3 | 1 | 1 889 | 6 532 | 29 | 12 395 | 42 916 | 30 | 14 284 | 49 448 |
| HCCO 4 | 1 | 1 837 | 6 116 | 36 | 4 391 | 56 675 | 37 | 6 228 | 62 791 |
| HCCO 5 | 1 | 2 999 | 6 332 | 19 | 9 209 | 19 330 | 20 | 12 208 | 25 662 |
| HCCO 6 | 2 | 2 443 | 7 259 | 30 | 19 179 | 39 779 | 32 | 21 622 | 47 038 |
| HCCO 7 | 1 | 2 217 | 5 655 | 23 | 17 382 | 46 426 | 24 | 19 599 | 52 081 |
| HCCO 8 | 2 | 1 956 | 6 597 | 30 | 15 109 | 44 021 | 32 | 17 065 | 50 618 |
| MSP/PDS1 | 4 | 1 426 | 4 966 | 12 | 6 122 | 12 007 | 16 | 7 548 | 16 973 |
| MSP/PDS2 | 4 | 1 200 | 3 033 | 11 | 5 156 | 10 048 | 15 | 6 356 | 13 081 |
| MSP/PDS3 | 3 | 1 415 | 2 558 | 15 | 8 841 | 16 090 | 18 | 10 256 | 18 648 |
| MSP/PDS4 | 3 | 2 007 | 3 958 | 16 | 9 368 | 17 995 | 19 | 11 375 | 21 953 |
| MSP/PDS5 | 2 | 1 643 | 3 168 | 11 | 5 779 | 10 287 | 13 | 7 422 | 13 455 |
| MSP/PDS6 | 6 | 4 536 | 8 557 | 10 | 6 289 | 12 188 | 16 | 10 825 | 20 745 |
| MSP/PDS7 | 2 | 1 468 | 2 797 | 25 | 14 805 | 29 939 | 27 | 16 273 | 32 736 |
| MSP/PDS8 | 2 | 607 | 1 606 | 30 | 14 773 | 28 680 | 32 | 15 380 | 30 286 |
| MSP/PDS9 | 5 | 2 158 | 4 941 | 12 | 6 117 | 11 602 | 17 | 8 275 | 16 543 |
| MSP/PDS10 | 4 | 1 596 | 3 364 | 12 | 5 386 | 10 843 | 16 | 6 982 | 14 207 |
| MSP/PDS11 | 9 | 4 475 | 9 985 | 30 | 8 998 | 28 773 | 39 | 13 473 | 38 758 |
| MSP/PDS12 | 7 | 3 196 | 7 811 | 30 | 14 318 | 29 590 | 37 | 17 514 | 37 401 |
| MSP/PDS13 | 2 | 1 075 | 2 069 | 16 | 9 678 | 17 748 | 18 | 10 753 | 19 817 |
| MSP/PDS14 | 4 | 2 075 | 4 006 | 30 | 13 688 | 28 418 | 34 | 15 763 | 32 424 |
| MSP/PDS15 | 4 | 1 455 | 3 895 | 30 | 13 218 | 37 657 | 34 | 14 673 | 41 552 |
| MSP/PDS16 | 5 | 2 687 | 6 927 | 19 | 8 938 | 18 569 | 24 | 11 625 | 25 496 |
| MSP/PDS17 | 3 | 1 089 | 2 076 | 15 | 8 185 | 16 123 | 18 | 9 274 | 18 199 |
| MSP/PDS18 | 4 | 3 539 | 6 263 | 12 | 6 190 | 11 674 | 16 | 9 729 | 17 937 |
| MSP/PDS19 | 9 | 4 895 | 9 701 | 14 | 9 045 | 22 217 | 23 | 13 940 | 31 918 |
| MSP/PDS20 | 4 | 2 501 | 5 240 | 14 | 5 820 | 13 624 | 18 | 8 321 | 18 864 |
| **All** | **101** | **67 428** | **151 976** | **594** | **286 106** | **713 228** | **695** | **353 534** | **865 204** |

# 11. Descriptive results – Patient characteristics

| | Cas - GPs/groups - experiment - wave 1 - 2008 | | | | | | Control - GPs - wave 1 - 2008 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nb. Patients listed & enc. | %>60 years | % Woman | % LTD | % PCHI | % PHIF | Nb. Patients listed & enc. | %>60 years | % Woman | % LTD | % PCHI | % PHIF |
| HCCO 1 | 8 279 | **23%** | 54,3 | 21,4 | **18,1** | **0,40** | 11 917 | 30% | 53,5 | 22,2 | 5,7 | 0,10 |
| HCCO 2 | 765 | **18%** | **57,9** | 19,6 | **11,8** | **0,30** | 15 810 | 29% | 52,8 | 20,9 | 7,2 | 0,10 |
| HCCO 3 | 1 889 | 25% | 52,9 | **19,9** | 23,1 | **1,00** | 12 395 | 27% | 53,6 | 24,2 | 16,4 | 0,90 |
| HCCO 4 | 1 837 | 32% | 56,4 | **21,1** | 19,5 | **1,00** | 4 391 | 35% | 56,7 | 26,9 | 13,2 | 0,60 |
| HCCO 5 | 2 999 | **14%** | **58,2** | **15,6** | 26,3 | **0,10** | 9 209 | 30% | 55,0 | 22,0 | 10,5 | 0,00 |
| HCCO 6 | 2 443 | **22%** | **54,0** | 23,1 | **14,8** | **0,50** | 19 179 | 29% | 57,2 | 24,4 | 11,4 | 0,30 |
| HCCO 7 | 2 217 | **16%** | **64,3** | **18,2** | 15,4 | **0,30** | 17 382 | 22% | 55,6 | 23,6 | 15,5 | 0,50 |
| HCCO 8 | 1 956 | **25%** | **53,0** | 26,7 | **20,8** | **1,30** | 15 109 | 32% | 56,4 | 26,3 | 8,0 | 0,30 |
| MSP/PDS1 | 1 426 | **55%** | 61,1 | 33,9 | 4,3 | 0,00 | 6 122 | 48% | 58,5 | 31,3 | 4,4 | 0,00 |
| MSP/PDS2 | 1 200 | **58%** | 58,6 | **33,8** | 4,0 | 0,00 | 5 156 | 45% | 59,0 | 28,0 | 4,3 | 0,00 |
| MSP/PDS3 | 1 415 | **46%** | 59,6 | **33,3** | 2,1 | 0,00 | 8 841 | 35% | 56,8 | 29,3 | 6,2 | 0,10 |
| MSP/PDS4 | 2 007 | 43% | 58,5 | 32,2 | 3,8 | 0,00 | 9 368 | 48% | 58,9 | 30,4 | 4,8 | 0,00 |
| MSP/PDS5 | 1 643 | 29% | 57,0 | 21,0 | 1,7 | 0,00 | 5 779 | 33% | 56,1 | 21,6 | 2,3 | 0,00 |
| MSP/PDS6 | 4 536 | 30% | 55,9 | 17,7 | 2,1 | 0,00 | 6 289 | 30% | 54,8 | 18,4 | 1,8 | 0,00 |
| MSP/PDS7 | 1 468 | 26% | **51,5** | **12,3** | 0,9 | 0,00 | 14 805 | 23% | 56,0 | 16,2 | 2,8 | 0,00 |
| MSP/PDS8 | 607 | 36% | 57,7 | **16,3** | 1,3 | 0,00 | 14 773 | 38% | 58,9 | 24,5 | 3,5 | 0,00 |
| MSP/PDS9 | 2 158 | **28%** | 56,3 | 21,1 | 4,7 | 0,00 | 6 117 | 34% | 54,4 | 22,1 | 2,8 | 0,00 |
| MSP/PDS10 | 1 596 | **26%** | 56,1 | **20,0** | 2,7 | 0,00 | 5 386 | 35% | 55,5 | 24,0 | 2,3 | 0,00 |
| MSP/PDS11 | 4 475 | 33% | 58,6 | 22,5 | **7,7** | **0,00** | 8 998 | 32% | 57,8 | 22,7 | 12,9 | 0,20 |
| MSP/PDS12 | 3 196 | **21%** | 58,4 | **16,9** | 4,1 | 0,00 | 14 318 | 32% | 57,6 | 21,1 | 5,3 | 0,00 |
| MSP/PDS13 | 1 075 | **21%** | **50,6** | **17,3** | 1,3 | 0,00 | 9 678 | 38% | 54,4 | 24,9 | 3,4 | 0,00 |
| MSP/PDS14 | 2 075 | **26%** | **52,9** | **19,5** | 1,9 | 0,00 | 13 688 | 37% | 56,7 | 24,7 | 6,1 | 0,00 |
| MSP/PDS15 | 1 455 | 24% | 55,3 | **28,6** | 10,5 | **0,50** | 13 218 | 25% | 53,6 | 25,0 | 13,7 | 0,70 |
| MSP/PDS16 | 2 687 | 37% | 55,9 | 17,8 | 4,9 | 0,00 | 8 938 | 32% | 53,3 | 21,0 | 5,8 | 0,00 |
| MSP/PDS17 | 1 089 | 37% | 54,1 | 18,2 | 3,9 | 0,00 | 8 185 | 42% | 54,6 | 20,0 | 3,4 | 0,00 |
| MSP/PDS18 | 3 539 | 38% | 56,2 | 21,4 | 1,9 | 0,00 | 6 190 | 36% | 57,3 | 24,2 | 2,8 | 0,00 |
| MSP/PDS19 | 4 895 | 31% | 58,1 | 23,1 | 4,8 | 0,00 | 9 045 | 31% | 55,6 | 21,8 | 4,3 | 0,00 |
| MSP/PDS20 | 2 501 | 32% | 56,0 | 23,4 | 3,3 | 0,00 | 5 820 | 29% | 55,5 | 20,9 | 2,7 | 0,00 |

# 11. Descriptive results – Quality performance MGP/HCN/HCC vs CCA for 2008 vs. CCA

| | Cases - GPs/groups - experiment - wave 1 - 2008 | | | Controls - GPs - wave 1 - 2008 | | |
|---|---|---|---|---|---|---|
| | % pop. Mammo | % pop. Influenza vac. | % pop. Hba1c | % pop. Mammo | % pop. Influenza vac. | % pop. Hba1c |
| HCCO 1 | 36,1 | 59,3 | **44,4** | 39,4 | 62,3 | 40,9 |
| HCCO 2 | **42,7** | 62,6 | 41,5 | 39,9 | 64,3 | 51,8 |
| HCCO 3 | **37,6** | 53,2 | **38,1** | 34,6 | 53,5 | 30,5 |
| HCCO 4 | **34,5** | 50,9 | 36,1 | 31,3 | 52,6 | 31,1 |
| HCCO 5 | 26,1 | 52,5 | **28,3** | 28,2 | 64,2 | 36,3 |
| HCCO 6 | 30,7 | 52,2 | **41,6** | 31,5 | 55,3 | 31,6 |
| HCCO 7 | **40,0** | 57,9 | **43,5** | 33,2 | 60,0 | 30,8 |
| HCCO 8 | 30,8 | 63,5 | **44,7** | 36,2 | 65,6 | 41,7 |
| MSP/PDS1 | **26,0** | 59,5 | **46,7** | 23,6 | 61,5 | 29,2 |
| MSP/PDS2 | **27,2** | 56,4 | **40,6** | 21,3 | 57,4 | 33,4 |
| MSP/PDS3 | **35,3** | 62,5 | **46,5** | 30,8 | 63,0 | 35,4 |
| MSP/PDS4 | **38,5** | 62,3 | **69,4** | 36,5 | 62,4 | 31,9 |
| MSP/PDS5 | **34,9** | 58,8 | **43,6** | 32,1 | 49,8 | 31,8 |
| MSP/PDS6 | 28,1 | 49,5 | **32,7** | 30,1 | 49,5 | 32,1 |
| MSP/PDS7 | **33,3** | 32,4 | **46,3** | 30,0 | 56,0 | 23,5 |
| MSP/PDS8 | **38,7** | 50,6 | 31,3 | 26,0 | 64,8 | 43,7 |
| MSP/PDS9 | 31,8 | 54,5 | **61,5** | 34,5 | 60,6 | 44,0 |
| MSP/PDS10 | **33,8** | 59,9 | 24,1 | 29,1 | 60,3 | 37,2 |
| MSP/PDS11 | **38,6** | 64,8 | **43,8** | 31,9 | 65,5 | 37,8 |
| MSP/PDS12 | 32,3 | 51,2 | **52,0** | 35,4 | 57,7 | 47,5 |
| MSP/PDS13 | **41,0** | **71,4** | **61,4** | 32,1 | 66,2 | 35,4 |
| MSP/PDS14 | 28,3 | **59,8** | 22,5 | 30,7 | 62,9 | 34,5 |
| MSP/PDS15 | 33,9 | 55,0 | **52,8** | 35,8 | 52,8 | 27,7 |
| MSP/PDS16 | **37,1** | **67,6** | **41,9** | 34,1 | 67,5 | 30,2 |
| MSP/PDS17 | **37,8** | 57,7 | **32,4** | 30,2 | 66,6 | 31,0 |
| MSP/PDS18 | 35,9 | 51,0 | **42,9** | 36,8 | 52,2 | 37,1 |
| MSP/PDS19 | **37,8** | **59,9** | **60,1** | 34,4 | 54,3 | 49,8 |
| MSP/PDS20 | 34,1 | **61,2** | 49,0 | 35,6 | 58,5 | 55,4 |

|  | hba1C | micro | chol | fo | creat | ecg |
|---|---|---|---|---|---|---|
| cas | 6.993** | 7.206** | 6.698** | 7.887*** | 2.777 | 9.100*** |
| taux_homme_MT | -0.230* | -0.190* | -0.372*** | -0.322*** | -0.301*** | -0.241*** |
| taux_sup_60 | -0.035* | -0.012 | -0.069*** | -0.085*** | -0.038*** | -0.031** |
| taux_cmuc_MT | -0.040 | 0.614*** | 0.309* | 0.347** | -0.003 | 0.114 |
| taux_ame_MT | -2.368* | -1.750 | -0.665 | -5.669*** | -2.183* | -1.943* |
| taux_ald_MT | 0.116 | 0.123 | 0.039 | 0.176* | -0.003 | 0.079 |
| constant | 42.779*** | 23.521*** | 78.475*** | 82.480*** | 54.268*** | 39.463*** |
| N |  |  | 593 |  |  |  |
| r2 | 0.0681 | 0.0703 | 0.1540 | 0.1792 | 0.1167 | 0.1109 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

# 11. Descriptive results – Efficiency of prescription MGP/HCN/HCC vs CCA for 2008 vs. CCA

| | Cases - GPs/groups - wave 1 - 2008 | | | Controls - GPs - wave 1 - 2008 | | |
|---|---|---|---|---|---|---|
| | % ATB Gen | % STA Gen | % HTA Gen | % ATB Gen | % STA Gen | % HTA Gen |
| HCCO 1 | **71,1** | **57,7** | **53,0** | 57,6 | 53,5 | 47,2 |
| HCCO 2 | **67,6** | **57,3** | **46,1** | 63,1 | 47,0 | 44,5 |
| HCCO 3 | **79,8** | 36,5 | **57,7** | 72,0 | 40,9 | 55,7 |
| HCCO 4 | **68,8** | 19,3 | **54,9** | 65,3 | 44,5 | 54,6 |
| HCCO 5 | **82,9** | **72,6** | **56,9** | 63,9 | 55,8 | 56,3 |
| HCCO 6 | **74,3** | **47,7** | 47,7 | 65,5 | 37,4 | 51,2 |
| HCCO 7 | **68,6** | 29,8 | **63,0** | 67,0 | 45,1 | 51,9 |
| HCCO 8 | **71,2** | **57,1** | **57,4** | 68,6 | 48,9 | 50,3 |
| MSP/PDS1 | 58,3 | 39,3 | **52,5** | 63,1 | 41,3 | 51,4 |
| MSP/PDS2 | 58,7 | **42,2** | **52,8** | 65,8 | 38,4 | 52,6 |
| MSP/PDS3 | **72,7** | 38,1 | **61,0** | 68,1 | 38,4 | 52,1 |
| MSP/PDS4 | **65,1** | **64,1** | **57,9** | 62,2 | 35,4 | 51,9 |
| MSP/PDS5 | 48,5 | **61,8** | 51,3 | 61,6 | 39,5 | 47,6 |
| MSP/PDS6 | 60,7 | 40,7 | 46,7 | 64,1 | 44,9 | 51,8 |
| MSP/PDS7 | **78,5** | **39,2** | **46,3** | 66,5 | 37,5 | 46,0 |
| MSP/PDS8 | 55,2 | 46,2 | 46,0 | 62,5 | 49,0 | 53,5 |
| MSP/PDS9 | **76,6** | **57,7** | **65,2** | 60,9 | 46,6 | 46,8 |
| MSP/PDS10 | **78,0** | **82,6** | **59,3** | 61,1 | 40,8 | 49,1 |
| MSP/PDS11 | **69,6** | 57,8 | **57,5** | 65,1 | 58,3 | 50,9 |
| MSP/PDS12 | **76,6** | **49,2** | 49,7 | 63,1 | 42,6 | 51,4 |
| MSP/PDS13 | **64,8** | **56,3** | **58,1** | 53,4 | 48,3 | 47,4 |
| MSP/PDS14 | 49,7 | **45,7** | 37,7 | 56,8 | 41,6 | 50,1 |
| MSP/PDS15 | **74,6** | **53,3** | **56,4** | 69,5 | 32,3 | 54,2 |
| MSP/PDS16 | **77,3** | **63,9** | **50,6** | 60,4 | 27,7 | 43,4 |
| MSP/PDS17 | 60,3 | **60,0** | 52,0 | 71,1 | 40,9 | 52,1 |
| MSP/PDS18 | 52,9 | 38,2 | 47,4 | 59,5 | 53,7 | 48,8 |
| MSP/PDS19 | **62,3** | **62,6** | **54,9** | 51,9 | 41,0 | 51,1 |
| MSP/PDS20 | **72,5** | 46,6 | **65,2** | 60,7 | 50,7 | 54,6 |

# Discussion

- Dimension of analysis

- Quality: process -> final output, proxy for hospital use

- Post sampling for patients

- Selection bias : panel & cluster

- DEA vs SCF : multi-product & hypotheses (substitution vs complementarity)

- Endogeneity: instruments for GPs variable (group, FTE, % revenue for charges)

- Still in progress until... 2013