University of Nevada, Reno

A Market Opportunities Analysis for a One-Stop Clinic

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in
Finance

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May, 2014

THE GRADUATE SCHOOL

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prepared under our supervision by

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Entitled

A Market Opportunities Analysis For A One-Stop Clinic

be accepted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE

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Abstract

One-stop clinics are an innovative approach to an integrated ambulatory care system using a value-based reimbursement system. This study assessed the local market opportunities of a one-stop clinic by investigating patient shopping behavior. Results indicate that the elderly and women are more likely to have one-stop visits. Primary care, imaging, and lab services were most frequently visited combination in one-stop visits. Age and gender were significantly associated with one-stop shopping behavior; self-pay patients were less likely to have one-stop visits, compared to Medicare patients. There are no significant differences between patients with commercial insurance, Medicaid, and Medicare. Missing appointments behavior is investigated as well. The results reveal that the elderly and women were more likely to miss an appointment; self-pay patients were nearly 28 times more likely to miss an appointment compared to Medicare patients. We conclude that there is a local market for a one-stop clinic.

Acknowledgement

I would like to thank my thesis committee for all the guidance through the entire project; the discussions, the ideas and the feedback have been extremely helpful throughout the whole process. Dr. Chunlin Liu, my thesis advisor, you have guided and supported me over the past two years. You have set an example of excellence as a researcher, mentor, and instructor. Dr. Arun Upadhyay, my committee member, thank you for the constant enthusiasm and encouragement. Ms. Leanne Bauer, thank you for the efforts on data requesting, real world expertise and your help on the initial ideas for this study. Special thanks to Dr. Jeanne Wendel, from the Economics Department, Graduate School representative on my thesis committee. Your encouragement, guidance, and support from the beginning helped me to develop an understanding of the subject and finish this study successfully. It has been an honor to work with you. Your contributions, detailed comments, and expertise have been a great value to me.

Also, I would like to extend my sincerest thanks and appreciation to the director of the University Writing Center, Dr. William J Macauley, Jr. You have helped me with my writing from the very first paper of my graduate study to my thesis now. The technique of writing you have taught me will keep benefiting my professional career and future studies.

Finally, I would like to thank my families. To my husband, Francesco, special thanks for his patience, understanding and support during my two-year graduate study. To my children, Francesco Jr. and Francesca, the love and happiness you have brought to me have kept me smiling and going.

Table of Contents

Abstract i
Acknowledgement ii
Table of Contents iii
List of Tables iv
List of Figures v
Introduction 1
Study Purpose and Research Questions 5
Literature review 6
Data and Methods 7
Data sources 7
Study Design 9
Multivariate logistic regression 13
Results 15
Number of patients 15
Characteristics of one-stop shopping patients 16
Patterns of one-stop visits 18
Likelihood of one-stop shopping 22
Likelihood of missing appointment 26
Discussion and Conclusions 27
Limitations 30
Conclusions 31
Appendices 32
Appendix A Variables List 32
Appendix B Glossary of Terms 33
Appendix C Institutional Review Board Certificate of Approval 34
Bibliography 40

List of Tables

Table 1 Number of Visits and Patients 15

Table 2 Characteristics of Patients with One-stop Shopping Behavior 17

Table 3 Numbers of Visits and Patients in All One-Stop Shopping Visits 18

Table 4 Summary of Number of Services 20

Table 5 Patterns of primary care + 1 service combinations in one-stop visits 21

Table 6 Patterns of primary + 2 or 3 services combinations in one-stop visits 21

Table 7 Multiple Logistic Regression Results - the likelihoods of one-stop shopping behavior (Patient from ALL Area) 24

Table 8 Multiple Logistic Regression Results - the likelihoods of one-stop behavior (Patients from TARGET Area).....26

Table 9 Multiple Logistic Regression Results - the likelihoods of missing scheduled appointment (All area vs. Target area) 27

List of Figures

Figure 1 An Example of One-stop Clinic Model.....3
Figure 2 Studied Medical Services and Modalities 10
Figure 3 Study Design 11
Figure 4 Number of Services used by Patients with One-stop Visits 20

Introduction

The United States healthcare industry is rapidly changing in both financing and care delivery (American Hospital Association, 2012). With the passage of the Patient Protection and Affordable Care Act (ACA) of 2010, the reimbursement model is moving from a volume-based system (fee-for-service) to a value-based system (Physicians Foundation, 2010). The value-based system makes health providers accountable for the care they provide by sharing savings and loses (Centers for Medicare and Medicaid Services, 2014). Health providers will receive lower reimbursements for poorer health outcomes and higher reimbursement for better health outcomes for their managed population.

Under the ACA, healthcare providers should focus on quality and efficiency to better manage the population health while reducing the cost, in order to share savings. The ACA encourages doctors, hospitals and other health care providers to voluntarily come together to form a network, to provide better coordinated high quality care to their patients, which also could keep costs down (Centers for Medicare & Medicaid Services, 2014). “The goal of coordinated care is to ensure that patients, especially the chronically ill, get the right care at the right time while avoiding unnecessary duplication of services and preventing medical errors” (Centers for Medicare & Medicaid Services, 2014).

To manage population health, especially chronic disease control and preventive care, ambulatory care systems play an important role. From a finance standpoint, ambulatory services have been providing the majority of services within operating margin for most health systems under traditional fee-for-service reimbursement model

(The Chartis Group, 2011). A coordinated care system encouraged by the ACA may transition more procedures and treatments to an ambulatory setting, which will generate more revenues. For these reasons, improving ambulatory performance is a top strategic priority for health systems nationwide (The Chartis Group, 2011).

A competitive ambulatory care system should be able to finance and deliver comprehensive coordinated patient care (Patient-Centered Primary Care Collaborative, 2012). Under these criteria, the one-stop clinic model stands out. A one-stop clinic is an innovative approach to build an integrated ambulatory care system (Ng, Cheung, Ngan, & Chu, 2013). One-stop clinic provides many outpatient services under one roof. As a result, ability to manage the continuum of care will improve quality of care and patient satisfaction, and promote care coordination and increase access to care, while still being able to reduce cost of care.

Kaiser Permanents is a successful example of the one-stop clinic model. Kaiser, an integrated health organization, has long relied on a simple strategy of building complete, self-sustaining medical centers in each region it serves (Mohrman & Kanter, 2012). These medical centers generally employ 50 doctors or more, and "offer one-stop shopping: pharmacy and radiology and everything patient want from health care in one building" (Flanagin, 2009). Figure 1 presents an example of a one-stop clinic model. It is a map of the Kaiser Permanents Santa Rosa medical center. The outpatient site is connected to hospital resulting in transferring patients quickly and easily if needed. The three-story building in the east wing of the campus has easy access. It provides primary care, lab and imaging services, and more than 20 other specialties, including orthopedics,

oncology, OB/Gyn, endoscopy, gastroenterology, head& neck, audiology, neurotology, cardiology, pulmonology, breast care, wound care, infectious diseases, HIV and others.

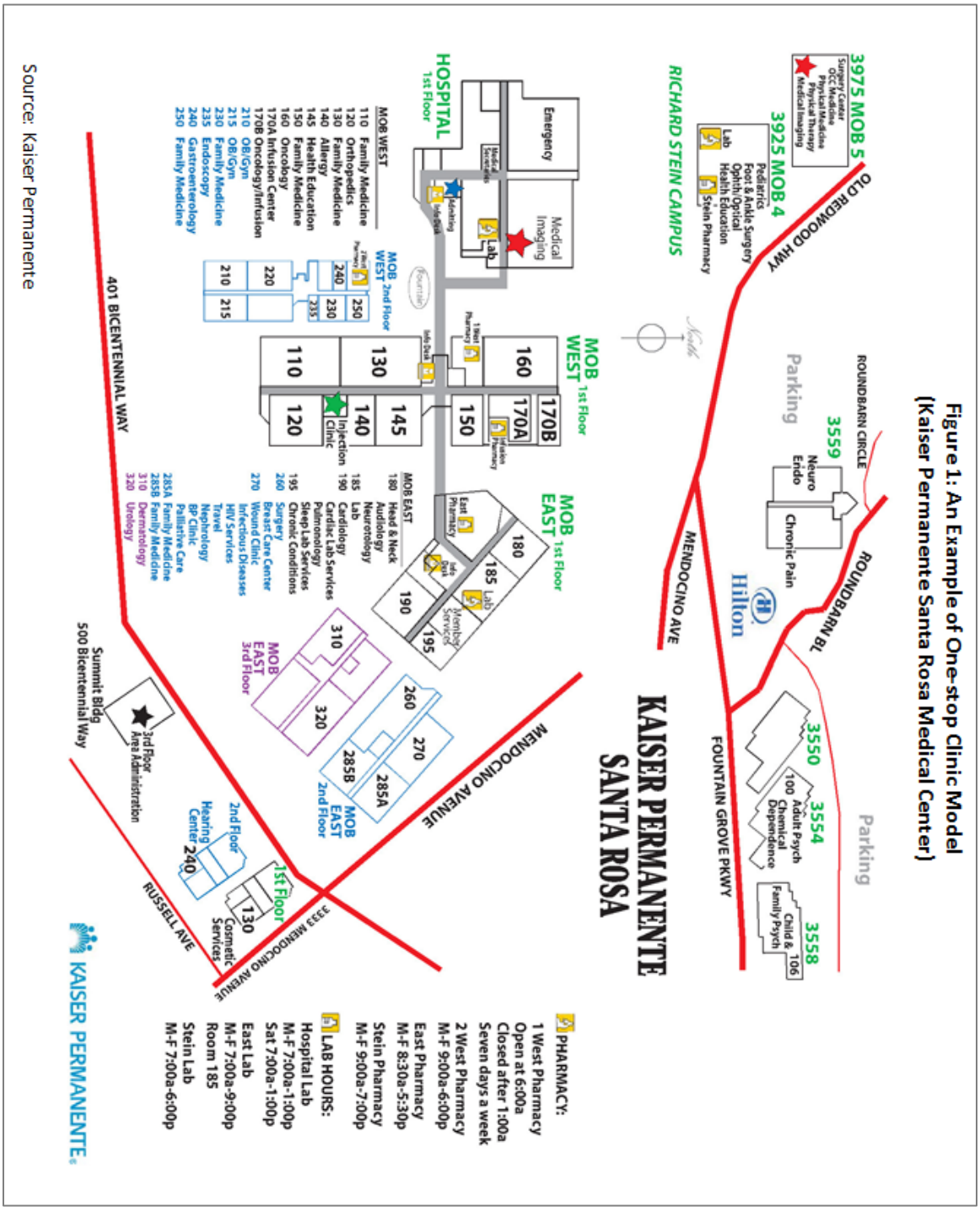


Figure 1: An Example of One-stop Clinic Model (Kaiser Permanente Santa Rosa Medical Center)

Source: Kaiser Permanente

A local integrated health network (the Health Network) is a not-for-profit health network in Reno. The primary goal of the health network is to provide high quality health care services to the local community. However, a big challenge for a not-for-profit organization is that they cannot raise money from private investors. How to improve the quality of care, increase access to care, and reduce the costs at the same time, are important questions for management. One-stop clinic is a feasible model that can achieve all these goals, and fit into the ACA requirements. Similar to most non-profit hospitals, the health network has very limited access to capital. Whether a one-stop clinic in local market can be self-sustained is the first question asked.

A one-stop clinic will be the first of its kind in Reno. The key for a one-stop clinic is to shorten the interval between initial primary physician consultation and the follow up assessments and treatments by offering multiple medical services in one location. After consulting the health network, a patient's one-stop shopping behavior in this study refers to a patient that has used at least two health services with more than one visit in 30 days. To assess the market demands of a one-stop clinic, our approach is to analyze the historical visit data and look for patterns of one-stop shopping that may reflect the needs of a one-stop clinic. The health network currently has more than 50 outpatient sites providing different health services. If high percentage of visits were involved in one-stop shopping, there is a market opportunity for a clinic offering multiple services in one location, which is expected to reduce the waiting time and improve patients' satisfaction, reduce costs by sharing recourses, and improve the care coordination between physicians, which leads to better quality of care. From an operational view, one-stop clinic can

increase the physician's utilization and maximize capacity, which will generate extra revenue for the clinic; also it may save administrative expenses, for example, different services can share pars for check-in. Furthermore, since one-stop clinic can provide full episode of care in an ambulatory setting with timely manners, it can better manage the population health, prevent the conditions/illness to become worse and reduce the risk of emergency room (ER) visits.

This study is designed to assess the market opportunities of a one-stop clinic in Reno. We analyze available data to examine patients' one-stop shopping behavior, look for patterns and significant factors of the behavior, to determine the market opportunity for a one-stop clinic.

Study Purpose and Research Questions

The purpose of this study is to investigate and analyze the patterns of current patients' one-stop shopping behavior, assess the factors associated with the behavior, and find the potential customers (patients) for a local one-stop clinic. To achieve this, we address the following questions:

1. How many patients have one-stop shopping behavior in 2013?

2. What types of patients have one-stop shopping behavior in 2013?

3. What are the patterns of one-stop visits (service combinations)?

4. What are the variables associated with the one-stop shopper?

5. What are the variables associated with missing appointment behavior?

Literature review

When literature refers to one-stop shopping behavior for health care, most of it focuses on integration of care. Medical mall is a good example. Medical mall was developed in the late 80's, integrating primary care, some specialties, pharmacy, dental care, physical therapy, diagnostics, government services, and other patients' services (Anonymous, 1996). Integration of care improves coordination of care and may reduce patients' waiting time. After the physician consultation, patients could quickly receive necessary assessments and follow-ups (Nguyen, 2005; Birns, Vilasuso, & Cohen, 2006; Jackson, 2009; Reid, David, & Nicholl, 2009).

In terms of a one-stop clinic model, most of the literature presents specialty clinics with multiple related services, such as fertility clinics (Magos, et al., 2005), carpal tunnel clinics (Reid, David, & Nicholl, 2009), neck lump clinics (McCombe & George, 2002; Hamarneh & Shortridge, 2013), breast clinics (Dixon, 2002), and sexual health clinics (Cherry, 2009). Those studies conclude that patients receive quicker assessments, resulting early diagnoses and treatments, providing better health outcomes.

There are not many studies about one-stop primary care clinics like Kaiser Permanent medical center. This study explores local market opportunities for a one-stop clinic integrating primary care, lab and imaging services, and some other specialties by investigating patients' one-stop shopping behaviors.

Data and Methods

This section explains the data process and study design. Institutional Reviews Board approvals were received from the Renown Regional Medical Center and the University of Nevada, Reno (Appendix C). Figure 1 shows groups of different services and modalities among the imagining services identified in the current study. Figure 2 illustrates the study design.

Data sources

The health network had nearly 30% market share of outpatient services in Reno as of 2013. The visit datasets reflect the current patients' cohort of the health network. To identify one-stop visits in current patient's cohort, three routine datasets are used: 3 year office visits (n=657,715), 2013 lab visits (n=154,851), and 2013 imaging appointments (n=165,324). The patient Medicare Records Number (MRN) has been replaced by unique identification numbers, and patient age has been replaced by 5 year age group to protect patient privacy.

1. The three-year office visit dataset includes all outpatient site visits from January 1, 2011 to December 31, 2013. It covers primary care, urgent care, women's health, pediatric care, cardiology, inpatient services, lab services, and other specialties. The 2013 lab visit dataset includes all outpatient lab services from January 1, 2013 to December 31, 2013. The 2013 imaging appointment dataset comprises all appointments for both completed as well as missed appointments. 2011 and 2012 office visits data was excluded, in addition, since the health network are only interested in primary care, urgent care, women's health, pediatric care, and cardiology visits, inpatient services and other specialties are excluded as well. Since completed outpatient lab visit data was available from

another dataset, we exclude lab services from the office visits. This dataset has detailed patient information, including patient identification number, patient age, patient gender, insurance type, zip code, visit type, visit date, visit status, and visit department. Therefore, two other datasets were merged into this dataset to identify patients' geographic information.

2. The 2013 lab visit dataset is comprised of one record for each outpatient lab visit between January 1, 2013 and December 31, 2013. If a patient had multiple lab visits, multiple records would be shown in this dataset.
3. The 2013 imaging appointment dataset includes both completed appointments and missed appointments. Missed appointments were filtered out and only completed appointments were used for visits. This dataset does not provide zip code.

We matched these three datasets and identified unique patients' records between January 1, 2013 and December 31, 2013 for later analysis. The merged datasets include one-stop visits indicator, patient identification numbers, patient age, patient gender, insurance type, and zip code.

Additionally, missed appointments were identified. We requested appointment detail datasets for office visits and lab visits, since we only had missed imaging appointments from the third dataset (2013 imaging appointments). However, at the time of the study, only office appointment details were available. Since the 2013 imaging appointment dataset does not provide zip code information, we matched zip codes by patient identification number to the office visit dataset. Then we merged the 2013 office appointment detail dataset (n=363,751) and the 2013 imaging appointments with zip code (n=141,824) and identified 505,566 unique appointment records for 118,021 patients

from January 1, 2013 to December 31, 2013 for later analysis. Data were computed and analyzed in Microsoft Excel® 2007, Access® 2007 and SAS® version 9.3 Enterprise Guide (SAS Institute, Inc., Cary, North Carolina).

Study Design

In 2013, a total of 149,223 patients with 517,995 ambulatory visits were recorded. These visits include 216,566 office visits, 154,851 lab visits and 146,578 imagining visits. The health network suggested using a 30 day time limit to investigate one-stop shopping behavior. If a patient used more than one health service in 30 day period, we considered this patient for one-stop shopping behavior. We also used a term of "one-stop visit", since we do not have real one-stop visits (use multiple service in one visit at a same location), one-stop visit is refer to a series of visits (at least two) to multiple services (at least two) in 30 days, regardless of visit location. A patient-centered care model is encouraged by CMS under the ACA. It requires primary physicians play a "navigator" role. We only analyzed the patients with primary care office visits. We excluded patients who only visited urgent care, women's health, cardiology, and pediatric care, without any primary care visits. Completed visits and missed visits were separately analyzed. We extracted the patients who had one-stop shopping behavior and calculated the distribution by age, gender and insurance type.

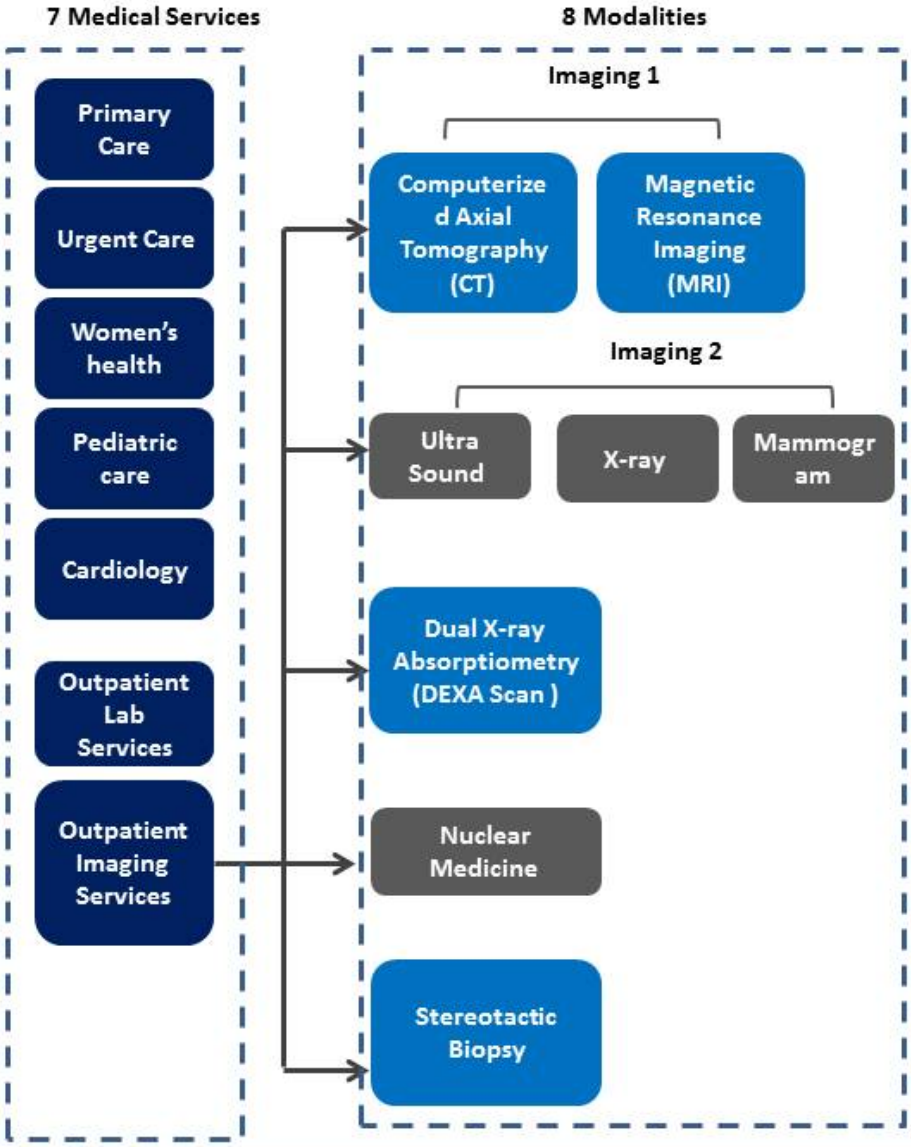
The health network divided medical services into seven types and eight modalities in imagining services. Figure 2 shows the medical services and modalities that were studied. The modalities, which are the different tests performed by different medical equipment, were considered as different services in addition to six services: primary

care, urgent care, women's health, pediatric care, cardiology and outpatient lab services. Furthermore, we grouped *Computerized Axial Tomography* (CT) and *Magnetic Resonance Imaging* (MRI) as imaging 1, and *ultra sound*, *X-ray* and *mammogram* as imaging 2. From an operation and finance view, in an ambulatory setting, generally we provide CT and MRI as a group of services in the same location. Similarly, if women's health services were offered, ultra sound, X-ray and mammogram machines are normally on site, because they are used for common test/screening of OB/GYN visits. We examined the patterns of one-stop shopping behavior by analyzing the combination of services in one-stop visits (a series of visits to multiple services in 30 days, regardless visit location). We focused on the patterns of two and three services.

The possible location of a one-stop clinic was given by the health network. We used zip codes to identify target population. Multiple logistic regressions were used to investigate the likelihood of one-stop shopping behavior with different age, gender and insurance type for all patients. We also did the same analysis for target area patients. Then we compared all patients and target area patients.

Missed office and imaging visits from the original dataset was used to identify the potential customers who may use one-stop medical services. Logistic regression was utilized to assess the characteristics of the patients who were more likely to miss/cancel an appointment. Figure 3 illustrates the study design.

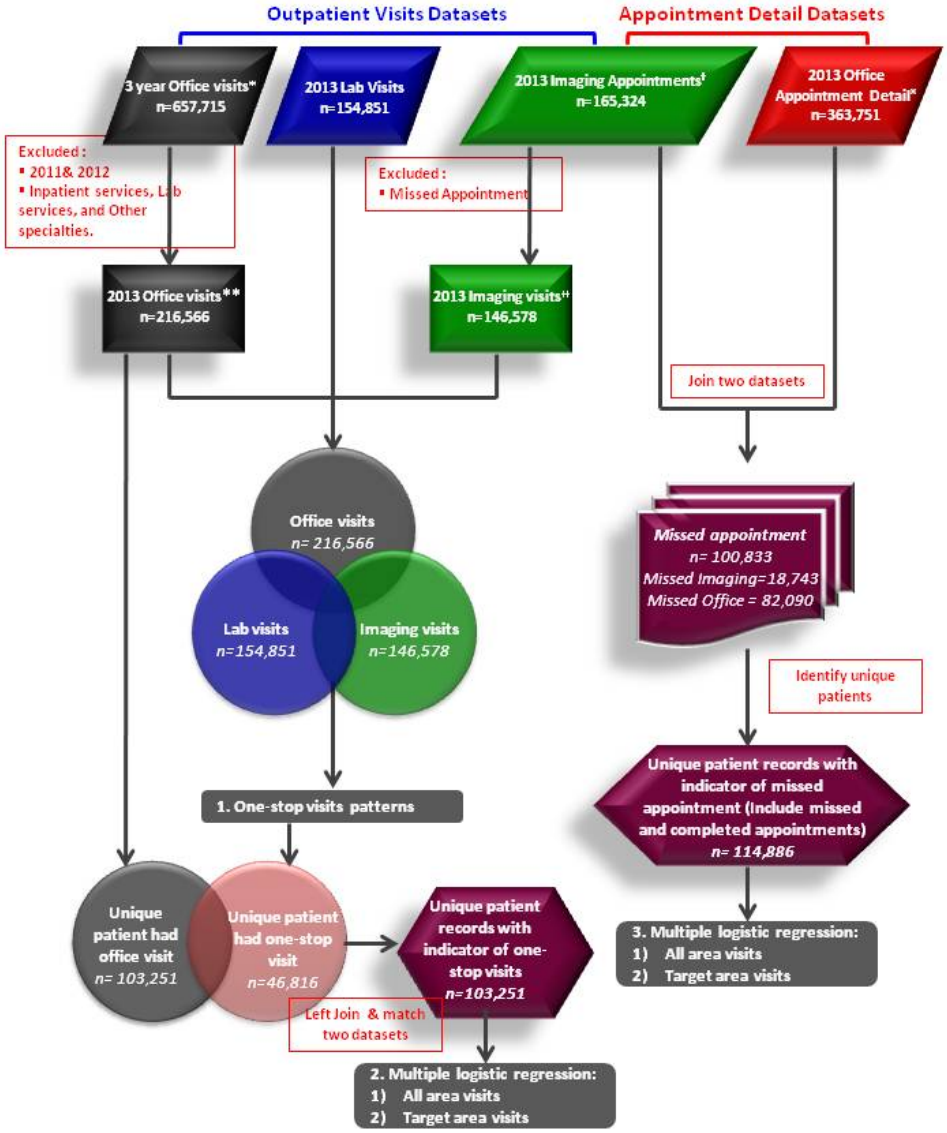
Figure 2: Studied Medical Services and Modalities



Service	Label in Tables	Modality
IMG 1	CT	Computerized Axial Tomography(CT)
	MR	Magnetic Resonance Imaging (MRI)
IMG 2	US	Ultra sound
	DX	X-ray
	MA	Mammogram
DS	DS	Dual X-ray Absorptiometry (DEXA Scan)
NM	NM	Nuclear Medicine
SB	SB	Stereotactic Biopsy

Source: Author created

Figure 3: Study Design



Source: Author created

***** 3 year office visits covers 01/01/2011 – 12/31/2013 all office visits, includes Primary care, Urgent care, Women's health, Pediatric care, Cardiology, Inpatient services, Lab services, and Other specialties.

*** *** 2013 office visits covers 01/01/2013-12-31/2013 all office visits, includes Primary care, Urgent care, Women's health, Pediatric care, and Cardiology, excludes Inpatient services, Lab services, and Other specialties.

‡2013 imaging appointments covers 01/01/2013-12/31/2013 all imaging appointments, includes completed appointments and missed appointments in 8 modalities: *Computerized Axial Tomography (CT), Magnetic Resonance Imaging (MRI), Ultra Sound , X-ray, Mammogram, Dual X-ray Absorptiometry (DEXA Scan), Nuclear Medicine ,* and *Stereotactic Biopsy.*

‡‡ 2013 imaging visits covers 01/01/2013-12/31/2013 only completed appointments in 8 modalities, excluded missed appointments.

× 2013 office appointment detail covers 01/01/2013-12/31/2013 all office appointments, includes completed and missed appointments in Primary care, Urgent care, Women's health, Pediatric care, and Cardiology, excludes Inpatient services, Lab services, and Other specialties

Multivariate logistic regression

We used multivariate logistic regressions to determine the associations between age, gender and insurance types and different indicators. A basic equation of the logistic regression is:

$$\mathbf{Pr(Indicator_i = 1) = \beta_0 + \beta_1 Age + \beta_2 Gender + \beta_3 Insurance\ Type + \varepsilon_i}$$

Where:

Indicator: Binary dependent variable. We use this multivariable logistic regression model for assessing the likelihood of having one-stop shopping and missed appointment behaviors. Two indicators were generated in the study: indicators of one-stop visit and missed appointment. We coded patients who had one-stop shopping or missing appointment behavior as "1", otherwise as "0".

Age: Categorical independent variable. Age is provided in five year age grouping, 0 to 4 years, 5 to 9 years and so on. We code "0 to 4 years" as 1, "5 to 9 years" as 2 and so on. The maximum is 18 for "85 years and older".

Gender: Binary independent variable. Patients who are female are coded as “1”, otherwise coded as “0”.

Insurance Type: Binary independent variables. Four insurance types are provided: *commercial*, *Medicare*, *Medicaid*, and *self-pay*. Generally, employed patients have *commercial* insurance offered by their employers. *Medicare* is "the federal health

insurance program for people who are 65 or older, certain younger people with disabilities, and people with End-Stage Renal Disease (permanent kidney failure requiring dialysis or a transplant, sometimes called ESRD)" (Medicare, 2014). *Medicaid* is a federal and state joined health and medical services program for individuals and families with low income and few resources (Medical News Today, 2014). The current minimum eligibility for national Medicaid is 133% of the federal poverty level (Medicaid, 2014). *Self-pay* patients are considered those make more than 133% of the federal poverty level but not enough to have commercial insurance. Patients who were included in a specific type are coded as "1", these are excluded from a specific type are coded as "0".

The variables used in the study are described in Appendix A.

Results

Number of patients

There were 517,995 outpatient visits, which include primary care, urgent care, women's health, pediatric care, cardiology, outpatient lab and imaging visits. 149,223 unique patients have been seen by the health network outpatient sites in 2013. The unique patient count is not the sum of patient count of office visits, lab visits and imaging visits, since some patients might use more than one health services. For example, a patient could have office visits and lab visits; we would count this patient as office patient, as well as lab patient. One-stop visits (a series of visits to multiple services in 30 days, regardless visit location) involved 209,344 visits (40.4% of 517,955 total visits) by 46,816 (31.4% of 332,386 total patients) patients (Table 1).

Table 1. Number of Visits and Patients

Total Visits	**517,995**
Office [a]	216,566
Lab	154,851
Imaging [b]	146,578
Total Patients[c]	**149,223**
Office[a]	103,252
Lab	71,269
Imaging	55,497
One-stop visits	**209,344 (40.4%)**
Patients with one-stop visits	**46,816 (31.4%)**

[a] Office services include primary care, urgent care, women's health, pediatric care and cardiology
[b] Imaging services include CT, MRI, ultra-sound, X-ray, Mammogram, DEXA Scan, Nuclear Medicine and Stereotactic Biopsy (more details refer to Figure 1)
[c] Number of total patients is not the sum of patients who had office, lab and imaging visits, for example, a patient could have both office and imaging visits.

Characteristics of one-stop shopping patients

Due to data limitations, we were only able to identify 40,827 one-stop shopping patients' demographic information. Among these 40,827 patients, the percentage of a patient who had one-stop visit increased with age after five and reached the highest point in the age group of 65-69 years as 1.8% (2,628 out of all 149,223 patients). After age of 69, one-stop shopping behavior decreased. In terms of insurance type, patients with commercial insurance had highest percentage for one-stop visits, followed by Medicare, Medicaid, and self-pay. In general, women were more likely to have one-stop shopping behavior than men (16.5% vs. 10.9%). Among the 40,827 identified patients with one-stop shopping behavior, there were 4,661 patients living in the target area. These patients showed similar trends as the general population in that women were more likely to have one-stop visits than men (1.9% vs. 1.3%), and elderly were more likely to have one-stop visits as well. Similar to the general patients, after the age of 69, the percentage of target area patients with one-stop visits decreased. Unlike general patients, Medicaid patients from the target area were more likely to have one-stop visits than Medicare and self-pay patients (Table 2)

Table 2 Characteristics of Patients with One-stop Shopping Behavior

(01/01/2013-12/31/2013)

	# of patients with One-stop visits of all area (n=40,827)					# of patients with One-stop visits of Target area (n=4,661)				
	Female	%	Male	%	All gender	Female	%	Male	%	All gender
Age Group	**24,628**	**60.3[a]**	**16,199**	**39.7[a]**	**40,827**	**2,780**	**59.6[b]**	**1,881**	**40.4[b]**	**4,661**
0-4	497	2.0	481	3.0	978	45	1.6	38	2.0	83
5-9	390	1.6	378	2.3	768	38	1.4	44	2.3	82
10-14	550	2.2	506	3.1	1,056	65	2.3	57	3.0	122
15-19	863	3.5	607	3.7	1,470	103	3.7	68	3.6	171
20-24	1,109	4.5	667	4.1	1,776	167	6.0	116	6.2	283
25-29	1,116	4.5	643	4.0	1,759	136	4.9	113	6.0	249
30-34	1,190	4.8	787	4.9	1,977	142	5.1	105	5.6	247
35-39	1,210	4.9	813	5.0	2,023	144	5.2	111	5.9	255
40-44	1,503	6.1	954	5.9	2,457	169	6.1	120	6.4	289
45-49	1,698	6.9	1,102	6.8	2,800	170	6.1	134	7.1	304
50-54	2,095	8.5	1,280	7.9	3,375	203	7.3	136	7.2	339
55-59	2,253	9.1	1,418	8.8	3,671	258	9.3	137	7.3	395
60-64	2,163	8.8	1,478	9.1	3,641	241	8.7	152	8.1	393
65-69	2,628	10.7	1,673	10.3	4,301	297	10.7	184	9.8	481
70-74	1,965	8.0	1,436	8.9	3,401	216	7.8	164	8.7	380
75-79	1,386	5.6	952	5.9	2,338	155	5.6	89	4.7	244
80-84	1,002	4.1	549	3.4	1,551	107	3.8	61	3.2	168
85+	1,010	4.1	475	2.9	1,485	124	4.5	52	2.8	176
Insurance type	**24,628**	**60.3[a]**	**16,199**	**39.7[a]**	**40,827**	**2,780**	**59.6[b]**	**1,881**	**40.4[b]**	**4,661**
Commercial	13,570	55.1	9,018	55.7	22,588	1,605	57.7	1,130	60.1	2,735
Medicare	8,794	35.7	5,523	34.1	14,317	134	4.8	83	4.4	217
Medicaid	1,400	5.7	909	5.6	2,309	951	34.2	592	31.5	1,543
Self-pay	864	3.5	749	4.6	1,613	90	3.2	76	4.0	166

[a] *The denominator is the number of patients with one-stop visits of all area (n=40,827), the numerator is the number of visits of the specific group.*

[b] *The denominator is the number of patients with one-stop visits of target area (n=4,661), the numerator is the number of visits of the specific group.*

Patterns of one-stop shopping behavior

There were 209,344 visits involved in one-stop shopping. Table 3 summaries the number of visits and number of patients for each service analyzed in the study. Among one-stop visits, imaging services were most frequently visited (39.02% of 209,344), followed by outpatient lab services, primary care, urgent care. These four services together accounted for 96.75% (202,534 visits) of all the one-stop visits. Among the imaging services, imaging 2 (ultra sound, x-ray and mammogram) were visited the most (28.93% of 209,344 visits), x-ray itself contributed 15.58% visits. Nuclear medicine had lowest volume.

Table 3. Numbers of Visits and Patients in All One-Stop Shopping Visits

Specialty	No. of Visits	% [f]	No. of Patients
Primary Care	**42,560**	**20.33**	**21,754**
Urgent Care	**22,431**	**10.71**	**14,554**
Women's health	**23**	**0.01**	**16**
Pediatric	**1,540**	**0.74**	**995**
Cardiology	**5,246**	**2.51**	**2,351**
Outpatient Lab	**55,861**	**26.68**	**30,168**
Imaging	**81,682**	**39.02**	**33,518**
Imaging 1	*15,981*	*7.63*	*6,009*
CT[e]	8,858	4.23	3,405
MR[e]	7,123	3.40	2,604
Imaging 2	60,568	*28.93*	25,187
US[e]	15,246	7.28	6,348
DX[e]	32,609	15.58	13,271
MA[e]	12,713	6.07	5,568
DS[e]	*4,581*	*2.19*	*2,143*
NM[e]	*80*	*0.04*	*30*
SB[e]	*472*	*0.23*	*149*

[e] *Labels have been explained in Figure 1*

[f] *The denominator is the total number of one-stop visits (n=209,344), the numerator is the number of visits of the specific service.*

Total of 209,344 visits involved in one-stop shopping were counted 71,964 times. One-stop shopping visited two to six services. Most of the one-stop shoppers (91.1%) visited two or three services (Figure 4 & Table 4). Table 5 and Table 6 present the combinations of two and three services. The combination of primary care and outpatient lab services was most frequently used with 46,381 times (64.45% of 71,964 times of one-stop shopping). If we counted imaging services (imaging 1, imaging 2,dual X-ray Absorptiometry, nuclear medicine and stereotactic biopsy) as a whole, primary care and imaging services combination was the second frequently used among all two service combinations studied (15,712 times visited, and 21.83% of 71,964 times of one-stop shopping). Within the imaging services, primary care plus imaging 2 (ultra sound, X-ray and Mammogram) were the most often visited with 12,370 times (17.19% of 71.946 time of one-stop shopping) (Table 5). For the three services combination, the most frequently visited was primary care, outpatient lab service and imaging services with 13,931 times of one-stop shopping (19.31% of 71,946 times of one-stop shopping) (Table 6).

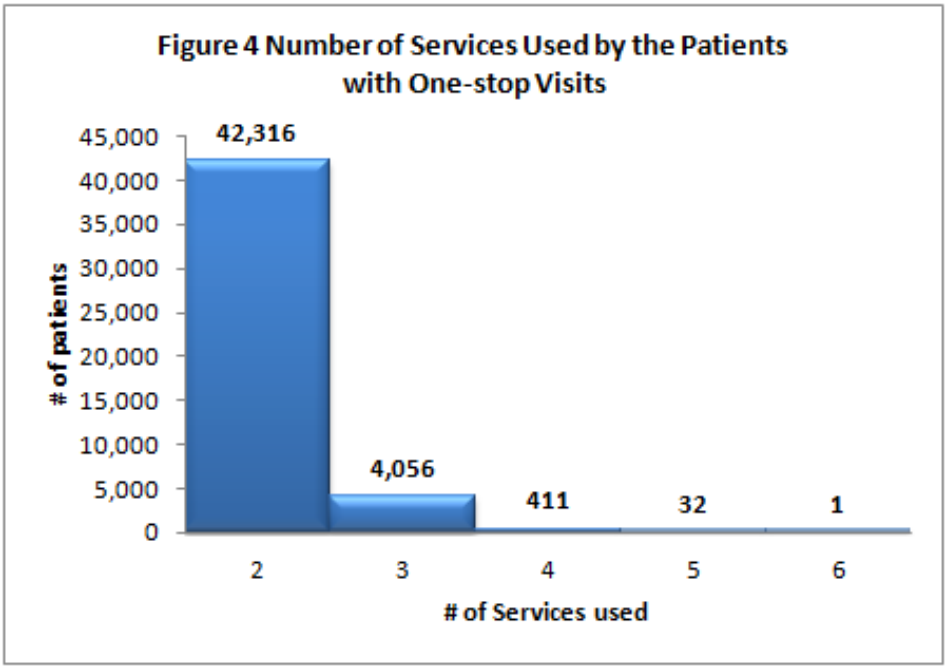


Table 4 Summary of Number of Services

# of Services used	# of patients	%
2 Services	42,316	90.4
3 Services	4,056	8.7
4 Services	411	0.9
5 Services	32	0.1
6 Services	1	0.0

Table 5 Patterns of primary care + 1 Service Combinations in One-stop Visits (01/01/2013-12/31/2013)

Combination of Services	Count of One-stop Shopping	% [g]	# of Patients
Primary Care + Urgent Care	4,767	6.62	1,447
Primary Care + Women's Health	12	0.02	2
Primary Care + Pediatric	34	0.05	15
Primary Care +Cardiology	1,586	2.20	383
Primary Care + Lab	46,381	64.45	12,787
Primary Care + Imaging	15,712	21.83	4,169
Primary Care + Imaging 1	*2,594*	*3.60*	*659*
Primary Care + CT	1,044	1.45	271
Primary Care + MR	1,550	2.15	388
Primary Care + Imaging 2	*12,370*	*17.19*	*3,299*
Primary Care + US	2,622	3.64	698
Primary Care + DX	8,029	11.16	2,090
Primary Care + MA	1,719	2.39	511
Primary Care + DS	*725*	*1.01*	*204*
Primary Care + NM	*3*	*0.00*	*1*
Primary Care + SB	*20*	*0.03*	*6*

[g] The denominator is the count of time of one-stop shopping (n=71,964), the numerator is visit frequency of a specific combination.

Table 6 Patterns of primary Care + 2 or 3 Services Combinations in One-stop Visits (01/01/2013-12/31/2013)

Combination of Services	Count of One-stop Shopping	% [g]	# of Patients
Primary Care +Urgent Care + Women's Health	-	-	-
Primary Care +Urgent Care + Pediatric	3	0.00	1
Primary Care +Urgent Care + Lab	4,031	5.60	437
Primary Care +Urgent Care + Imaging	2,364	3.28	288
Primary Care +Urgent Care + Cardiology	96	0.13	13
Primary Care +Lab + Imaging	13,931	19.36	1,311
Primary Care + Imaging 1	*3,041*	*4.23*	*211*
Primary Care + CT + Lab	2,014	2.80	147
Primary Care + MR + Lab	1,027	1.43	64
Primary Care + Imaging 2	*10,154*	*14.11*	*1,004*
Primary Care + US + Lab	3,285	4.56	305
Primary Care + DX + Lab	5,186	7.21	472
Primary Care + MA + Lab	1,683	2.34	227
Primary Care + DS + Lab	*718*	*1.00*	*93*
Primary Care + NM + Lab	-	-	-
Primary Care + SB + Lab	*18*	*0.03*	*3*
Primary Care +Urgent Care + Lab + Imaging[h]	455	0.22%	146

[g] The denominator is the count of time of one-stop shopping (n=71,964), the numerator is visit frequency of a specific combination.

[h] This is a four services combination

Likelihood of one-stop shopping

Table 7 presents the multivariable logistic regression of the likelihood of one - stop shopping behavior among all patients in 201. Initially a regression was run to investigate the likelihood of overall one-stop shopping behavior regardless of number of services used in the one-stop shopping. We also were interested in finding out if there are any differences between number of services used in a one-stop visit and how good our model was. By grouping different number of services of one-stop visits, we found more than 90% of the patients with one-stop shopping behavior have visited two services, details can be found in Table 4. Three logistic regressions were run for two services used, three services used and four services used one-stop visits. The dependent variable for each regression was if the patient had one-stop shopping behavior (YES= "1", NO= "0"), and if the patient had a one-stop shopping of two, three, and four services used (Yes = "1", No = "0"). All regressions investigated same set of independent variables: age gender, insurance type; and within the insurance type, all regressions used same reference group - Medicare. In this study, a p-value less than .01 is defined as highly significant, less than .05 is defined as significant.

Four regressions showed consistent results: age and gender were highly significant across all; self-pay is highly significant except in Regression 4 - four services used. Commercial and Medicaid insurance type were highly significant in Regression 2 - 2 services used, and Regression 3 - three services used.

Regression 1 showed age and gender highly significant associated with overall one-stop shopping behavior (no matter how many services were used). In general, every

5 years age increase, the odds of one-stop shopping behavior increased 9%. The odds ratio for gender was 1.35 with coefficient 0.3 and a 99% (1.085, 1.094) confidence interval. This suggested that women were 1.35 times more likely to have one-stop shopping behavior than men. Patients who had commercial or Medicaid insurance were not significantly different from Medicare patients in terms of one-stop shopping behavior. No surprise, self-pay patients were least likely to be a one-stop shopper (OR: 0.32).

Regression 2 had the best estimation. The result indicates age, gender and insurance type are all highly significant associated with two services used in one-stop shopping. With 5 years increasing in age, patients were 1.14 times more likely to perform one-stop shopping behavior. Women were 1.13 times more likely to use two services in a one-stop visit than men. For insurance types, Medicaid patients were 1.78 times more likely to use two services in a one-stop visit, compared to Medicare, followed by patients with commercial insurance, they were 1.10 more likely to have one-stop visits. Again, self-pay patients were least likely to become one-stop shoppers (OR: 0.46). Regression 3 investigation of likelihood of 3 services used in a one stop visit showed similar results as two services used. However Regression 4 - four services used started to loss significance due to the small sample size. Therefore, we did not go on for more services used in one-stop visits.

Among the patients from the target area, results were consistence with all patients: Gender and age were still highly significant across the board. For overall one-stop visits, patients with commercial and Medicaid insurance did not show significant difference from Medicare patients in terms of one-stop shopping behavior. Self-pay

patients still were least likely to have one-stop visits. We stopped at three services used in one-stop shopping, since the model was starting to lose significance (Table 8).

Table 7
Multivariable Logistic Regression Results- the likelihoods of one-stop shopping behavior (Patient from ALL Area)

	Regression 1: All Area One-stop Visit (n=103,251 Yes = 40,827 No = 62,424)					Regression 2: All Area 2 Services Used (n=103,251 Yes= 18,921 No = 84,330)				
	Coefficient	***P***	**Odds Ratio**	**95% CI**		**Coefficient**	***P***	**Odds Ratio**	**95% CI**	
age	**0.09	<.0001	1.09	1.085	1.094	**0.13	<.0001	1.14	1.133	1.145
Gender	**0.30	<.0001	1.35	1.317	1.388	**0.12	<.0001	1.13	1.09	1.164
Insurance Type[†]										
Commercial	-0.04	0.0789	0.97	0.929	1.004	**0.09	0.0001	1.1	1.045	1.148
Medicaid	-0.04	0.2683	0.96	0.903	1.029	**0.58	<.0001	1.78	1.646	1.924
Self_pay	**-1.13	<.0001	0.32	0.303	0.344	**-0.78	<.0001	0.46	0.418	0.5
	Regression 3: All Area 3 Services Used (n=103,251 Yes= 1,481 No =100,770)					**Regression 4: All Area 4 Services Used (n=103,251 Yes = 320 No =102,931)**				
	Coefficient	***P***	**Odds Ratio**	**95% CI**		**Coefficient**	***P***	**Odds Ratio**	**95% CI**	
age	**0.12	<.0001	1.12	1.110	1.140	**0.13	<.0001	1.14	1.100	1.190
Gender	**0.34	<.0001	1.4	1.290	1.520	**0.36	0.0023	1.43	1.140	1.800
Insurance Type[†]										
Commercial	**0.38	<.0001	1.46	1.310	1.640	0.24	0.134	1.27	0.930	1.740
Medicaid	**0.28	0.0086	1.33	1.080	1.640	-0.1	0.7661	0.9	0.470	1.760
Self_pay	**-0.69	<.0001	0.5	0.390	0.650	-1.03	0.0115	0.36	0.160	0.800

Note: The Wald statistics are distributed chi-square with 1 degree of freedom.

**Significant at the 5%; ** Significant at the 1%*

[†] reference group was Medicare patients

Table 8 Multivariable Logistic Regression Results- the likelihoods of one-stop behavior (Patients from TARGET Area)

	Regression 5: Target Area One-stop Visit (n=10,7691 Yes=4,659 No=6,110)					Regression 6: Target Area 2 Services Used (n=10,7691 Yes=2,134 No=8,635)					Regression 7: Target Area 3 Services Used (n=10,7691 Yes=293 No=10,476)				
	Coefficient	***P***	**Odds Ratio**	**95% CI**		**Coefficient**	***P***	**Odds Ratio**	**95% CI**		**Coefficient**	***P***	**Odds Ratio**	**95% CI**	
age	**0.09	<.0001	1.1	1.08	1.11	**0.14	<.0001	1.15	1.13	1.17	**0.10	<.0001	1.11	1.06	1.15
Gender	**0.24	<.0001	1.27	1.17	1.37	*0.12	0.0207	1.12	1.02	1.24	**0.44	0.0005	1.55	1.21	1.99
Insurance Type[†]															
Commercial	-0.07	0.2455	0.93	0.82	1.05	*0.17	0.0223	1.19	1.02	1.37	0.02	0.9265	1.02	0.72	1.44
Medicaid	0.03	0.7659	1.03	0.83	1.28	**0.73	<.0001	2.07	1.62	2.66	-0.04	0.9	0.96	0.49	1.89
Self_pay	**-1.16	<.0001	0.31	0.26	0.39	**-0.67	<.0001	0.51	0.39	0.68	-1.03	0.0128	0.36	0.16	0.8

Note: The Wald statistics are distributed chi-square with 1 degree of freedom.

**Significant at the 5%; ** Significant at the 1%*

[†] Reference group was Medicare patients

Likelihood of missing appointment

Two logistic regressions were conducted to investigate the likelihood of missing scheduled appointment behavior. Table 7 presents the results of the logistic regressions. Two regressions showed similar results for both all area and target area: age and gender highly significantly associated with missing appointment behavior. Medicaid patients were not significant different from Medicare patients in regards to missing appointment behavior. Patients with commercial insurance were less likely to miss a scheduled appointment compare to Medicare patients. However, self-pay patients were most likely to miss an appointment. The odd ratio was 27.86 and 23.7 for all area and target area patients, respectively. This means, compared to Medicare patients, self-pay patients are nearly 28 and 24 times more likely to miss an appointment across all area and target area, respectively.

Table 9 Multivariable Logistic Regression Results- the likelihoods of missing scheduled appointment (All area vs. Target area)

	All Missed Appointments (n=114,886 Yes= 43,217 No=71,669)					Patients from Target Area Missed Appointments (n=12,099 Yes=4,438 No= 7,661)				
	Coefficient	***P***	**Odds Ratio**	**95% CI**		**Coefficient**	***P***	**Odds Ratio**	**95% CI**	
Age	**0.09	<.0001	1.10	1.09	1.10	**0.11	<.0001	1.12	1.10	1.13
Gender	**0.51	<.0001	1.67	1.62	1.73	**0.47	<.0001	1.59	1.44	1.76
Insurance Type[ɬ]										
Commercial	**-0.32	<.0001	0.72	0.68	0.77	**-0.25	0.0045	0.78	0.66	0.93
Medicaid	-0.05	0.392	0.95	0.84	1.07	0.07	0.7078	1.08	0.74	1.57
Self_pay	**3.33	<.0001	27.86	26.31	29.50	**3.17	<.0001	23.70	19.94	28.18

Note: The Wald statistics are distributed chi-square with 1 degree of freedom.

*Significant at the 5%; ** Significant at the 1%

ɬ Reference group was Medicare patients

Discussion and Conclusions

This study is a market opportunity analysis for a one-stop clinic in Reno. To understand the community needs of a one-stop clinic is critical for making the business decision, especially during this rapid changing period of the U.S. health industry. On one hand, we want to improve the quality of care while reducing cost; on the other hand, we expect the clinic will be able to financially be self-supported.

Our study showed the likelihood of one-stop shopping behavior increased when age increased, and reached the highest percentage in the 65 to 69 years group. After the age of 69, one-stop shopping behavior decreased. The decrease might be due to the independence of the patient. Generally, older people need assistance in transportation, and they may have multiple health conditions. This group of patients has more of a need for a convenient location with multiple services to reduce the frequency of the visits while getting all necessary services. One-stop clinic matches all those purposes, making multiple services in one visit possible. Across all age groups, women had higher percentage of one-stop shopping behavior than men. This may because men tended to delay seeking help for health (Galdas, Cheater, & Marshall, 2005).

The number of services used in a one-stop visit may be affected by the condition of the patient, appointment availability in a specific location in 30 days, and the wiliness of the patient. In our study, majority of the one-stop visits used two services and three services. The maximum number of services used were six, but only occurred once (Table 4). This result does not suggest that our patients only have the need for two or three services at one location. Instead, our 50+ service locations are spread throughout the

whole city, as well as rural areas, our patient might have limited access to necessary services. One-stop clinic may increase the access to care and fix the differences between market demands and available health services.

In our study, imaging services were the most frequently visited among one-stop visits, followed by outpatient lab service, primary care and urgent care. This result indicates that those services are in high demand. We recommend a one-stop clinic should consider primary care, urgent care, lab and imaging services as the must-have services. As for imaging services, ultra sound, x-ray and mammogram are must-have modalities, since they were counted more than 74% of all imaging visits (60,568 out of 81,682).

When we investigate the combination patterns of one-stop visits, primary care was included for all the combinations. This is because primary care physicians (PCPs) are supposed to serve as navigator for patients' first stop. Any follow-up assessment or specialty referrals should be directed by their PCPs. The high volume of primary care, lab and imaging services combination also indicates this is a general practice model in the field.

Primary care and urgent care combinations frequently occurred as well. This might be due to the availability of a patient's PCP. If a patient could not make an appointment with his/her PCP, and the condition was urgent but not emergency, they might visit urgent care since it does not require an appointment. If a one-stop clinic provided both primary care and urgent care services, physicians would have more flexibility to see their patients. Also, missed/canceled appointments and same day appointments would have more opportunities to be filled. As a result, the utilization will

increase, and urgent care would have more capacity for patients in need, which may lead to fewer visits to ER, since Urgent care is available and cheaper. Less ER visits will reduce the operation cost and also would improve the overall performance score of health care providers, which increases the chance to have share savings.

In terms of insurance type, only self-pay patients were significantly different from Medicare patients. Self-pay patients were least likely to have one-stop visits. This may be due to their ability to pay. In practice, we normally consider these patients make less than livable wage, which means one more visit, one more expense, which includes the bill of visit, lost income, lost household production, etc. One-stop clinic will reduce the frequency of visits for same amount of health services.

As of likelihood of one-stop shopping behavior, age and gender were highly significant. Elderly are more likely to have one-stop visits, which may be due to their complication of conditions. Women are more likely to have one-stop shopping behavior, this may due to their concern for their health, compared to men. These trends are similar between all patients and target area patients. If target area has large number of elderly and females, we may expect high demand for a one-stop clinic.

Patients who missed an appointment may have different reasons. But one of the reasons can be logistic issues, such as lack of transportation, long waiting time, no time off from work, etc. The missing appointment behavior is highly significant associated with age and gender: women are more likely to miss an appointment. Some women maybe need to work and take care of the family. If a one-stop clinic provided adult care and children's care in the same location, it might fit those women's needs. The likelihood

of missing appointments slightly increased when age increased. This may be due to elderly having more needs of multiple services and multiple visits, but they might have difficulties in keeping those appointments, because of logistic reasons. One-stop clinic would be more convenience for patients. Patients who are likely to one-stop shop and who are likely to miss an appointment are demographically similar - elderly and women. This might indicate that patients who missed an appointment because of time consuming and inconvenient locations, even further supports the needs of one-stop clinic.

Limitations

This study has some limitations. First, the actual incomes of patients were not accurate in the Electronic Medical Records (EMR) system, since they were self-reported. Insurance types were used to substitute income and estimated actual income for future analysis. Second, we did not have any information of primary care physician referrals. Therefore, we could not investigate whether one-stop shopping behavior was due to referral or to patients' free choices. Third, our datasets did not come from the same source; different variables were generated in different datasets. We only had residence information of patients in the office visit data, therefore, when we were forced to match patient demographic information with the office visit data, results lost a few one-stop visits data in our analysis. Fourth, our datasets did not reflect the real visit information for women's health and pediatric care. This might due to report writer's coding errors which excluded tow outpatient sites located in hospitals. This issue can be easily fixed by rewriting the code. Finally, our data were limited to the health network ambulatory care

locations, which were nearly 30% of the market. The other 70% of the market could not be analyzed using current data.

Conclusions

Regardless of the limitation of the data, we had successfully analyzed the patterns of one-stop shopping behavior of the health network patients. This could represent 30% of market needs of a one-stop clinic. From the results, we could conclude that there is a local market for a one-stop clinic. The results could help the health network leaders to understanding the market opportunities of a one-stop clinic in Reno, and provide empirical evidence to define the target population. Also, policymakers can use this information to develop better health care delivery models.

This is the first step to analyze market opportunities for a one-stop clinic in Reno. The next step is to estimate the volumes of different services in the target area. Then more financial data will be needed to analyze the cost and benefit of opening a one-stop clinic in a defined location.

Appendices

Appendix A. Variables List

Variable	Variable Description
Indicator of one-stop visit	A patient had one-stop visit in 2013 was coded as "1", otherwise "0"
Indicator of missed appointment	A patient had missing appointment (either office appointment or imaging appointment) in 2013 was coded as "1", otherwise "0"
Age	0-4 = 1
	5-9 = 2
	10-14 = 3
	15-19 = 4
	20-24 = 5
	25 -29 = 6
	30-34 = 7
	35-39 = 8
	40-44 = 9
	44 - 49 = 10
	50-54 = 11
	55-59 = 12
	60-64 = 13
	65-69 = 14
	70-74 = 15
	75-79 = 16
	80-84 = 17
	85+ = 18
Gender	Female = 1, Male=0
Insurance Type	Commercial: Yes = 1, No = 0
	Medicare: Yes=1, No=0 (Reference Group)
	Medicaid: Yes=1, No=0
	Self-pay: Yes=1, No=0

Appendix B Glossary of Terms

Ambulatory care: A generic term for any health service for which an overnight in hospital is not required (e.g., outpatient services, X-ray, day surgery and medical diagnostics). Examples: Well-baby visits, abscess drainage, chemotherapy (Segen's Medical Dictionary, 2012).

Primary care: Primary care is that care provided by physicians specifically trained for and skilled in comprehensive first contact and continuing care for persons with any undiagnosed sign, symptom, or health concern (the "undifferentiated" patient) not limited by problem origin (biological, behavioral, or social), organ system, or diagnosis. Primary care includes health promotion, disease prevention, health maintenance, counseling, patient education, diagnosis and treatment of acute and chronic illnesses in a variety of health care settings (e.g., office, inpatient, critical care, long-term care, home care, day care, etc.). Primary care is performed and managed by a personal physician often collaborating with other health professionals, and utilizing consultation or referral as appropriate. Primary care provides patient advocacy in the health care system to accomplish cost-effective care by coordination of health care services. Primary care promotes effective communication with patients and encourages the role of the patient as a partner in health care (American Hospital Association, 2012)

Urgent care: Urgent care is defined as the delivery of ambulatory medical care outside of a hospital emergency department on a walk-in basis without a scheduled appointment (Urgent Care Association of America , 2008)

One-stop clinic: An outpatient clinic provides integrated healthcare services at a single location.

Appendix C: Institutional Review Board Certificate of Approval

Renown Regional Medical Center
Institutional Review Board
1155 Mill St., X-19
Reno, NV 89502

January 15, 2014

RE: IRB# 2014-003

Dear Ms. Inara Santora,

James Cohen, M.D., Board Designee for Daniel Shapiro, M.D., Interim-Chair, has provided an ***Expedited*** *review* and approved your new study submission package and protocol for the study:

A Financial Assessment of Market Opportunities for a One-Stop Clinic

On **January 14, 2014**. The Institutional Review Board of Renown Regional Medical Center will meet on **January 30, 2014** at which time Dr. Cohen and Dr. Daniel Shapiro will inform them of this approval.

As part of this New Study Package the Board understands and agrees with the following materials for the initiation of research:

- IRB Application
- Statement of Confidentiality
- Investigator Agreement
- Waiver of IRB Fees
- CVs and NIH/CITI Training Certification Materials
- Protocol
- Waiver of Consent & Waiver of HIPAA

IRB Approval necessitates the following:

- It is required that you notify the IRB (and as appropriate; the FDA, institutional officials and sponsors), within 10 days, of the following:
  - Any changes in their research activities, including study completion (amendments must be submitted in consecutive order).
  - Any unanticipated problems involving risk to human subjects.
  - Any adverse reactions, morbidity or mortality.
  - (This timely reporting to the IRB is not limited to local occurrences/findings but also includes multisite discoveries as well)
- It is required that a progress report be reviewed by the IRB within 365 days of your approval date, or before **January 13, 2015** . This report will need to include the number of patients included in the protocol and any complications or adverse reactions. If you do not have a form for such reporting, one can be obtained from the IRB.

- If your study is completed prior to the expiration date, please submit a progress report indicating closure to the IRB.
- All revisions to the protocol and consent form are to be approved by the IRB prior to implementation.

Sincerely,

Matthew J. Free
Renown Regional Medical Center
IRB Coordinator

Renown Regional Medical Center
Institutional Review Board
APPLICATION FOR APPROVAL TO CONDUCT RESEARCH INVOLVING HUMAN SUBJECTS

IRB APPLICATION FACE SHEET

TLE OF PROJECT: A FINANCIAL ASSESSMENT OF MARKET OPPORTUNITIES FOR A ONE-STOP CLINIC
col:
posed start date: Jan.10 2014 Proposed end date: May 10 2014 Estimated total number of subjects: 20,000

PRINCIPAL INVESTIGATOR: Name, address, phone, fax, e-mail	2. CO-INVESTIGATOR(S): complete address(es), e-mail
nara Santora Add: 850 Mill St. Ste. 200 Reno NV 89502 Phone: 775-920-6569 Fax: 775-920-6564 Email: ISantora@Renown.org	
4. APPLICANT/SPONSORING ORGANIZATION: (contact person(s), complete address, phone, fax, e-mail) Inara Santora Add: 850 Mill St. Ste. 200 Reno NV 89502 Phone: 775-920-6569 Fax: 775-920-6564 Email: ISantora@Renown.org	5. PERFORMANCE SITES: (include all) Hometown Health Decision Support

6. INVESTIGATOR ASSURANCE: I accept responsibility for the scientific conduct of the research and I agree to provide information and/or progress reports to the IRB of Renown Regional Medical Center as requested. I verify that all responsible investigators are appropriately credentialed to do the services provided and the work undertaken in this protocol.

Signature of Principal Investigator: _____ Date: _____

7. CONFLICT OF INTEREST: All investigators are responsible for declaring any real or potential conflict of interest in regard to their research. Potential conflicts of interest include any consulting relationship or financial interest in a company sponsoring research you are involved in, which would include stocks, joint ventures, or patents.

A. Do any of the investigators have a real or potential conflict of interest? __YES* _x_NO

B. Will any of the investigators receive payment, either financial or in-kind (other than routine billing for direct care services rendered) related to participation in this study? __YES* _x_NO

C. If YES to either of the above, is this information included on the consent form? __YES _NO*

* Please attach additional sheet with explanations.

8. Research involves the use of: *(check all that apply)* ___Investigational Device ___Investigational Drug, Phase *(circle)*: I II III IV
___Emergency Use Exemption __Compassionate Use Exemption __Humanitarian Use Exemption __Treatment Use Exemption
_x_Cohort ___Case-Control Study ___Survey or Cross-Sectional Study ___Case Series ___Case Reports
___ Investigational Procedure (type): _____ Other: _____

FOR EMERGENCY USE ***please include a letter from the attending physician and an independent physician indicating emergent situation***
COMPASSIONATE USE EXEMPTED STUDIES only: ***All exempt studies must complete the Statement of Exemption Form in addition to the application and a letter indicating why the individual requires compassionate use.***

IRB ACTION ON PROTOCOL & INFORMED CONSENT

DATE RECEIVED: 1/8/14 IRB #: 2014-003 Requires review fee: √NO __YES: Date Payment Received: _____

TYPE OF REVIEW: __Regular √Expedited __Administrative (including Emergency Use Exemption)
__Deferred from Institution: _____ Approval date: _____ Exp date: _____
DATE REVIEWED: 1/14/14
√Approval as submitted (IRB approval expires on: _____)
___Approval deferred pending receipt of additional information (below)
___Disapproved, for reason below:

Signature of Chairperson: _____ Date: 1/14/14

b. Describe the plan to destroy the identifiers at the earliest opportunity consistent with the conduct of the research (how and when identifiers will be destroyed). If there is a health or research justification for retaining the identifiers or such retention is otherwise required by law, provide the reason to retain identifiers:
The dataset will be de-identified.

4. Explain why the research could not be practicably carried out without this waiver or alteration.
This study is going to identify what services will be needed for the target community; the historical services used will be the major source to predict the future needs. However, all the patients identified will be de-identified.

5. Explain why the research could not practicably be conducted without access to and use of the protected health information.
This study is going to identify what services will be needed for the target community; the historical services used will be the major source to predict the future needs.

Principal Investigator's Assurance:
I assure the RRMC IRB that the information that I provided in this Waiver or Alteration of HIPAA Authorization is accurate and complete; that the PHI that I request is the minimum amount of identifiable private information necessary for my research project; and that the PHI will not be reused or disclosed to any other person or entity, except (a) as required by law, (b) for authorized oversight of the research study, or (c) for other research for which the use or disclosure of protected health information would be permitted by the HIPAA Privacy Rule.

Signature of Principal Investigator or Designee

Jan. 6 2014
Date signed

IRB USE ONLY **Date Reviewed:** __/__/__ __**APPROVED** __**NOT APPROVED--REASONS:**

Signature of Chair or Designee

ıpal Investigator's Assurance:
ısure the RRMC IRB that the information that I provided in this application is accurate and complete.

Signature of Principal Investigator or Designee

Jan. 6, 2014
Date signed

IRB USE ONLY **Date Reviewed:** 1/14/14 **APPROVED** **NOT APPROVED--REASONS:**

Signature of Chair or Designee

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DATE: February 3, 2014

TO: Chunlin Liu, PhD
CC: Inara Santora
FROM: Biomedical IRB

PROJECT TITLE: A financial assessment of market opportunities for a one-stop clinic
SUBMISSION TYPE: Request to Rely on External IRB
EFFECTIVE DATE: 02/03/14
EXPIRATION DATE: Per Renown IRB, January 13, 2015
REVIEW TYPE: Acceptance of External IRB

Thank you for submitting the University application asking to rely on the Renown IRB; and the Renown IRB applications, including those for waivers of the consent process and HIPAA authorization, and the Renown IRB approval letter for this project.

The Biomedical IRB accepts the Renown Regional Medical Center IRB as the reviewing IRB for the above-referenced project. This acceptance is consistent with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46). No further action for this project is required at this time.

The investigators agree to inform the University IRB of the Renown IRB determinations of unanticipated problems or serious or continuing noncompliance, approvals for continuing review, and notice of study closure.

If you have any questions, please contact Gwenn Snow, MS, RD at 775.784.3506 or gwenns@unr.edu Please include your project title in all correspondence with this committee.

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