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Hospital das Clínicas - UFMG

Evaluating the Economical Impact of Telehealth as a Routine Activity

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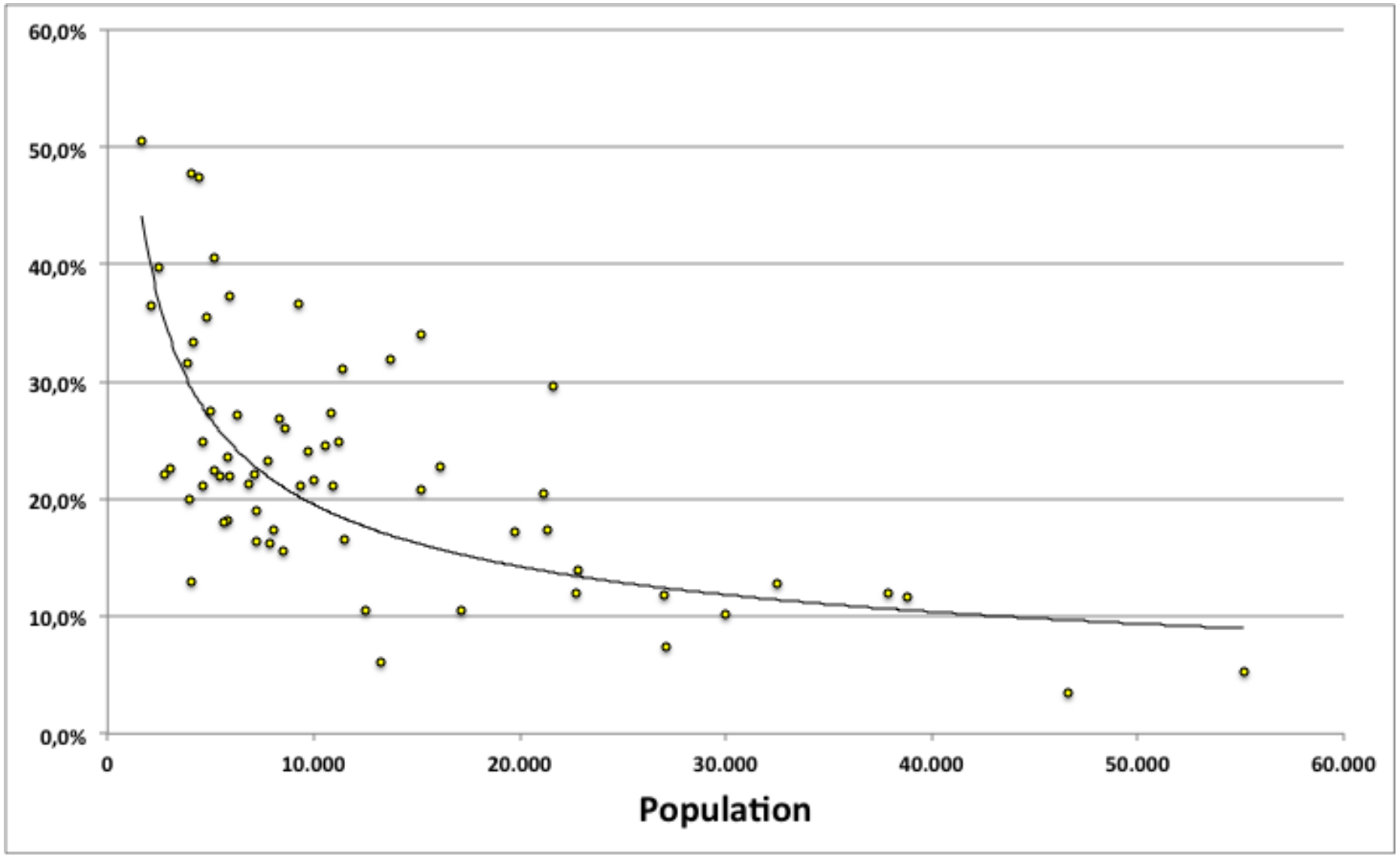
1. Introduction

- The Brazilian Constitution: everyone has the right to public health care and the municipalities are responsible for.
- In small municipalities: specialized health care is not available and the patient has to be referred .
- Referral costs have a significant impact on municipal health budget

Referral Costs as % Municipal Health Budget



1. Introduction

- The use of telehealth, particularly in small municipalities, reduces costs by decreasing number of referrals.
- The Telehealth Network of Minas Gerais (TNMG)
  - is present in 780 municipalities with 1.000 telehealth sites including 48 ambulances at primary care, secondary care and urgency
  - has performed 2,6 millions of diagnostic exams and 75.000 teleconsultations

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1. Introduction

- Previous studies in 68 municipalities have demonstrated that TNMG promotes substantial savings.
- Cost savings evaluation it is an important motivation factor for municipal health manager
- However, referral cost evaluation is a complex task because:
  - municipal cost structure is not prepared for
  - requires health service structure and accounting knowledge
  - it is a time consuming activity
- **As a routine activity, it requires a simple model !**

1. Introduction

- Objective:

To develop a simple model for telehealth saving evaluation to permit municipal health managers to know the impact of TNMG activities on municipal health budget.

Why? municipal managers can incentivize the use of telehealth

2. Referral Costs

- Referral costs have two categories:
  - Fixed costs – do not depend on the number of referrals (staff salaries, insurance, etc.)
  - Variable costs – depend on the number of referrals (combustible, maintenance, etc.)
- Telehealth **can not** reduce fixed costs because
  - It will not reduce 100% of referrals
  - There will exist always urgency/emergency referrals

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2. Referral Costs

- TNMG former cost study found the following variable referral costs:
    1. travel expenses for drivers, nurses and patients
    2. combustible, lubricants, tires and maintenance for vehicles used to transport patients
    3. consultations/exams
    4. telephone/internet
    5. vehicle rental
- It also found that:
    - for some of them, there is not a clear separation of the expenses directly related to patient referral
    - costs 1 and 2 represents 86% of total variable cost

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2. Referral Costs

- travel expense cost is easily calculated:

= daily value ($/day) x number of days traveled (day/month) = $/month

- combustible cost requires a little bit more:

$$= \frac{\text{combustible price (\$/liter) x monthly distance traveled (km/month)}}{\text{vehicle consumption (km/liter)}}$$

= combustible cost ($/month)

- finally, the cost per patient referred:

$$= \frac{\text{total costs (\$/month)}}{\text{\# referred patients (patient/month)}}.$$

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3. A Rough Evaluation of Telehealth Saving

Combustible price ($/liter)	1,16
Combustible consumption (km/liter)	7,00
Combustible cost ($/km)	1,16/7,00 = 0,166
Lubricant price ($/liter)	11,54
Lubricant consumption (km/liter)	10.000
Lubricant cost ($/km)	11,54/10.000= 0,001
Tire price ($/tire)	200,00
Tire life (km/tire)	20.000
Tire cost ($/km)	200,00/20.000=0,010
Total ($/km)	0,177
Travel distance (km/month)	4.840
Vehicle cost ($/month)	0,177*4.840=856,68

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3. A Rough Evaluation of Telehealth Saving

Travel expenses ($/day)	26,92
Travelling days (days/month)	22
Travel cost ($/month)	*26,92*22=592,24*
Total monthly cost ($/month)	*856,68+592,24=1.448,92*
Monthly number of patients	66
Total ($/patient)	*1.448,92/66=21,95*
Correction factor	0,86
Total variable cost ($/patient)	*21,95/0,86=25,53*

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3. A Rough Evaluation of Telehealth Saving

- Number of telehealth activities in the month: 234 (teleconsultations and telediagnosis exams).
- Telehealth efficiency: 80,3% (avoided patient referral given by the system)
- Total saving for the municipal health system:

Monthly saving = 234 x 0,803 x 25,53 = $ 4.797,14

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3. A Rough Evaluation of Telehealth Saving

- 10 necessary parameters:
  1. combustible price ($/liter),
  2. combustible consumption (km/liter),
  3. lubricant price ($/liter),
  4. lubricant consumption (km/liter),
  5. tire price ($/tire),
  6. tire life (km/tire),
  7. travel distance (km/month),
  8. travel expenses ($/day),
  9. travelling days (days/month)
  10. monthly number of patients

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4. Using Saving Evaluation Model as a Motivation Tool

- Short video course available for registered users of the system through the TNMG website.
- An application, also available in TNMG website, where the municipal manager introduce the 10 parameters and the system calculates the savings relative to his municipality.

5. Conclusion

- Economical evaluation of the system has been an important argument:
  - to increase adherence to the system
  - to convince financial supporters to expand the system
- A complete and precise economic analysis is a complex and time consuming process, inadequate for routine evaluations
- Participation of municipal managers and consequent involvement were low

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5. Conclusion

- The use of the simplified model permits the municipal manager to calculate the savings as a routine activity
- We hope:
  - More involvement of managers and consequently more intensive use of the system
  - Collect data for cost analysis

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Thank you

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