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EXPLORING THE ECONOMIC COST OF DEPRESSION AMONG LOW-INCOME UN-INSURED LATINOS IN MONTGOMERY COUNTY: RESULTS OF A CASE-STUDY

(Análisis económico de los costes de la depresión: un estudio de casos en la comunidad latina sin seguro médico en el condado de Montgomery)"

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What is required to get a seed to bloom? There is undoubtedly an interaction between various factors such as light, nutrients, and of course a suitable place to grow. The seeds also need to be taken care of by a skilled gardener and be in the company of good neighbors…

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…In loving memory of Nono Pinto (†)

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LIST OF ABBREVIATIONS AND ACRONYMS

$	United States Currency (US Dollars)
∑	Sum
↑	Greater
ACA	Affordable Care Act
AM	Ante Meridiem or in the morning
BMI	Body Mass Index
CAP-MH	Community Academic Partnership for Mental Health
CBOs	Community-based Organizations
CCC	Chronic Care Condition Costs (Comorbidity)
CDC	Center of Disease Control
CDH	Coronary Heart Disease
CGC	Caregivers Costs
CHF	Congestive Heart Failure
CTC	Center for Trauma and the Community
CVD	Cardiovascular Diseases
CVS	CVS Pharmacy
DALY	Disability Adjusted Life Years
DC	District of Columbia
DLE	Disability and Loss of Earnings
DSM	Diagnostic and Statistical Manual of Mental Disorders
DTC	Depression Treatment Costs
DUI	Driving Under the Influence
e.g.	For example
ED	Emergency department

ED-PC Connect	Emergency Department – Primary Care Connect
EMR	Electronic Medical Record
ER	Emergency Room
FCC	Family Costs
FLSA	Fair Labor Standards Act
FMLA	Family and Medical Leave Act
GBD	The Global Burden of Disease
GBD	Global Burden of Disease Study
HA1c	Hemoglobin A1c Test
HALE	Healthy life expectancy
HCCC	Holy Cross Community Center
He/r	Abbreviation for He or Her (possessive noun)
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
IP-RISP	Interventions and Practice Research Infrastructure Program
IPT	Interpersonal therapy
Lab	Laboratory, facility that provides controlled conditions to performed blood work and biological sample analysis.
MCBHP	Montgomery Cares Behavioral Health Program
MD	Maryland
MH	Mental Health Session
MHC	Mental Health Costs
min.	Minutes
N/A	Not Assigned
NAMI	National Alliance on Mental Health
NIH	National Institute of Health
OECD	Organization for Economic Co-operation and Development

OV	Outpatient Visits
PCC	Primary Care Coalition of Montgomery County, Inc.
PHQ	Patient Health Questionnaire
PHQ-2	Patient Health Questionnaire-2
PHQ-9	Patient Health Questionnaire-9
PM	Post Meridiem / after midday or in the afternoon
PRIME-MD	Primary Care Evaluation of Mental Disorders
PRO	Productivity
PTSD	Post-Traumatic-Stress-Disorder
SCC	Spanish Catholic Center of Catholic Charities
SGC	Support Group Costs
SLESQ	Stressful Life Events Screening Questionnaire
U$S	United States Currency (US Dollars)
U.S.	United States of America
UC	Urgent Care
UDC	Untreated Depression Costs
US	United States of America
YLD	Years lived with disability
YLL	Years of Live Lost

Please note that following terms are used interchangeably in this document:

- **Latino and Hispanic**
- **Untreated Depression Costs and Non-Treatment Costs**

BEYOND MONEY: The Real Cost Depression

It was the year 1999 when my eyes abruptly opened to a concept that was always associated with madness...

As a young professional, I was dabbling in health administration while pursuing my master's degree at Universidad Favaloro. At the moment, I was only interested in health processes' efficiency and how quality improvement would increase access to higher quality healthcare services. By then, I would not give much thought to those aspects that might lead an individual to seek health services, neither if they would under nor over utilize them. I would not associate the importance of a holistic healthcare system with a holistic approach to the individual's needs. I would simply dismiss any form of "depression" as another way of "manipulation" … in general, for me health administration was not about personal feelings.

In 1999, the premature death by suicide of my 82-year-old grandfather showed me fiercely the impact of misdiagnosed and untreated depression. As sitting in the front row of a movie theater, I silently imagined and observed the painful waves of negative emotions that might have overwhelmed my "Nono", and certainly left us –all who knew him – powerless. A year later, in 2000, another premature death by suicide of Dr. Rene Favaloro, founder of the University I was attending and my ideological mentor, confirmed to me that depression and its consequences affect all individuals, without discriminating against by age, sex, religion, education levels, political association, or economic status. At that moment I started to grasp the importance of seeing each individual as a whole – where mind, emotions, and body are always interconnected –, and consequently not leaving depression behind.

My perspective completely changed and I started to learn. Since then depression would go far beyond the economic costs of any mental health treatment, the medicine or the social support – or lack-thereof –. Depression would represent a new range of ideas to change, mainly associated with a socially misunderstood and misused concept – taboo – , with old beliefs of fleeting madness – stigma –, with the constant loneliness of unanswered questions – isolation –; and the direct or indirect involvement of all of us – this generation stunned by social networks but absent-minded in personal relationships –.

Thus, those research projects that began as a way to satisfy my curiosity as I walked toward my master degree, became my profession: resilience, the impact of natural disasters in refugees, increasing access to high quality healthcare service for the poor and the elders, prevention and education programs for children and youth at-risk, the impact of depression on health and chronic diseases, post-traumatic stress disorders caused by interpersonal violence. In all of them, depression was the overlooked problem behind any health visit's chief complaint. Therefore, health administration became a way to reinforce a holistic approach where quality, health processes, and individuals are always interrelated in order to prevent any underneath cause to be left behind.

A decade later, in 2011, as a result of my personal, professional and academic search, I was faced with the unique opportunity to explore costs of depression. It was then when, with sadness, I understood how much and how many things my "Nono", Dr. Favaloro, and many others, lost during their lifetime and how much was gone stray at their unforeseen end. It took me years to extrapolate and estimated the economic costs; meanwhile I valued the emotional costs that my grandfather's passing represented to me and my family, such as the many lost opportunities to prevent such abrupt loss, or the many years of unanswered "why (s)". These aspects, at the end, could not be measured in numbers or repaid for with cash.

Sixteen years of intense intellectual and spiritual research thought me that the real cost of depression is beyond money.

Marcela

September 2015

INTRODUCTION

"All clients have suffered any sort of trauma and loss. They were exposed to different kind and level of risk like: violence, war, oppression…" *(Key Informant; Mar 11, 2011)*

"***Reflective Engagement in the Public Interest - A Collaborative Mental Health Research Agenda in the Community"*** (Kaltman, Goodie, Townsend, Watson, Campoli)

Depression is a common but serious illness. Nineteen percent (19%) of Americans will suffer from depression at some time during their lives (Leahy, 2014), and in any given year, 10-14 million people will experience a clinical depression (NAMI, 2009). Depression is a lifelong vulnerability for millions of people.

There is no single cause of depression. Most of the research on depression has focused on individual explanations for depression (e.g., biological and psychological etiologies), but it is likely caused by a combination of genetic, biological, environmental, and psychological factors (NAMI, 2009). The link between poverty and depression and depressive symptoms is well established (Goosby, 2007).

In general, depression remains largely undetected, untreated, and usually under-identified due to the fact that only 20-25% of clinically depressed persons actually see a mental health professional (Coyne, Schwenk, & Fechner-Bate, 1995). People with depression most often visit non-psychiatric medical care providers for relief of their depression symptoms (Aguilar-Gaxiola & Gullotta, 2008).

Depression has human costs like sadness, sense of isolation, feeling like a burden, inability to enjoy life, and -for 35,000 people every year- suicide (Joiner, 2010). These costs in the quality of life are

enough to make us all concerned about depression, but there are also economic costs that are significant- indeed, alarming. However, the number of often substantial economic consequences is frequently overlooked. These costs fall to the social care, education, housing, criminal justice and social security systems, and often they are especially felt by individuals with depression problems and their families (Leahy, 2014).

Depression is the leading cause of medical disability for people aged 14 to 44 (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003). In any 30 day period, depressed workers have 1.5 to 3.2 more short-term disability days (Druss, Schlesinger, & Allen, 2001). Depressed people lose 5.6 hours of productive work every week (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003). Fifty percent (50%) of the loss of work productivity is due to absenteeism and short-term disability (Kessler, et al., 1999). In fact, absenteeism and work performance are directly related to how severe the depression is -the more severe the depression, the worse the outcome. Depressed people are seven times more likely to be unemployed (Lerner, et al., 2004). Additionally, individuals suffering from depression (diagnosed or otherwise) consume considerably more health services than similar individuals without depression symptoms. Consequently, depression is a growing concern for healthcare costs and health insurance companies, particularly as rates of diagnosed depression steadily increase (Faris, 2012).

Previous studies have demonstrated that, immigrant Latinos[1] living in the United States may experience depression because of social and contextual problems such as difficulties with acculturation, discrimination based on ethnicity or presumed immigration status, and poverty (Shattell, et al., 2009). Because Latinos are twice as likely as Whites to live below the federal poverty line (U.S. Census Bureau, 2005b), they can be expected to experience more depression. Therefore, Latinos are identified as a high-risk group for depression, anxiety, and substance abuse (National Alliance for Hispanic Health, 2001).

[1] The terms Latino and Hispanic are used interchangeably in this document.

In particular, Latinos with depression tend to use mental health services less frequently than "White" groups or to defer treatment (Wells, Klap, & Koike, 2000). Some barriers to access are lack of health insurance, lack of immigration documents ("undocumented"), the preference for informal sources of health care, individual responsibility for health care management, and reduced knowledge about mental health (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013). Additionally, once the Latino accessed to health services, the current disparities in mental health services for Latinos are severe and persistent (Alegria, et al., 2007). Therefore, Latinos not only have less access to mental health services than "Whites", but are less likely to receive health care, and are more likely to receive low quality health care when requesting treatment. Consequently, Latinos with depression are at higher risk to be left behind because their mental illness "is not detected" in health care facilities (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013).

Costs of mental health treatment and the financial burden associated with it are additional barriers. Even though there are some mental health services available to those who need them at *sliding fees*[2], the perception of the high cost of treatment or of the medicine is a major barrier to access mental health care (Stefl & Prosperi, 1985). If left untreated, depression can have even more serious — and sometimes long-term — consequences that can affect every aspect of people's life, including the lives of their family.

The human cost associated with depression has been the object of many research initiatives and discussions in the mental health arena. Yet, analyses concerning the economic costs associated to such treatments, what those expenditures represent for the "depressed" individuals and their families, and the impact of this cost on the health system and the society as a whole, is limited. In particular, these analyses are mostly absent as it pertains to low-income Latinos in the US.

Economic researches in direct and indirect costs associated with depression are relatively limited or non-existent for low-income un-insured Latino. Therefore, such types of analysis are necessary to

[2] **Sliding scale fees** are variable costs for products, services, or taxes based on one's ability to pay. Such fees are thereby reduced for those who have lower incomes or less money to spare after their personal expenses, regardless of income *(Wikipedia)*

outline financial expenditures, recognize its key economic components, and estimate how much they represent for the "depressed" individuals and their families. Realizing that many of the human costs cannot be narrowed to a number, an economic estimation may provide a better understanding on what those expenditures mean to the health system and the society at large.

In 2006 a Community Academic Partnership for Mental Health (CAP-MH) was initiated, to work on building community capacity to deliver accessible mental health services to Latino Immigrants, by strengthening an existing partnership between the Center for Trauma and the Community (CTC) in the Psychiatry Department at Georgetown Medical School, and the Primary Care Coalition (PCC) of Montgomery County, Maryland, and its nonprofit clinics' network. In 2011 the CAP-MH received funding from the National Institutes of Health (NIH) for a study called "Improving Mental Health Services for Low-Income Latinos in Primary Care," – which had the main goal of supporting the timely development and evaluation of culturally competent-, trauma-sensitive-, and innovative-interventions to improve patient mental health within the network of clinics serving the poor and uninsured. During a two-year period (2012-2013), more than 600 people agreed to participate in the screening and interview process at two Community Clinic sites –namely: the Spanish Catholic Center of Catholic Charities (SCC) in Wheaton, and the Holy Cross Community Center (HCCC) in Silver Spring. A sample of 200 individuals was enrolled into the study, and subsequently was confirmed as having moderate, moderately severe, or severe depression.

This dissertation named "Exploring the Economic Cost of Depression among Low-Income Uninsured Latinos in Montgomery County: Results of a Case-Study" –now on nick-named "Cost of Depression" for short, pertains to economic cost analyses associated to mental health treatment, and lack-thereof, in the nonprofit clinics for low-income uninsured Latinos in Montgomery County, Maryland. The goal of this thesis is to better understand the cost impact of prescribed mental health interventions -and the effects of lack of adherence to treatment among community members living with depression.

"Cost of Depression," is an exploratory-quantitative study that aims to add an economic perspective to the community-based participatory research conducted by the CAP-MH. To achieve the goal of this study, seven economic components associated with depression –and its subcomponents - were identified and estimated. Mental health treatment costs (MHC), chronic care condition costs (CCC), work disability and loss of earnings (DLE), social support group costs (SGC), caregivers costs (CGC), and family costs (FCC), were conceptualized and quantified as much as possible.

Furthermore, "Cost of Depression", focuses on the economic analysis of three sample cases that were encountered in the larger depression study ("Improving Mental Health Services for Low-Income Latinos in Primary Care"). Cases at each level of depression (moderated, moderately severe, or severe depression) were randomly selected to illustrate the potential costs involved in the depression treatment, and the potential costs when treatment was not adhered to. The study also explores whether depressive disorder was associated with negative health outcomes; therefore, indicators of medical and social costs connected to these health consequences were measured. Information regarding treatments and health outcomes were derived from participant's medical records.

Direct and indirect costs were estimated utilizing the standard direct/indirect economic costs associated with depression and related comorbid chronic diseases; and they were estimated at two levels, (1) using the clinic cost; and (2) using public rates. The total annual costs and the comorbidity costs were appraised by using the Chronic Disease Cost Calculator[3], which was also used to compare untreated depression costs with the cost of a well-controlled depression treatment. Life Expectancy was calculated using the World Life Expectancy calculator.

Results indicated that uninsured low-income Latinos with depression in Montgomery County struggle to use mental health services. This finding is in agreement with findings by Kohn-Wood & Hooper, 2014 in Latinos in the U.S. An earlier study in this community determined that some barriers to individual access, include: lack of health insurance, lack of immigration documents ("undocumented"),

[3] Developed by RTI International, 2013

stigma, the preference for informal sources of health care, individual responsibility for health care management, and reduced knowledge about mental health (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013).

Despite the fact that Latinos may have access to health care in this community, their perception of the cost of treatment or of the psychotropic medicines is a major barrier to access mental health care. Additionally, the total out of pocket expenses of a depression treatment is likely to increase exponentially if the person suffers from another chronic health condition, such as diabetes, hypertension, obesity or heart disorder. These health problems are prevalent in the Latino community, and in the study sample, 87% had a concomitant chronic health condition.

Meanwhile in this study, some outcomes of untreated depression were higher urgent and emergency care costs, questionable health care effectiveness and uncontrolled chronic disease management. Loss of earnings and productivity played a key role in the final estimation, the younger the sufferer the long-lasting the consequences of depression while the higher the education the greater the economic lost due to inability to work. The impact in family members' mental health remained uncertain.

Consequently, despite the perception that Latinos may have regarding the costs associated with depression and its treatment - and the reality that the depression is a costly chronic care condition - through these three cases it was evident that Depression Costs are very high and become unpredictable and uncontrolled when depression is left untreated. These costs are also expected to increase over time, if indirect costs of comorbid conditions, productivity, and family costs are considered and carefully analyzed.

The dissertation concluded that – in order to avoid "catastrophic" depression costs – it is necessary to improve the approach of the culturally-sensitive effective mental health interventions needed in the community to address depression; yet, it is important to increase access to them by working on the cultural barriers preventing Latinos from seeking depression counseling and by improving quality of services in community clinics.

This document summarizes the manner in which the study was designed and developed, and presents the results of the three case-studies.

CHAPTER 1

RESEARCH PLAN AND METHODS

"It is unknown what depression is about, what the symptoms are, how it can be treated, what can be done, where to go, and what the consequences are." *(A participant at a Focus Group Feb 03, 2011)*

"***Reflective Engagement in the Public Interest - A Collaborative Mental Health Research Agenda in the Community"*** (Kaltman, Goodie, Townsend, Watson, Campoli)

"Cost of Depression" aims to explore the costs associated with a depression treatment and their increase when treatment is not adhered to. Using as baseline the data collected by the research "Improving Mental Health Services for Low-Income Latinos in Primary Care" conducted by the CAP-MH during 2012-2013; this study seeks to provide an economic perspective that may shed light on the factors that influence the expenses related to depression. Its goal is to better understand the cost impact of prescribed mental health interventions and the economic effects of lack of adherence to treatment among community members living with depression.

This thesis Cost of Depression does not pursue to compare the cost of mental health treatment versus the cost associated with the lack of access or adherence to treatment. Such comparison would represent a larger study and the active involvement of public and private stakeholders that presently may be directly or indirectly collaborating with different approaches and solutions to mental health

treatments related to depression. This study looks forward to being considered the first step toward a more in-depth cost analysis, for when time and resources are available.

The goals of this research are:

1. Identify and assess direct and indirect costs associated with a depression treatment; and
2. Measure key economic elements associated with depression based upon the findings from three case-studies.

Achieving these goals, the hypothesis to prove is:

Depression is a common but serious illness that has high human and monetary costs. Untreated depression increases the likelihood of engaging in risky behaviors, and can lead to higher financial burdens for individuals and families.

DTC = (↑) high

UDC = (↑↑) higher

DTC = Depression Treatment Costs
UDC = Untreated Depression Costs

Depression can lead to greater financial burdens for individuals and families, and when left untreated its economic variables became *"unpredictable or uncontrolled."*

Depression Costs = DTC or UDC

DTC or UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC

DTC = Depression Treatment Costs
UDC = Untreated Depression Costs
MHC = Mental Health Costs
CCC = Chronic Care Condition Costs (Comorbidity)
DLE = Disability and Loss of Earnings
PRO = Productivity
SGC = Support Group Costs
CGC = Caregivers Costs
FCC = Family Costs

Study Design

To achieve the goal of "Cost of Depression" dissertation, issues such as "out-of-pocket" expenses, mortality and morbidity costs, work disability and loss of earnings, psychotropic medication costs, and avoidable emergency room visit costs, as well as additional caregiver costs, were studied and conceptualized.

An economic formula was developed and its components and sub-components were computed in three sample cases that were encountered in the larger depression study ("Improving Mental Health Services for Low-Income Latinos in Primary Care"). Cases were randomly selected among participants that suffered from three different level of depression (moderate, moderately severe, and severe depression). The idea was to test and observe the variation of the potential costs involved on the depression treatment, and the incremental costs when treatment was not adhered to. A detail of the cost assumptions and selection is provided in Chapter 4.

The study also explores whether depressive disorder was associated with negative health outcomes. Therefore, indicators of medical and social costs associated with these health consequences were measured. Information regarding treatments and health outcomes were derived from participant's medical records.

Additional social components and demographic information about the Latino population in Montgomery County, Maryland is provided in Chapter 3 (*Understanding the Context*).

Due to the limitations of the study, "Cost of Depression" does not explore the emotional costs associated with depression, early loss due to suicide, dependence to prescription or recreational drugs. This thesis does not evaluate those costs either for the person living with depression or for their family, close relatives or friends.

Data Analysis

The data was manually collected during the research "Improving Mental Health Services for Low-Income Latinos in Primary Care" conducted by the CAP-MH during 2012-2013. Additional information regarding treatments and health outcomes derived from participant's health records. Through the combination of both set of data, it was possible to identified co-existent chronic care conditions that participants might have suffered from (comorbidity) and determined whether they were treated or not.

Economic components and their controllability were identified through a literature review such as the Global Burden of Disease Study (GBD) (World Health Organization, 2004); Depression in Latinos: Assessment, Treatment, and Prevention (Aguilar-Gaxiola & Gullotta, 2008); The Hidden Costs of Mental Illness (Upper Bay Counseling and Support Services, Inc.); Quality Improvement Annual Report at Spanish Catholic Center of Catholic Charities (Campoli, M., 2010) and the Official Final Deaths for 2010 Report (Center of Disease Control, 2012); among others.

A formula was developed with the intention of reflecting all the related economic elements associated with depression as much as possible, and then it was computed in three different depression scenarios.

Two corresponding analysis are presented by this thesis: (1) the social & health analysis and (2) the economic analysis.

Social & Health Analysis

"Cost of Depression" includes the following social and health data:

- *Background information.* Demographics (age, gender, education, time living in the United States, language of preference); health literacy, financial information, children living in other countries (family separation), and social support.

- *Chart Outcomes.* Health diagnosis, clinic visits, treatment for depression, PTSD, or other mental disorders, including type of treatment, sessions, medications, and whether taken as prescribed. The chart review was conducted in person at each Community Health Center.

- *Mental Health Outcomes.* Depression was assessed with the Patient Health Questionnaire (PHQ), (Spitzer & Williams, DSM-III and the Transformation of American Psychiatry: A History, 1994). The validity of a Spanish version of the PHQ was established (Diez-Quevedo, Trangil, Sanchez-Planell, Kroenke, & Spitzer, 2001). Trauma exposure was assessed with questions from the Stressful Life Events Screening Questionnaire (SLESQ) (Goodman, Corcoran, Turner, Yuan, & Green, 1998) (Green, et al., 2006). Post-traumatic stress disorder (PTSD) was assessed with the PTSD Checklist (Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J. A., & Keane, T. M., 1993).

Economic Analysis

To estimate the costs associated with depression treatment - and its impact if treatment is not adhered to-this study explore the depression cost using three study-cases corresponding to three different scenarios based on the level of depression (moderated, moderately severe, and severe depression).

The "Depression Costs" formula used to appraise depression costs in this study was developed based on key economic elements identified during the literature review (Chapter 2), the different focus groups conducted during the research process, and several informal interviews conducted at community clinics. The goal of this tool is to estimate direct and indirect tangible and intangible costs associated with depression as close to the reality as possible. This tool may need further validation in future studies.

Calculations derived from:

Depression Costs = DTC or UDC

DTC or UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC

1. MHC = Direct Costs + Indirect Costs
   MHC Direct Costs = Diagnosis + Treatment + Medication
   MHC Indirect Costs = Transportation + Miscellaneous (parking, tips, other)

2. CCC = Direct Costs + Indirect Costs
   CCC Direct Costs = Health Visits + Labs + Medication + Urgent Care + Emergency Care + Hospitalization
   CCC Indirect Costs = Transportation + Miscellaneous (parking, tips, other)

3. DLE = YLL + YLD + DALY + LOSS OF EARNINGS

4. PRO = Absenteeism + Time Off Work + Not-Value-Added-Time + Waiting Time + Waiting List

5. SGC = Housekeeping Hours + Errands Hours + Baby/Children Sitter

6. CGC = CG Loss of Earnings and Productivity + Financial Support
   CGC = Absenteeism + Time Off Work + Additional Financial Support

7. FC = ∑ Individual "DTC"/"UDC" per family member or close relative

Costs identified or mentioned were estimated utilizing the standard direct/indirect economic costs associated with depression and related comorbid chronic diseases; and it was estimated at two levels, (1) using the clinic cost; and (2) using public rates (See Chapter 4).

The following factors were considered in the calculation: mental health diagnosis and treatment costs, psychotropic, transportation, outpatient chronic care treatment (OV), labs and medication for chronic conditions, urgent visits (UC), emergency room visits (ER), disability and loss of earning variables (YLL, YLD, DALY, HALE). Productivity factors such as absenteeism, time off work, not-value-added time, and wait-time for an appointment, and waiting list to access health services were also measured. Support group and caregivers' productivity costs were also measured.

- *Individual Costs.* Direct and indirect costs were identified through several different ways:

    1. *Informal Focus Group:* In the month of April, 2015, a group of ten (10) health promoters were gathered with the goal of providing input on costs associated with depression. Health promoters are trained trusted community members, who in coordinated efforts help other members with health education and promotion as well as community

resources. General questions were asked in order to verify if assumptions previously made were correct and close to the participant's reality.

2. *Health Records:* Information such as diagnosis and treatment, mental health medication, labs, chronic care treatment and medicine, and emergency room medicine was collected from medical health records, depending upon availability and access to that data. This data was complemented and analyzed against health literature review and health benchmarks.
3. *Literature Review:* labor and quality data was gathered from literature review and documented cases from past experiences at community health clinics.

- *Depression Treatment Annual Costs.* Total annual costs were compared with the comorbidity costs, appraised by using the Chronic Disease Cost Calculator (Centers for Disease Control and Prevention / developed by RTI International, 2013). The tool was used to estimate DTC, a further description is provided under Key Analytic Tools.

The estimation is limited to the data collected during the research's baseline survey, follow-up survey and health record release. Some inpatient treatment data and information on emergency room visits or hospitalizations, as well as expenditures incurred by family members, may not be available. A detail of the concepts and assumptions about costs related to: diagnosis & treatment, medication, transportation, chronic health conditions, time off work, not-value-added time, waiting-time, emergency room visits; and annual income can be seen in Chapter 4.

- *Life Expectancy.* Life Expectancy was calculated using the World Life Expectancy calculator (https://www.livingto100.com/calculator/age). Costs included in this analysis were medical expenditures and absenteeism costs for arthritis, asthma, cancer, cardiovascular diseases (congestive heart failure, coronary heart disease, hypertension, stroke, and other cerebrovascular disease), depression, and diabetes.

Key Analytic Tools

- *The Patient Health Questionnaire (PHQ)* – to assess depression condition and severity.

The Patient Health Questionnaire (PHQ) is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-9 is the depression module, which scores each of the 9 DSM (*Diagnostic and Statistical Manual of Mental Disorders)* criteria in a scale from "0" (not at all) to "3" (nearly every day). In the study "The PHQ-9: validity of a brief depression severity measure" (Kroenke, Spitzer, & Williams, 2001) PHQ-9 was completed by 6,000 patients in eight (8) primary care clinics and seven (7) obstetrics-gynecology clinics. Construct validity was assessed using the 20-item Short-Form General Health Survey, self-reported sick days and clinic visits, and symptom-related difficulty. Criterion validity was assessed against an independent structured mental health professional interview in a sample of 580 patients. The study demonstrated that in addition to making criteria-based diagnoses of depressive disorders, PHQ-9 is also a reliable and valid measure of depression severity. These characteristics plus its brevity make the PHQ-9 a useful clinical and research tool.

The use of the PHQ-9 tool would not ensure that people that screened positive and is living with depression would have immediate access to mental health services nor that primary care provider would acknowledge a mental health disorder and provide referral for treatment.

A description of the study "Improving Mental Health Services for Low-Income Latinos in Primary Care" conducted by the CAP-MH during 2012-2013 can be found in Appendix 1.

- *The Chronic Disease Cost Calculator* – to estimate depression treatment annual costs.

The Cost Calculator estimates state-level medical expenditures for the following chronic diseases: arthritis; asthma; cancer; cardiovascular diseases (CVD) including congestive heart failure (CHF), coronary heart disease (CHD), hypertension, stroke, and other heart diseases; depression; and diabetes. Medical expenditure estimates are provided for the entire state population (all payers and the uninsured) and separately for Medicaid, Medicare, and privately insured. The Cost Calculator also

estimates state-level absenteeism costs for the above chronic diseases. It allows users to generate estimates of the costs of selected chronic diseases using customized inputs. Finally, it provides 10-year projections of the medical costs of chronic diseases.

Cost Calculator cost estimates reflect how much money major payers spend on a specific set of chronic diseases within a state in one year. The statistical analysis used to generate these estimates minimizes double-counting of costs across diseases, which often occurs in other cost estimates. These estimates provide vital information to better understand how pervasive these chronic diseases are and the cost burden they impose. Measures of economic burden, as provided by the Cost Calculator, are especially helpful for understanding the financial consequences of selected chronic diseases. Such information is essential for making informed investment decisions for chronic disease prevention, resource allocation, and disease management programs.

These estimates should not be viewed as "too high" or "too low." Rather, they need to be taken in context by considering the overall health needs of the population and the degree to which those needs are being met. Further, medical spending and absenteeism, which are included in the Cost Calculator, are only a portion of the total cost burden of these chronic diseases. The Cost Calculator does not take into account other sources of economic burden such as lost economic productivity due to disability and premature death. Although these estimates represent only a portion of the total economic burden of these diseases, they provide crucial information to better understand the scope of the problem.

There is no evidence that this tool was used in previous research conducted at universities or government areas. However, this tool may help us to remedy the lack of data on mental health treatments or depression treatments from the public or private sector.

- *The World Life Expectancy* – to calculate participant's life expectancy under current conditions.

World Life Expectancy is an Educational Experience developed by LeDuc Media. The Site's goal is to assist people in providing meaningful data regarding life expectancy from all over the world. The tool

has been used for by major universities, government institutions, corporations, and military organizations.

Study Estimations & Assumptions

- The sampling of three case scenarios on which the formula was computed was selected from the larger research group (CAP-MH, 2012-2013) by chance. Possible candidates were identified among the participants suffering from different level of depression (moderate, moderately severe, and severe). This subset was randomly chosen to participate in the computation based on their depression severity selecting them with random picking. This allowed for each person to have an equal chance of participating in the study.
- Direct and indirect costs were identified in an *informal focus group* with a health promoters working within the Latino community. Costs mentioned were estimated utilizing the standard direct/indirect economic costs associated with depression and related comorbid chronic diseases; and it was estimated at two levels, (1) using the clinic cost; and (2) using public rates.
- The term "costs" as used in the Chronic Disease Cost Calculator (Centers for Disease Control and Prevention / developed by RTI International, 2013) represents costs to each payer for medical costs and costs to society for absenteeism costs. Other costs of chronic disease, including productivity losses through reduced work attendance and premature mortality, or decreases in the quality of life are not included in the estimates. Estimated costs include expenditures for office based visits, hospital outpatient visits, emergency room visits, inpatient hospital stays, dental visits, home health care, vision aids, other medical supplies and equipment, prescription medicines, and nursing homes. Sums of the total costs across subpopulations may not equal the overall total costs due to rounding. Treated population is defined as the number of people receiving care for the disease in the previous year.
- Absenteeism costs are estimated based on the average annual number of work days missed per person attributable to the specific disease at any given state, for the purpose of this study, the

Chronic Disease Cost Calculator (Centers for Disease Control and Prevention / developed by RTI International, 2013) used employment data from Maryland.

- The numbers of missed day at work are important to determine productivity and loss of earning. The Fair Labor Standards Act (FLSA) does not require payment for vacations, sick leave or holidays (federal or otherwise). These benefits are matters of agreement between an employer and an employee (or the employee's representative). Also, if an employee quits his/her job before using all of his/her sick leave, under the FLSA the employer is not obligated to pay him/her for that time (United States Department of Labor). The common agreement is 10 day in a fiscal year. The Family and Medical Leave Act (FMLA) provides covered and eligible employees up to 12 weeks of unpaid leave for certain medical situations of either the employee or a member of the employee's immediate family; however, in many instances paid leave may be substituted for unpaid FMLA leave.
- This study did not interpret as numeric cost certain variables such as productivity factors (physically and mental health days), and productivity (work attendance).
- Intensive Care Unit costs and hospitalizations were not considered.
- Costs were estimated at its public rates, as describe in the following table:

Limitations

This study has several constraints on generalizability, applications to practice, and utility of findings that are the result of the ways in which the initial research was designed ("Improving Mental Health Services for Low-Income Latinos in Primary Care" conducted by the CAP-MH during 2012-2013) and the economic analysis of this thesis was conducted.

Random sample selection – Although the fact that simple random sampling was the ease and fair way of assembling the sample presented in this document, since every member was given equal opportunities of being selected; the conclusions drawn by the formula computation and the results might need further external validation. Due to the representativeness of a sample obtained by simple

random sampling, it is reasonable to make generalizations from the results of the sample back to the population; however, the lack of access to Latino health data, usually not available for such large population may increase the need for further verification and comparisons.

Severe Latino data limitations - The scarcity of data on Latinos continues to be a limitation for many researches including this study. At the Maryland level, it was not until 1997 that the Maryland Department of Health and Mental Hygiene started collecting mortality data in its Vital Statistics reports for populations. At the Montgomery County level, there are no available assessments of mortality data for Latinos. For example, Latinos are continuously underrepresented in State surveys as most of them are administered only in English and by phone (Latino Health Initiative of Montgomery County, 2008).

Other aspect that limits this study is the scarcity in data related to mental health treatments or depression treatment from the public and private sector. Such limitation was partially remedied by utilizing the Cost Calculator.

Data Collected - The data collected in this study answered demographic and health questions that would complete an epidemiological study, with limited flexibility to modify any question before the data was collected. Therefore, some specific information related to the economic analysis is estimation from market current values or it was benchmarked from other studies. Additionally, internal changes at the community clinics involved in the research did not allow access to health information from previous years; consequently some economic parameters (YLD or DALY) could not be estimated. Data from family members, close relatives, or friends living/exposed to depression, was not available.

Data about emotional aspects of the individual or his/her family, close relatives or friends, was not available, therefore not explored or estimated.

Community Health Organizations - The data collection was conducted in two Community Health Centers located in Wheaton and Silver Spring, Maryland. Their primary goal is to serve those underserved low-income populations, with limited budgets and resources, so there are no data on how

the results of our study might vary under different parameters such as newer health care organization and financing structures.

Comparative Data – Due to the limited economic data for low-income Latinos living with depression, it was not possible to conduct a comparative analysis between depression treatment costs (DTC) and untreated depression costs (UDC).

Type of treatment – This study does not include the cost related to informal treatment experienced by any participants. Based on information provided by community members during focal groups (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013), *informal treatment* is very common among the studied group and include different practices such as acupuncture, visits to the "curandera/o" (person believed to cure through diverse sources including spiritual or physical venues); practicing yoga; taking medicine brought from their country of origin, drinking calming teas; to name some of the practices commonly found among community members.

Additional limitations,

- The case-study did not have access to individual interviews to confirm the individual costs that each of them may have incurred into. Estimates are based on information provided by health promoters on the common community practices, and general costs are only estimated numbers. Actual costs may vary, depending on each individual reality.
- Data collected from focus groups and interviews are personal opinion of the people participating in those activities based on their knowledge and understanding of the Latino community. This may limit any generalization to the reality of the community.
- This study did not interpret the economic costs of productivity factors (physically and mental health days), and productivity (work attendance).
- Intensive Care Unit costs and hospitalizations data were not available therefore not included in this study.

- This study does not intent to compare disparities in mental health prevalence or mental health service usage among different ethnic population.
- This economic study did not estimate costs associated with food banks, public services or social support provided to the children, government benefits that participants or family members may have received, or in-kind donations from non-profit organizations.

CHAPTER 2

THE ECONOMIC IMPACT OF DEPRESSION:

A Conceptual Framework

"Many people are afraid to speak about depression; they fear that others may consider them "crazy people." (*A participant at a Focus Group Mar 18, 2011)*

"***Reflective Engagement in the Public Interest - A Collaborative Mental Health Research Agenda in the Community"*** (Kaltman, Goodie, Townsend, Watson, Campoli)

The Out-of-Pocket Expenses

Depression is a mental disorder that frequently affects individuals of all ages. Patients may experience a single episode or recurrent ones. The impact the disease has on an individual's everyday life is important, resulting in a substantial economic burden imposed on society, with the majority of the costs being generated outside the health care systems (Karampampa, Borgström, & B., 2011).

Depression varies depending ethnicity, for example African-American (4%) and Latinos (4%) show higher incidence than Whites (3.4%) (Faris, 2012). Between 60% and 80% of all depression cases can be effectively treated with brief, structured forms of psychotherapy and anti-depressant medication

(World Health Organization , 2003). The number of patients diagnosed with depression increases by approximately 20% per year (Faris, 2012). In a Medicare study (Faris, 2012) conducted with 14,903 individuals in the United States, 2,108 had depression and 1,081 were not officially diagnosed despite reporting clinical symptoms of depression or taking antidepressant medication. Most of the patients also suffered from serious comorbid conditions, such as diabetes or heart disease. Regarding the health care costs, in the same study, those currently diagnosed with depression had healthcare costs of approximately $22,960 in a one-year period. Those without any signs of depression had healthcare costs approximately half that of those with a diagnosis ($11,956). Those reporting depression symptoms but no depression diagnosis had average healthcare costs of $14,365.

Additionally, depression is a risk factor for cancer and heart diseases. Depression, anxiety and substance abuse disorders in patients who also suffer from physical disorders may result in poor compliance and failure to adhere to their treatment schedules; as well as risky behaviors such as smoking and unsafe sexual activities that have been linked to the development of physical disorders such as carcinoma and HIV/AIDS (World Health Organization, 2005).

In summary, depression is one of the most costly illnesses in the United States today. While managed care often focuses on the costs of treatment, the costs of non-treatment are usually ignored. Moreover, depression is often undetected or undertreated where it appears most commonly in the primary care setting (Fernandez-Garcia, Franks, Jerant, Bell, & Kravitz, 2011). When comorbid with other medical problems, especially cardiovascular disease, depression greatly increases mortality, morbidity, and expense.

Direct & Indirect Costs

In order to explore the costs that depression might represent for an individual and his/her family it is necessary to understand and delineate what concepts are involve among those costs.

A Cost-of-Illness research conducted by a private organization (Health Care Consulting Services, 2014) has determined that depression – as a mental illness – has an economic impact beyond its direct expenses, and may include,

1. Burden of illness
    - Direct costs
    - Indirect costs
2. Impact on the family
3. Lifetime costs
4. Adjustments for severity (comorbidity)
5. Treatment effectiveness

The World Health Organization in its report "Investing in Mental Health" (2005) established that the economic impacts of any mental illness- including depression - not only sway on the personal income of the persons with mental disorders, but also in their ability and their caregivers to work and make productive contributions to the national economy, as well as the utilization of treatment and support services (See Table 1).

The family burden cannot be ignored in the economic evaluation of the disease. Family members are often the primary caregivers of people with mental disorders. They provide emotional and physical support, and often have to bear the financial expenses associated with mental health treatment and care. In addition to the obvious distress of seeing a loved one disabled by the consequences of a mental disorder, family members are also exposed to the stigma and discrimination associated with mental ill health. Rejection by friends, relatives, neighbors and the community as a whole can increase the family's sense of isolation, resulting in restricted social activities, and the denial of equal participation in normal social networks (World Health Organization, 2005).

Table 1: The overall economic burden of mental disorders

	Care Costs	Productivity Costs	Other Costs
Sufferers	Treatment and service fees/payments	Work disability; lost earnings	Anguish/suffering
Family and Friends	Informal care-giving	Time off work	Anguish; isolation; stigma
Employers	Contributions to treatment and care	Reduced productivity	-
Society	Provision of mental health care and general medical care (taxation, insurance)	Reduced productivity	Loss of lives; untreated illnesses (unmet needs), social exclusion

Source: World Health Organization (2005), "*Investing in Mental Health*"

For the World Health Organization, the overall economic burden of a mental disorder as depression, include:

- Care Costs, represented by
  - Treatment and service fees / payments; generally paid for by the "sufferer" (person with the mental disorder);
  - Informal care-giving provided by different members of the group of reference;
  - Contributions to treatment and care, given by employers;
  - Provision of mental health care and general medical care paid by the society through taxation and insurance.
- Productivity Costs, reflected as
  - Work disability and loss of earnings
  - Time off work
  - Reduced productivity
- Other costs, including the incommensurable variables like
  - Treatment side effects
  - Stigma and social exclusion

- Loss of lives
- Untreated illnesses

Additionally, in the "Investing in Mental Health" Report (World Health Organization , 2003), direct and indirect costs are divided into *"core costs"* and *"other non-health costs",* presented in Table 2. The different types of measurable costs in a mental health disease have been transformed into a single cost-based measure, and organized by types of costs based on expenditures made or resources lost. An important characteristic of mental disorders is that mortality is relatively low, onset often occurs at a young age, and the indirect costs derived from lost or reduced productivity in the workplace are high (World Health Organization , 2003).

Table 2: Types of measurable costs

	Core Costs	Other non-health costs
Direct Costs (payments made)	Treatment and service fees/payments	• Social welfare administration • Public and private criminal justice system • Transportation
Indirect Costs (resources lost)	• Morbidity costs (in terms of value of lost productivity) • Mortality costs	• Value of family caregivers' time

Source: World Health Organization (2005), *"Investing in Mental Health"*

Besides the direct and indirect depression treatment costs, it is relevant to acknowledge the fact that many people living with depression also suffer from long-term physical health conditions. These can lead to significantly poorer health outcomes and reduced quality of life. It is unsurprising that co-morbid mental health problems also substantially increase patients' use of health services for their physical problems. Increased service use translates into substantial additional and wider economic costs. A broader set of costs may include not only those directly linked to the patients and his/her treatment, but also to the family members and close relatives living with him/her.

Another economic aspect to explore is the economic impact due to un-treated comorbid illnesses, low adherence to medication, and avoidable emergency room visits; risky behaviors highly prevalent in depressed people.

Different studies in Montgomery County, such as "Reflective Engagement in the Public Interest - A Collaborative Mental Health Research Agenda in the Community[4]" (Kaltman, Green, Watson, Campoli); "Improving Mental Health Services in Primary Care[5]" (Kaltman, Green, Watson, Serrano, Campoli), and "Knowledge Regarding Antidepressant Medication among Depressed Latino Patients in Primary Care[6]" (Kaltman, Green, Watson, Serrano, Campoli); determined that costs such as transportation, medication, health treatment to comorbid diseases are hidden costs to depression, hence very important to the individual, family, and social economy.

Considering the number of children within the group of family and friends affected by a person living with depression, it can double the general costs of the mental health diseases, since costs of childhood disorders can be both large and largely hidden (Knapp, Almond, & Percudani, 1999). Early onset of mental disorders disrupts education and early careers (Kessler, 1995). The consequences in adulthood can be enormous if effective treatment is not provided (Maughan & Rutter, 1998).

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[4] ***"Reflective Engagement in the Public Interest - A Collaborative Mental Health Research Agenda in the Community,"*** was a small grant from the Georgetown Office of the President designed to complement the work of the larger Interventions and Practice Research Infrastructure Program (IP-RISP) grant. It that had the goal to conduct focus groups with patients in order to understand their perspectives regarding mental health research, and to engage community-based grassroots organizations (CBOs) in a discussion regarding their perceived thoughts about client's needs and priorities, which can be used to shape a mental health research agenda. All the information gathered together was put forth on a workshop event, where it was discussed the details of developing a community-informed research agenda that can address mental health needs and foster wellness among a culturally diverse population.

[5] ***"Improving Mental Health Services in Primary Care,"*** this project aimed to integrate clinical research into the clinical care process at the community clinic level at the Primary Care Coalition (PCC). Further impact of this project would be: 1) PCC's electronic medical record (EMR) will be improved by upgrading the mental health section; then 2) a naturalistic evaluation of the Montgomery Cares Behavioral Health Program (MCBHP) will be conducted, comparing clinics with and without the program.

[6] ***"Knowledge Regarding Antidepressant Medication among Depressed Latino Patients in Primary Care,"*** this project aims to assess knowledge about antidepressant medications in general, and prescribed medication in particular (purpose, risks, benefits, side effects) among a low-income sample of depressed Latino immigrants taking psychiatric medications in primary care; to examine baseline characteristics of patients taking antidepressant medication compared to those not taking antidepressant medication in an existing database; and to learn about mental health patient's and provider's perceived barriers in communication and knowledge regarding behavioral health medication.

Mortality and Morbidity Costs

The burden of depressive disorder extends far beyond the disorder itself influencing the mortality risk of the patient. The statistics are staggering, more than the 90% of those who die by suicide, have depression (The National Institute of Mental Health, 2009).

Evidence showed in Table 3, demonstrates that among the causes of death in United States during 2010 (Center of Disease Control (CDC); 2012); causes related to mental health issues and health disparities overwhelmingly remains among the 50 causes of death of Americans of all ages, being suicide (self-harm) the number 13 cause for both male and female. While the Table 4 shows that suicide is the second cause for women between 15 and 24 year-old and the 3rd cause of death in women between 25 and 44 year old (Center of Disease Control, 2012) (See Tables 3&4)

Suicide has a dramatic impact on the family and the society in both human and financial terms. The impact of suicide represents the loss of one individual to suicide every 7 days and three suicide attempts *every day* since there are about 25 nonfatal suicide attempts for every reported suicide. Some of these attempts result in a significant medical injury and disability, which directly impacts health care costs, particularly for self-insured persons (Quinnett, 2011).

Similarly, a meta-analysis of 20 studies (Barth, Schumacher, & Herrmann-Lingen, 2004) has shown that clinical depression is a significant risk factor for mortality in patients with coronary heart disease both short-term (3–6 months; adjusted odds ratio 2.07) and long-term (6–24 months; adjusted odds ratio 2.61). Another study evaluated long-term mortality risks measured at middle age among 12,866 men with a high risk for coronary heart disease. Greater depressive symptoms were found to be associated with significantly higher risk of all-cause mortality and a higher risk of cardiovascular death and, more specifically, stroke mortality (Gump, Matthews, Eberly, & Chang, 2005). Even the risk of death by all causes is increased in depressed patients who are twice as likely to die prematurely compared with the general population (SMR 1.9 men; 2.1 women) (Osby, Brandt, Correia, Ekbom, & Sparén, 2001)

Table 3: USA Causes of Death by Age and Gender

Ranking	UNITED STATES POPULATION	All Ages 308,745,538
1	Coronary Heart Disease	379,543
2	Lung Cancers	158,317
3	Lung Disease	133,656
4	Stroke	129,474
5	Other Neoplasms	92,937
6	Alzheimer	83,494
7	Diabetes Mellitus	69,071
8	Hypertension	63,097
9	Colon-Rectum Cancers	52,621
10	Kidney Disease	51,482
11	Influenza & Pneumonia	50,082
12	Breast Cancer	41,435
13	Suicide	38,357
…		
40	Alcohol	6,464

Source: World Life Expectancy
http://www.worldlifeexpectancy.com/
Data retrieved in Jan 18, 2014
CDC Official Final Deaths 2010: Published 11/29/12

Table 4: **Total Deaths by Age and Gender (Female Population)**

1/24/2014	United States TOTAL DEATHS BY AGE AND GENDER																	
Cause of Death / Ranking	**All Ages**		**0 - 14**		**15 - 24**		**25 - 34**		**35 - 44**		**45 - 54**		**55 - 64**		**65 - 74**		**75 +**	
	Rnk	**Deaths**	**Rnk**	**Deaths**	**Rnk**	**Deaths**	**Rnk**	**Deaths**	**Rnk**	**Deaths**	**Rnk**	**Deaths**	**Rnk**	**Deaths**	**Rnk**	**Deaths**	**Rnk**	**Deaths**
FEMALE POPULATION	156,964,212		29,938,286		21,308,500		20,431,857		20,634,607		22,864,357		18,881,581		11,616,910		11,288,114	
Road Traffic Accidents	22	10,497	5	534	**1**	**2,063**	2	1,414	5	1,294	14	1,434	23	1,219	24	949	30	1,590
Suicide	**27**	**8,086**	**17**	**87**	**2**	**829**	**3**	**1,092**	**3**	**1,538**	**10**	**2,066**	**19**	**1,515**	**34**	**556**	**43**	**403**
Poisoning	20	11,923	22	29	**3**	**808**	1	1,965	1	2,758	4	3,923	18	1,729	37	389	47	322
Homicide	35	3,477	6	383	4	611	4	684	14	595	29	520	40	315	46	159	49	210
Other Neoplasms	6	41,542	7	381	**5**	**287**	5	448	6	993	5	3,596	4	7,010	4	9,114	8	19,713

Source: World Life Expectancy
http://www.worldlifeexpectancy.com/
Data retrieved in Jan 18, 2014
CDC Official Final Deaths 2010: Published 11/29/12

Work Disability and Loss of Earnings

Depression is the leading cause of disability among nonfatal medical conditions in the United States (Laurence, 2014). Depression also increases the possibility of losing income due to inability to work or low productivity.

The Global Burden of Disease Study (GBD) (World Health Organization, 2004) looks at major causes of disease burden and how these have changed over time. One particular aspect of this report is that it looks at disability and not just mortality – which can be a somewhat a crude measure of the impact of disease, especially with chronic illnesses becoming increasingly important in the burden of disease. The GBD uses several metrics to determine health loss:

- Years of life lost (YLL) calculated by multiplying the number of deaths in each age group by a reference life expectancy at that age – so a disease that kills many young people will generate a greater YLL than a disease that kills older people.
- Years lived with disability (YLD) calculated by multiplying the prevalence of a consequence of an illness by its disability weight. Disability weights are based largely on surveys of the general population – to determine how much disability is accounted for by blindness, for example, compared with being unable to walk.
- Disability adjusted life years (DALY) are the sum of the above two numbers – representing the entire amount of healthy life years lost due to premature death and impaired function caused by an illness.

Additional concepts to compare YLL, YLD, and DALY with, are:

- Healthy life expectancy (HALE)
- Physically and Mentally Unhealthy Days - the physically and mentally unhealthy days measure the number of days in the past 30 days that individuals rated their physical or mental health as not good.

The US Burden of the Disease used the same systematic analysis to understand the major health problems in the United States and how they are changing over time[7]. The results show that US life expectancy for both sexes combined increased from 75.2 years in 1990 to 78.2 years in 2010; during the same period, HALE (Healthy life expectancy) increased from 65.8 years to 68.1 years. The diseases and injuries with the largest number of YLL (Years of Life Lost due to premature mortality) in 2010 were ischemic heart disease, lung cancer, stroke, chronic obstructive pulmonary disease, and road injury. Age-standardized YLL rates increased for Alzheimer disease, *drug use disorders*[8], chronic kidney disease, kidney cancer, and falls. The diseases with the largest number of Years Lived with Disability (YLD) in 2010 were low back pain, *major depressive disorder*, other musculoskeletal disorders, neck pain, and *anxiety disorders*.

As the US population has aged, YLDs have comprised a larger share of DALYs (Disability adjusted life years) than have YLLs. The leading risk factors related to DALYs were dietary risks, *tobacco smoking*, high body mass index, high blood pressure, high fasting plasma glucose, physical inactivity, and *alcohol use*. Tobacco smoking and alcohol use are unhealthy behavior associated with depression.

Directly related to these indicators and numbers is *the productivity* and it usually represented by the *physically and mentally unhealthy day* indicator. In 2008, individuals in the United States reported on average 3.6 physically unhealthy days and 3.4 mentally unhealthy days in the past 30 days. Physically unhealthy days increased with age. In 2008, adults ages 18 to 24 reported an average of 2.1 physically unhealthy days, while adults age 75 and older reported 6.0 days. Mentally unhealthy days decreased with age in the older groups. In 2008, adults ages 18 to 24 reported an

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[7] The group of collaborators of the US Burden of the Disease, used the same systematic analysis of descriptive epidemiology of 291 diseases and injuries, 1160 sequel of these diseases and injuries, and 67 risk factors or clusters of risk factors from 1990 to 2010 for 187 countries developed for the Global Burden of Disease 2010 Study to describe the health status of the United States and to compare US health outcomes with those of 34 OECD (Organization for Economic Co-operation and Development) countries.

[8] *Drug use disorder* is considered a behavioral health disorder associated with depression.

average of 4.0 mentally unhealthy days in the past 30 days, while adults age 75 and older reported 2.0 days (U.S.Department of Health and Human Services).

Time Off Work – Not-Value-Added Time – Waiting Time – Waiting List

Being physically and mentally unhealthy may or may not prevent a person to go to work; however the time off work and absenteeism (Goetzel, et al., 2004) are two aspects of depression becoming more important every day. Depression is a major cause of disability, absenteeism, presentism, and productivity loss among working-age adults. The ability to identify major depression in the workplace is complicated by a number of issues such as employees' concerns about confidentiality or the impact it may have on their job that cause some people to avoid screening (Center for Disease Control and Prevention, 2013). Studies focused on work and productivity show that,

- Approximately 80% of persons with depression reported some level of functional impairment because of their depression, and 27% reported serious difficulties in work and home life (Pratt & Brody, 2008)
- In a 3-month period, patients with depression miss an average of 4.8 workdays and suffer 11.5 days of reduced productivity (Valenstein, Vijan, Zeber, Boehm, & Buttar, 2001)
- Depression is estimated the cause of 200 million lost workdays each year at a cost to employers of $17 to $44 billion (Leopold, 2001) (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003)

Time off work and absenteeism, together with an overwhelmed primary care system that do not allow patients to access an effective health care service in timely manner (Davis, Schoenbaum, & Audet, 2005) have a direct impact on the productivity and income, especially when that individual is a hourly-based paid-worker.

Evidence about the total cost of health, absenteeism, short-term disability, and productivity losses show that based on average impairment and prevalence estimates, the overall economic burden of illness for depression and other mental illnesses represent per employee per year a value in US dollars of $348 average; being the third higher cost after hypertension and heart disease. Presentism[9] costs were higher than medical costs in most cases, and represented 18% to 60% of all costs for the health condition (Goetzel, et al., 2004).

Additional costs are represented by those associated to delays in treatment or in access to the health care. Evidence collected at PCC during 2007-2010 showed that an estimated average "waiting-time" to see a medical practitioner at safety-net-community-healthcare-centers was of **one and half months** in 2010 (Campoli, 2010) (based on the technique of "the third next available appointment question"[10]). Similarly, the average waiting-time in the lobby or waiting area before the appointment - also known as "no-value-added time" or wasting time - was, **120 minutes** for the same period of time (Campoli, 2010). The total appointment length - in average – is 20 minutes (Campoli, 2010). These numbers rise for specialty-care access and mental health access, due to the low numbers of culturally-appropriate mental health providers serving low income populations (National Alliance on Mental Health).

In addition to its direct medical and workplace costs, depression also increases health care costs and loss of productivity by contributing to the severity of other costly chronic conditions such as heart disease, diabetes, and stroke.

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[9] ***"Presentism"*** This term has been used to refer to employees who show up for work but, because they're impaired with a mental illness such as depression, they cannot work *up to their ability* (Bayer, 2005).

[10] ***"The third next available appointment"*** is a quality improvement technique. Average length of time in days between the day a patient makes a request for an appointment with a physician and the third available appointment for a new patient physical, routine exam, or return visit exam.
The "third next available" appointment is used rather than the "next available" appointment since it is a more sensitive reflection of true appointment availability. For example, an appointment may be open at the time of a request because of a cancellation or other unexpected event. Using the "third next available" appointment eliminates these chance occurrences from the measure of availability *(Institute for Healthcare Improvement, 2011).*

Mental Health Medication

Psychiatric medications are often viewed negatively by the public, and even as harmful (Jorm, 2012). A qualitative study of mostly Puerto Ricans and Dominicans showed that use of antidepressants was seen as indicative of a severe illness and a weakness or failure to cope (Interian, Martinez, Guarnaccia, Vega, & Escobar, 2007). In non-Latino groups, perceived necessity for taking medications is associated with more severe and anticipated longer duration of symptoms, while perceived harmfulness is associated with an unclear understanding of depression (Aikens, Nease, & Kliinkman, 2008). When necessity outweighed concerns about taking the medication, adherence is better (Russell & Kazantzis, 2008).

Mental health drugs represent one of the fastest-growing cost categories in outpatient managed health care (Fifer, Marken, Kamanitz, Kotin, & Thomas, 2014). Medications such as antidepressants, antipsychotics, and mood stabilizers now account for up to 25% of all pharmacy spending by commercial health insurers and 30% to 35% of all pharmacy spending by public payers (Magellan Health Services, 2005). Mental health outpatient drug costs have risen roughly 20% a year in each of the past 5 years for which national data are available (1996-2001). This level of annual increase is consistent across various data sources—payers' pharmacy claims, federal household surveys, physicians' office prescriptions, and pharmaceutical company sales reports—used to track drug costs and utilization (Zuvekas, 2005) (Martin & Leslie, 2003).

Increments in pharmaceutical expenditures vary across therapeutic classes and among patient groups. The increase of 18% per year for antidepressants for those with private insurance and Medicaid is substantial (Zuvekas, 2005). Roughly two thirds of the cost increase is reported to result from a rise in the number of drugs prescribed per patient; the remaining third is from increased numbers of patients receiving prescriptions for mental health medications (Zuvekas, 2005).

The majority of research examining treatment preferences for depression and PTSD (post-traumatic-stress-disorder) among Latinos has found a strong preference for individual psychotherapy (Cabassa, Lester, & Zayas, 2007). Across studies, medications were viewed less favorably and generally not perceived to be an effective or acceptable treatment option (Alvidrez & Azocar, 1999). Beliefs about the causes of depression, efficacy of the medications, concerns about addictive potential and side effects (Fernandez-Garcia, Franks, Jerant, Bell, & Kravitz, 2011) may influence treatment preferences among Latinos. Very little research exists about the knowledge and source of that knowledge regarding antidepressants in general, and among Latinos in particular. In one of the very few studies of knowledge about antidepressants - Chandra (2009) - found that Latino and African American teens and their parents had lower levels of knowledge than their White counterparts.

In addition, there is the practice of self-medication with medicine brought from patients' country of origin, often prescribed by a pharmacist or a neighbor in the other country. This is not just a cultural approach Latinos are comfortable with. On one hand there is more trust in the person recommending the medicine in their country of origin than in a doctor in the U.S.; on the other hand patients are also concerned about the cost of medications and treatment. (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013).

Avoidable Emergency Room Visits

Emergency department (ED) utilization has increased dramatically over the past two decades in the US. From 1997 to 2007, the number of ED visits increased by nearly 25%, to approximately 116.8 million per year (National Center for Health Statistics, 2010). Studies have shown that as many as 50% of these ED visits could have been avoided if patients had received appropriate and timely care in other settings (National Center for Health Statistics, 2010). Avoidable ED utilization places a financial burden on hospital EDs and denies patients the continuity and consistency of care available in primary care settings (Primary Care Coalition of Montgomery

County , 2012). Patients with depression visit the ED at higher rates than patients without chronic and/or behavioral health conditions (Primary Care Coalition of Montgomery County , 2012).

Between July 2009 and December 2011 – within the frame of the project called "ED-PC Connect" (Emergency Department – Primary Care Connect) led by PCC; the EDs in Montgomery County identified and referred more than 10,000 low-income uninsured patients (n=10,761 patients). More than 2,200 patients visited a clinic following referral, making more than 10,000 total clinic visits subsequent to their referrals. Within this context, it was found that the majority of patients who are ED "frequent flyers[11]" (≥ 3 visits in the year) have chronic conditions and behavioral health problems (62.2%) or behavioral health problems (50.6%), with an average visit per patient of 3.3. Concluding that patients with behavioral health and/or chronic health conditions utilized the ED more than those patients who did not have these conditions; additionally patients who come to the ED for reasons associated with behavioral health problems are significantly less likely to make a subsequent clinic visit (Primary Care Coalition of Montgomery County , 2012).

Compared with those without a depressive syndrome, people with depressive disorders were at least twice as likely to use emergency department services (Himelhoch, Weller, Wu, Anderson, & Cooper, 2004).

Just as estimation, in the Washington State Hospital Association Report (2011); depression services were the primary diagnoses in 4.5 percent of ED cases during 2010, and represented 3.9 percent of all ED charges which represented U$S 532.2 million.

[11] Term utilized to identify a person who repeatedly uses the health care services such as the ED.

Un-treatment Costs and Alternative Paths

Depression can render people disabled in their work life, family life, and social life. Left untreated, clinical depression is as costly as heart disease or AIDS to the U.S. economy. Untreated depression is responsible for more than 200 million days lost from work each year. The annual cost of untreated depression is more than $43.7 billion in absenteeism from work, lost productivity, and direct treatment costs (Goldberg, 2013).

The World Health Organization in its Report "Investing in Mental Health" (2004), rise additional considerations on this matter, especially related to those incommensurable costs associated with depression disorders.

Table 5 displays a comparison between "treatment costs" and "untreated depression costs". The main difference between both situations is the level of control over the different factors; whereas the patient is complying with an effective treatment the higher the governance this person has over his/her health and resources, and greater the ability of this person and his/her family to cope with the problem. Better self-care management translates in lower impact on family's and friends' health and productivity; decreased dependability on social welfare and community support; and higher income to afford treatments.

Additionally, depressed people who are not accessing mental health treatments not only deal with other related uncontrolled chronic conditions - that could have been prevented being a patient in a health-controlled setting - but also are at risk of developing further complications if circumstances do not change. While depression severity does not allow people to work, poor economic situation and few resources, make people become over-dependent of welfare and social support, when available. When social support is not available, quality of life – of patient and the support group – decrease. Since the chronic conditions intensify overtime, the inconveniences that family and friends may face, and the aftershock, if suicide or avoidable death happens, remain uncertain.

Consequently, untreated mental health problems could be a serious burden in the person and a family life, both from emotional and the economic perspective. The more people affected and exposed to depression, the longer period that last, the higher the costs.

No-Quality Costs and the Primary Care Setting

Depression is often undetected or undertreated where it appears most commonly in the primary care setting. Many of the costs associated to depression are not patient's responsibility, but the aftereffect of a low efficiency system to which the depressed patient is highly exposed. Although quality improvement efforts are underway - to ensure that patients receive the right treatment at the right time - primary care settings still struggle with clinical operation and capacity that would ensure timeline access to mental health diagnosis and care (Fernandez y Garcia, E.; Franks, P.; Jerant, A.; Bell, R. A.; Kravitz, R. L., 2011).

The original study ("Improving Mental Health Services for Low-Income Latinos in Primary Care") was conducted at two community health centers: SCC and HCCC. Both clinics have behavioral health support, with a part time bilingual social worker, and a one-day-a-week English speaking psychology, respectively. Urgent cases or suicidal cases are referred to the Crisis Center of Montgomery County, were free counseling and advice can be provided based on the case specifications and its urgency. Any worse scenario is directly referred to the nearest emergency room. These clinics do not count on a full-time mental health social worker or in-site interpretation services; which make the handling of complicated cases even more complicated in a scenario where very few can express themselves in English.

Organized as non-profit clinical care providers and operated in accordance with comprehensive federal standards, community health centers are defined by four key characteristics:

- Serve medically underserved populations;
- Provide a comprehensive range of "primary" health care services;

- Adjust charges for care based on patient income; and
- Governed by a community board, the majority of whose members are health center patients.

Community health centers are a key clinical presence in their communities whose members – due to their economic, social, immigration status – struggle to leave behind or to seek additional help when needed.

These clinics like others working in the community are facing daily budget challenges to keep providing quality health services to a growing underserved low-income community; moreover, having mental health services available on full-time or part-time basis could be considered a "luxury" for many health centers dealing with reduced number of culturally-appropriate primary health care providers; who, while in capacity to treat mental health issues, do not have the time nor the tools to deal with severe disorders, and do not have easy-to-access-places where to refer patient in need of long term care (Izquierdo, 2013). Sometimes, providers struggle with referring patients out when diagnosed or observed with depression due to long-waiting time to access services or the large amount of documents required to present in order to receive them (Palacios, 2013).

Additional costs arouse in this context and can be seen in Table 5 (previously discussed during this section):

- Waiting Time Costs, representing the costs associated with the length of time the person have to wait to access medical and mental services; and
- The No-Value-Added Time Costs, representing the time patients have to wait in the "waiting room" to be seen by a medical provider.

Table 5: Mental Health Costs – Conceptual Framework

Mental Health Costs				
Category			Treatment Costs	Non-Treatment Costs
Sufferers	Care Costs	Effective mental health treatment	Controlled	Low-Non Existent
		Treatment for additional Chronic Care Conditions	Low-Controlled	High-Uncontrolled
	Productivity Costs	Work Disability	3.3 days of absentism at work per year	Unable to work
		Time off work for treatment	Controlled	High-Uncontrolled
		Waiting Time	By Pre-set appointment	Walk-in/Urgent Care
		No Value Added Time	Low-Controlled	High-Uncontrolled
	Other Costs	Anguish/Suffering	Controlled / Expected to decrease over time	Uncontrolled / Expected to increase overtime
		Treatment side-effects	Controlled	Uncontrolled
		Suicide	Controlled	Uncontrolled
Family and Friends	Informal Care-Giving	Health support	Low	High
	Productivity	Errands and Chores	Low	High
		Time off work	Low	High
	Emotional Impact	Anguish, isolation, stigma	Low	Uncertain
Employers	Contributions	Treatment and Care	Controlled	Non-Existent
	Productivity	Reduce Productivity	Controlled	Non-Existent
Society	Community Support	Provision of Mental Health Care	Low	High
		Provision of Medical Health Care	Low	High
	Productivity	Lost earning and Growth	Low	Low
	Other	Loss of Lives	Controlled	Uncontrolled
		Untreated Illnesses	Controlled	Uncontrolled
		Unmet Needs	Controlled	Uncontrolled
		Social Exclusion	Low	Uncertain
	Public Services	Criminal Justice	Low	Uncertain
		Social Welfare	Low	High

Own construction based on *"Investing in Mental Health"* by World Health Organization (2005), March 2014

Food for Thought

Mental illness is generally more debilitating than most chronic physical conditions. On average, a person with depression is at least 50% more disabled than someone with angina, arthritis, asthma or diabetes. Mental pain is as real as physical pain, and it is often more severe (Layard, Clark, Knapp, & Mayraz, 2012).

Approximately, a half of all patients with anxiety conditions will recover, mostly permanently, after ten sessions of treatment. And a half of those with depression will recover, with a much diminished risk of relapse. Doctors normally measure the effectiveness of a treatment by the number of people who have to be treated in order to achieve one successful outcome. For depression and anxiety the number needed to treat is under 3 (Layard, Clark, Knapp, & Mayraz, 2012).

In the report called "How Mental Illness Loses out in the NHS" (Layard, Clark, Knapp, & Mayraz, 2012), presented for the National Health System in England, the mental health policy team estimated that effective mental health treatment can generate other large savings to the government and society, for example by increasing employment, reducing disability benefits and collection increased amounts in taxes due to improved productivity. Yet most of the depression cases go untreated. Therapy is not available for many reasons. Effective therapies have been developed more recently than drugs. But expenditure priorities also play their role. Their under-treatment exerts a huge cost in terms of distress - and of economic loss (Layard, et al., 2006).

CHAPTER 3

FINDINGS:

Social & Health Analysis

"Building strong a relationship among family members is key to dealing with depression… In Latino community treating the whole families is crucial to achieve important or relevant results."

(Key Informant March 3, 2011)

"***Reflective Engagement in the Public Interest - A Collaborative Mental Health Research Agenda in the Community"*** (Kaltman, Goodie, Townsend, Watson, Campoli)

Understanding the Context: A Community At-Risk

Underserved racial and ethnic groups in the United States of America (U.S.) experience significant mental health disadvantages related to access to services, quality of care received, and outcomes. In particular, Latinos in the U.S. with a mental disorder are less likely than non-Latino Whites to utilize mental health services and are more likely to delay treatment. Within the Latino population, immigrants are least likely to seek treatment (Watson, M.R., Kaltman, S., Townsend, T., Goode, T., Campoli, M., 2013).

Some findings of the project named *"A Collaborative Mental Health Research Agenda"* (Watson, M.R., Kaltman, S., Townsend, T., Goode, T., Campoli, M., 2013), revealed an acute awareness

of the mental health problems prevalence and the need for treatment in the local Latino community. Key issues mentioned were the impact of immigration-related stressors in depression severity, and pernicious comorbidities; while the limited mental health literacy is possibly contributing to different level of stigma and the general distrust towards the use of medications.

The negative impact of trauma exposure, acculturation, family separation and reunification or "sequential migration[12]," is a risk factor for depression among immigrants (Miranda, J.; Siddique, J.; Der- Martirosian, C.; et al., 2005).

While domestic violence is a widespread problem cutting across all racial and ethnic groups, Latino communities face a unique array of cultural, linguistic, and systemic difficulties with respect to this issue. Isolation is intensified by the language barrier and by being separated from family and friends who could otherwise provide support. The fear generated by abuse is compounded by the dread of deportation and of being separated from their children. Many Latino people, in particular Latina women, are unaware of the resources and information available to them for escaping domestic violence and are not familiar with how to navigate systems (National Latino Alliance for the Elimination of Domestic Violence, 2004).

Rates of depression and anxiety vary widely among different segments of the U.S. Hispanic / Latino population. Additionally, according to a new report published in Annals of Epidemiology by Albert Einstein College of Medicine of Yeshiva University and the Hispanic Community Health Study/Study of Latinos (2014), depression and anxiety may be undertreated among Hispanics and Latinos, particularly if they are uninsured. Fragmentation of existing mental health services does not help matters (Latino Health Initiative of Montgomery County, 2008).

[12] "***Sequential migration***," in which parents arrive in the U.S. first and children follow years later, creating difficult family dynamics and stress for both youth and their parents (Foxen, 2010).

As previously mentioned, this study focused in a Latino group living in Montgomery County, Maryland.

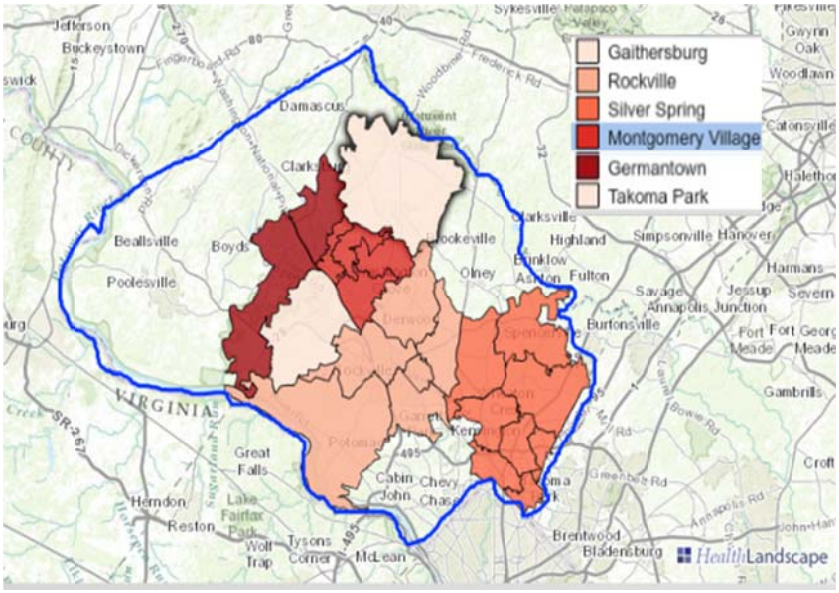
The system of care of Montgomery County, Maryland, known as "Montgomery Cares" serves approximately 112,000 low-income uninsured persons, of which about 64% are Latinos, with 97% within this group being immigrants. Depression is increasingly becoming a serious health concern in Montgomery County; given Latino immigrants in this community face unique stressors that impact mental health.

The Latino Community in Montgomery County

The Latino population in Montgomery County is the fastest growing ethnic group in the County with an annual growth rate of 7% between 2008 and 2012. In August 2012, an estimated 165,398 Latinos lived in Montgomery County, making Latinos the second largest minority in the County (second to African Americans) at 13.9% and representing the largest concentration of Latinos in Maryland (38%), followed by Prince George's County (29%), and Baltimore County (3%). The Latino population growth represents more than half of the total County growth (55.4%) (U.S. Census Bureau, 2011).

In Montgomery County, 65% of Latinos are foreign-born and 35% native-born, in contrast with national figures reporting Latinos are 60% native-born and 40% foreign-born (U.S. Census Bureau, 2011). Latinos in Montgomery County are younger (29.3 years, median) than the overall County's population (38.3 years, median) (U.S. Census Bureau, 2011). Nearly one third (31.5%) of Latinos are under 18 years of age and 63.5% are working age adults between the ages of 18 and 65 (U.S. Census Bureau, 2011).

Graphic 1: Latino Georgraphic Concentration in Montgomery County



Own construction
Source: U.S. Census Bureau, 2011
Tool: HealthLandscape.org
Feb 17, 2014

In Montgomery County, Latino families are composed of 3.96 members as the average size. About 44% of all Latino households in Montgomery County contain families larger than four members, compared to 13.2% for Montgomery County as a whole (U.S. Census Bureau, 2011).

In 2010, 90% of Latinos in Montgomery County spoke a language other than English at home. Close to 30% of these Latinos spoke little or no English; 60% spoke English well or very well, and 10% only spoke English (The Maryland Capital Park and Planning Commission, 2010).

Education attainment data indicate that Latinos in Montgomery County are more educated than Latinos as a whole in the United States: 22.1% of Latinos over age 25 in the County have a bachelor's degree or higher, compared with the national figure of 12.2% (U.S. Census Bureau, 2011). In Montgomery County, two of five (38.7%) Latinos 25 and older have less than a high school diploma; 18.6% graduated from high school; 16.4% have some college; and 4.2% have an associate degree (U.S. Census Bureau, 2012). These percentages are a glaring contrast to the County's overall figures: 66.8% of all adults age 25 and older have a bachelor's degree and only 8.6% have less than a high school diploma (The Maryland Capital Park and Planning Commission, 2010).

The rate of unemployment among Latinos in Maryland is 4.2% compared to 4.4% for the State population as a whole, and the proportion of Latinos ages 16 and over who are employed is 80% compared to 67% for the State population as a whole (Maryland Department of Labor, Licensing and Regulation, 2014). More than half of Latinos living in Montgomery County (51.6%) are either in service occupations (30.5%), or construction, extraction, maintenance and repair occupations (21.1%) (U.S. Census Bureau, 2011). Most Latinos are grouped in relatively low-wage and low-skill jobs that do not offer health insurance. Almost a quarter (22%) of Latinos in the civilian workforce in Montgomery County is in management, professional, and related occupations. Only 1.9% of employed Latino adults in Montgomery County (1,156 Latinos) work in health care and technical occupations (The Maryland Capital Park and Planning Commission, 2010).

Latinos have the lowest per capita income in Montgomery County ($20,165), representing only 37.4% that of whites' per capita income ($53,926) and 48% of the per capita income for all

residents ($41,901) in the County (The Maryland Capital Park and Planning Commission, 2010). In addition, 9.5% of County Latinos live in poverty compared to 4.5% of all County residents. The Latino per capita income ($20,165) is less than the self-sufficiency income of $25,961 as calculated by the Community Action Board of Montgomery County under the Department of Health and Human Services (Montgomery County Community Action Board, 2005).

Latino immigrants are disproportionately represented in occupations with higher risks of injury and fatality, and also live in environments with severe indoor and outdoor pollution (Kaiser Permanente National Diversity Council, 2001). Latino residents are more likely to live in old and poorly maintained buildings and may be exposed to mold, cockroaches, and lead paint and pipes (Maryland Department of Health and Mental Hygiene, 2006).

The Center for Disease Control and Prevention reports that the leading causes of death among Latinos at the national level are heart disease, cancer, unintentional injuries (accidents), stroke, and diabetes (in that order) (Centers for Disease Control and Prevention, 2011). In addition, reliable national data show that Latinos experience disproportionately large mortality rates for stroke, chronic liver disease, diabetes, HIV/AIDS and homicide when compared to the non-Latino white population (Centers for Disease Control and Prevention, 2011).

Latinos have higher rates of a number of diseases that compromise health and quality of life (Latino Health Initiative of Montgomery County, 2008). At the national level, the primary health conditions that affect Latinos include asthma, chronic obstructive pulmonary disease, HIV/AIDS, obesity, suicide, and liver disease (in that order) (Centers for Disease Control and Prevention, 2011). In Maryland, diabetic end-stage renal disease among Latinos was 10% to 20% higher than for non-Latino whites ages 55 and older, and hypertensive end-stage renal disease rates were 1.5 to 5 times higher than for whites (Maryland Department of Health and Mental Hygiene, 2006).

Health Insurance and the Impact of ACA

Based on the U.S. Census Bureau 2011 Report on the data collected by the latest census (2010), most Latinos are grouped in relatively low-wage and low-skill jobs that do not offer health insurance (U.S. Census Bureau, 2011). Latino Access to Health Care Study findings has corroborated the conclusion that those who are uninsured over the long term experience poorer health and earlier death than the insured population (Stanton, 2004). It is an unfortunate fact that the national number of uninsured people is increasing steadily at the same time that the rate of employment-based insurance continues to decline. Persons most likely to lack employer-based health insurance are the poor or near poor and those working in small businesses. Access to care by Latinos has worsened, particularly in the areas of health insurance and having a regular primary care provider (U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, 2006). High-level key informants in Montgomery County agree that the lack of access to health care services is the top barrier to Latinos' being able to maximize their health potential. During focus groups, low-income Montgomery County Latinos also listed the need for inexpensive health insurance, better access to quality health care, and continuity of care as top priorities (Rivera Group, Inc., 2007).

Studies conducted in Montgomery County in 2005 and 2007 revealed high rates of Latinos lacking insurance. For example, 58% of Montgomery County Latino Cancer Survey respondents (Department of Health and Mental Hygiene, Center for Cancer Surveillance and Control, Maryland Cancer Survey, 2005) and 50% of respondents of a RAND survey (Gresenz, Blanchard, & Lurie, 2007), reported having no health insurance in the previous year. In addition, half of the Montgomery County Latino Cancer Survey respondents reported not having a primary care provider. Studies in other parts of the country show that uninsured people experience reduced access to health care because they are less likely to have a regular source of care and more likely to delay seeking care and using preventive services (Institute of

Medicine, 1999). As a result, because Latino people tend to seek care when the severity and stages of their diseases are more advanced, they suffer poorer medical outcomes.

Lack of health insurance and the high cost of health care are interrelated barriers and the principal causes for which focus group participants said they delay care and seek medical attention only when acutely ill. Participants reported they first call a relative or friend in the United States or country of origin for advice when they are sick; then they try home remedies such as herbs, soups, and drinking plenty of water as the next intervention. These participants also said they commonly have medications sent to them from their countries of origin, try over-the-counter medicines, and visit unlicensed foreign-trained professionals; they visit hospital emergency rooms as a last resort. In addition, most participants reported not having visited a doctor in the previous year because of the cost involved and the unexpected bills that are generated even from only one visit (visit to the doctor, laboratory/radiology tests) (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013).

It is well established that the inability to pay is a major barrier for Latinos who wish to receive health care. In the RAND study (Gresenz, Blanchard, & Lurie, 2007), 49% of respondents reported experiencing difficulties getting care, delaying care, and not getting care when needed in the previous year. Among this group, 66% reported that the main reason for the difficulties was the cost of care.

Additionally, there is a large number of undocumented immigrants in Montgomery County, since Maryland is nationally considered a "sanctuary for illegal/undocumented aliens" (Gibson, 2011). Based on existing research undocumented immigrants have low rates of health insurance and health services use, and a heavy reliance on safety net providers.

On March 23, 2010, President Obama signed the *Patient Protection and Affordable Care Act* (ACA) into law (United States Congress 2010) (132 S. Ct. 2566). The components of the ACA that will impact access to health care once fully implemented along 2014 are that it requires most U.S.

citizens and legal permanent residents to have health insurance coverage to avoid paying a special tax. Subsidies will be provided to those with lower incomes to make insurance affordable. Businesses will also have to pay a special tax if they do not provide health insurance, with subsidies for small businesses. Despite the far-reaching expansion of health care coverage for the large number of uninsured individuals in the U.S., the ACA explicitly excludes undocumented immigrants from acquiring health insurance coverage through the health exchanges. In addition, undocumented immigrants continue to be ineligible for most public forms of health insurance coverage and would not benefit from subsidy carried out by the states. The undocumented could conceivably benefit from expanded employer coverage resulting from the incentives for coverage, as well as from the expansion of community health centers funded by the ACA. The net impact on access to care for undocumented immigrants will depend on their need for care, resources, and the response to the ACA by business and the states, but this is a topic still under study and waiting to be seen.

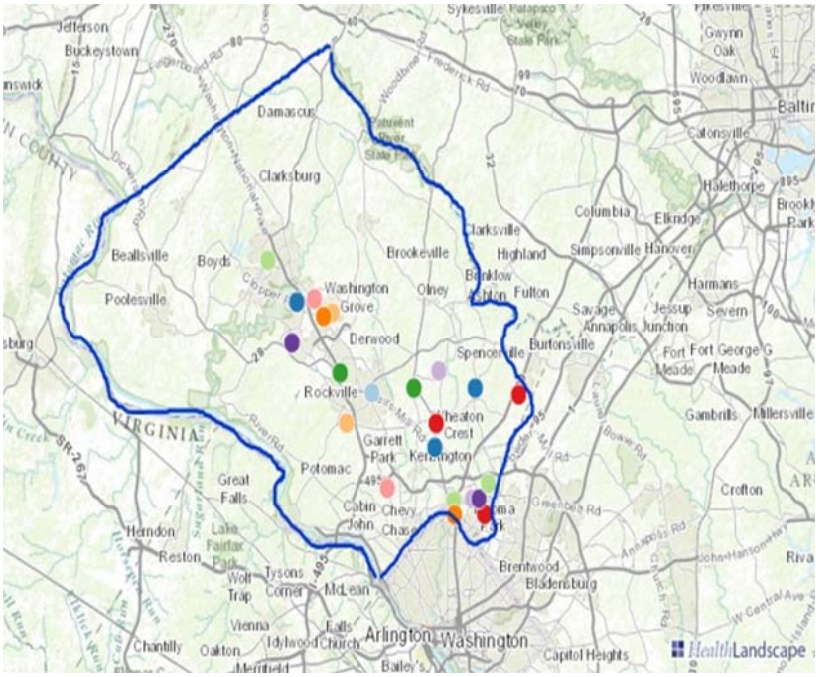
Community Health Centers and Mental Health Services

Although the large number of immigrants in Montgomery County, there is a lack of culturally and linguistically competent services (Latino Health Initiative of Montgomery County, 2008). Many people have reported, in many instances (community research and focus groups) (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013) (Rivera Group, Inc., 2007) not knowing where to go for care when they get sick and having difficulties identifying places they could go for care. In the RAND study, two of five *safety-net*[13] clinic patients reported not knowing where to get care either.

[13] A private, nonprofit organization or program component of a nonprofit that provides a range of medical, dental or mental health services or medications directly to economically disadvantaged patients who are predominantly uninsured *(Darnell, 2010).*

There are 24 registered safety-net clinics in Montgomery County working with low-income-uninsured patients. In a RAND study most of the managers of those clinics showed their concern regarding difficulties in finding and hiring bilingual (Spanish-English) health professionals (Latino Health Initiative of Montgomery County, 2008)

Graphic 2: Community Health Centers in Montgomery County



Own construction
Source: U.S. Census Bureau, 2011
Tool: HealthLandscape.org
Feb 17, 2014

Another barrier is presented by the unavailability of appropriate transportation and the long distances between home/work and health care services can make it very challenging to travel to an appointment (Latino Health Initiative of Montgomery County, 2008).

Additionally, mental health professionals – in particular - note that Latinos face many obstacles to accessing mental health care, including a lack of: culturally and linguistically competent mental health resources, services, and residential treatment facilities; knowledge of available resources; health insurance; sensitivity by emergency department personnel regarding mental health issues; and services to treat the chronically mentally ill.

"Improving Mental Health Services for Low-Income Latinos in Primary Care" - Study Description

In 2006 a Community Academic Partnership for Mental Health (CAP-MH) was initiated, to work on building community capacity to deliver accessible mental health services to Latino Immigrants, by strengthening an existing partnership between the Center for Trauma and the Community (CTC) in the Psychiatry Department at Georgetown Medical School, and the Primary Care Coalition (PCC) of Montgomery County and its network not-for-profit clinics. In 2011 the CAP-MH received funding from the National Institute of Health (NIH) for a study called "Improving Mental Health Services for Low-Income Latinos in Primary Care," – which had the main goal of supporting the timely development and evaluation of culturally competent, trauma-sensitive, and innovative interventions to improve patient mental health within the network of clinics serving the poor and uninsured. A major objective of this project was to integrate clinical research into the clinical care process at the community clinic level.

During a two-year period (2012-2013), more than 600 people agreed to participate in the screening and interview process at two Community Clinic sites –namely: the Spanish Catholic Center of Catholic Charities (SCC) in Wheaton, and the Holy Cross Community Center (HCCC) in Silver Spring. A sample of 200 individuals were enrolled into the study, after they qualified for the study using the Patient Health Questionnaire PHQ-2 and subsequently were confirmed as having moderate, moderately severe, and severe depression, using the PHQ-9 Questionnaire for Depression Scoring and Interpretation (PHQ9 Copyright © Pfizer Inc). These 200 individuals signed consent forms and agreed to participate in a 50-minute interview that included demographic characteristics, lifestyle behaviors, health literacy, social support and depression as well as post-traumatic stress disorder (PTSD) standardized instruments. Participants also agreed to a study follow-up that included a 1 year follow-up interview, as well as a medical record review to learn about modality and intensity of treatment (E.g.

psychotherapy and/or use of psychotropic medications), as well as general health outcomes. A 20 dollar gift card was provided to participants for participating in the interview.

In the study "Improving Mental Health Services for Low-Income Latinos in Primary Care", ***depression*** was assessed with the Patient Health Questionnaire[14] (PHQ), (Spitzer & Williams, DSM-III and the Transformation of American Psychiatry: A History, 1994). The validity of a Spanish version of the PHQ was established (Diez-Quevedo, Trangil, Sanchez-Planell, Kroenke, & Spitzer, 2001). Trauma exposure was assessed with questions from the Stressful Life Events Screening Questionnaire (SLESQ) (Goodman, Corcoran, Turner, Yuan, & Green, 1998) (Green, et al., 2006). Posttraumatic stress disorder (PTSD) was assessed with the PTSD Checklist (Weathers, Litz, Herman, Huska, & Keane, 1993). The PTSD Checklist has been used with Latino immigrants (Eisenman, Gelberg, Liu, & Shapiro, 2003) and has demonstrated general measurement equivalence across English- and Spanish-language versions (Grant, et al., 2004).

The population who participated in the baseline and follow up interview was identified at the waiting room of the clinics, asked about their willingness to participate, and then screened using the PHQ-2[15] Questionnaire, a shorter version of the PHQ-9 Questionnaire.

The PHQ-9 Questionnaire measures "Depression Severity". This is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of —not at all —several days—more than half the days, and —nearly every day, respectively. PHQ-9 total score for the nine items ranges from 0 to 27. Scores of 4, 10, 15, and 20 represent cut-points for mild, moderate, moderately severe and severe depression, respectively.

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[14] The Patient Health Questionnaire (PHQ) is a multiple-choice self-report inventory copyrighted by Pfizer Inc, that is used as a screening and diagnostic tool for mental health disorders of depression, anxiety, alcohol, eating, and somatoform. It is the self-report version of the Primary Care Evaluation of Mental Disorders (PRIME-MD), a diagnostic tool developed in the mid-1990s by Pfizer Inc.

[15] The Patient Health Questionnaire-2 (PHQ-2) is a shorter version of the PHQ-9 with two screening questions to assess the presence of a depressed mood and a loss of interest or pleasure in routine activities; a positive response to either question indicates further testing is required.

Table 6: PHQ-9 Questionnaire for Depression Scoring and Interpretation

Total Score	Depression Severity
1-3	**Minimal Depression**
4-9	**Mild Depression**
10-14	**Moderate Depression**
15-19	**Moderately Severe Depression**
20-27	**Severe depression**

Source: "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
Based on the PHQ9 Copyright © Pfizer Inc.

Several demographic variables that have – in previous studies and researches - been found to be correlated with use of mental health wellness/illness and the use of mental health services were included as controls: sex, age, marital status, education, economic and living situation, language; and family situation to understand the impact of the family separation/reunification process. The economic situation and the living conditions were analyzed together with the level of education and resources availability.

Acculturation was also measured, due to its importance within the immigrant and depression context. Acculturation is a process in which members of one cultural group adopt the beliefs and behaviors of another group. Assimilation of one cultural group into another may be evidenced by changes in language preference, adoption of common attitudes and values, membership in common social groups and institutions, and loss of separate political or ethnic identification. The most comprehensive measure of acculturation for use in health services and epidemiological research was developed by Hazuda (1988). Hazuda's scales are based on a theoretical model that views acculturation as a multi-dimensional process involving language, cultural beliefs and values and "structural assimilation". Acculturation is crucial in the mental health wellness of those adapting to a new environment; it is so that there is syndrome called the "immigrant syndrome". Immigrant Syndrome with Chronic and Multiple Stress is

characterized, on the one hand, by the fact that the individual suffers certain stressors or afflictions and, on the other, by the fact that he presents a series of symptoms from several areas of psychopathology (Achotegui, 2004). This study limited the questions to two: What is the language you speak at home?; and in your opinion, how well do you understand/speak English?

Functional aspects and social support were analyzed together with health functioning, health behavior and substance abuse.

A health record analysis was conducted to determine specific health aspect of each individual such as: health visits, diagnosis of chronic health problems and its level of control, emergency room visits, and hospitalization. During this analysis, it was necessary to clarify the following points:

- *Active Medication*, in the clinic's EMR (electronic medical record) represented the medication that the doctor prescribed at some point of the patient history and it was never discontinued. If the medication is in the active medication list meant that it was prescribed at some point, even before the year covered by the revision. It did not mean that the patient is strictly taking the medication.
- *Medication Discussed*, meant that every single visit the doctor/nurse/medical assistant talked about the medication with the patient.

Baseline Data

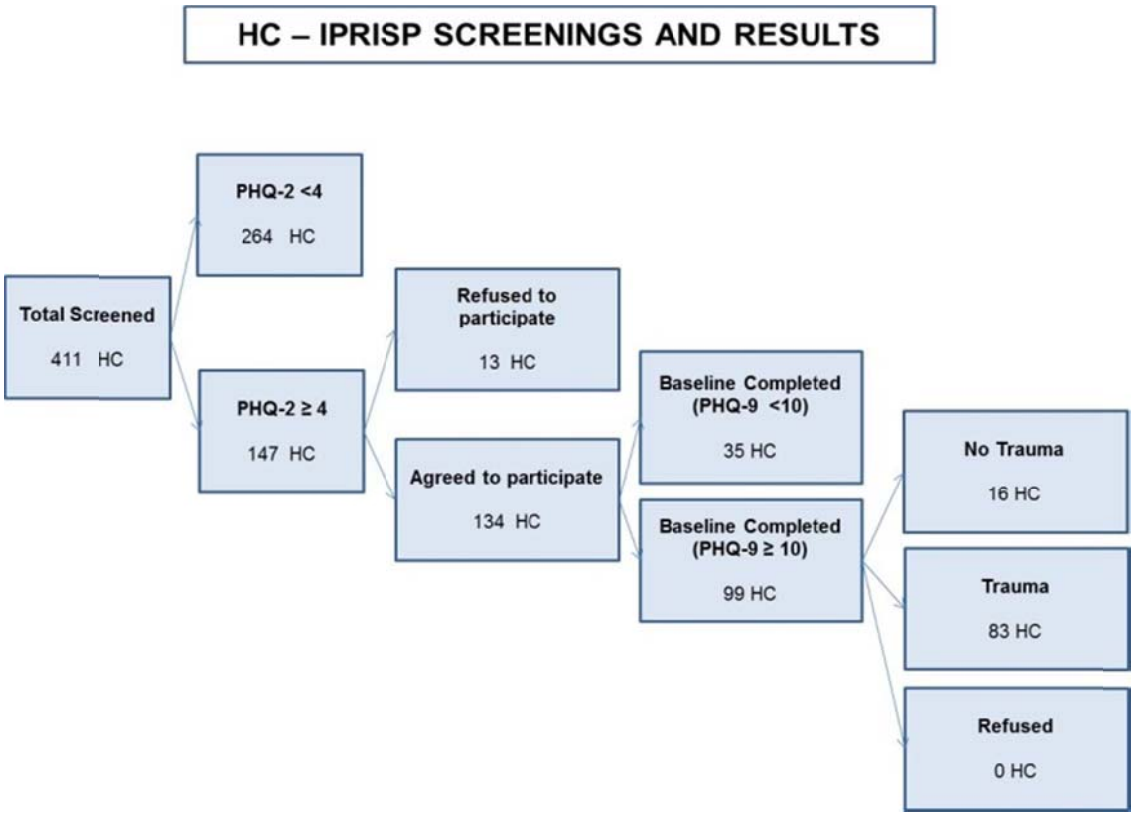
Baseline data collection was completed in a sample of 198 patients (99 at each site) with depression and possible PTSD.

At Holy Cross Community Health Center 411 people were screened with the PHQ-2. Out of those screened, 264 participants were not eligible (PHQ-2<4) and 147 were eligible (PHQ-2≥4). Out of those eligible to participate, 13 refused to do so and 134 agreed and completed the

baseline survey tool. The result of the PHQ-9 tool included in the baseline survey determined that 35 had mild depression with a PHQ-9 score less than 10, while the other 99 participants had moderate or severe depression with a PHQ-9 ≥ 10 and were eligible to participate in the follow up interview after 6 months of the initial interview. Within these 99 participants, only 16 did not have any related trauma and all (100%) of them agreed to continue participating in the study (Figure 1).

In summary only 24% out of those screened qualified and agreed to participate in the original study, therefore provided data that is showed in this document (Table 7).

Figure 1: HCCC – Behavioral Health Study Screening and Results



Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March, 2013

Table 7: Holy Cross Community Health Center – Behavioral Health Study Findings

Holy Cross Hospital Health Center (S.S.)
IP-RISP Findings

Patients	PHQ-2 Eligible (PHQ-9 ≥4)	Participated	PHQ-9 Eligible (PHQ-9 ≥10)	Trauma
No	264 (64%)		35(26%)	16 (16%)
Yes	147 (36%)	134 (91%)	99 (74%)	83 (84%)
Refusals		13 (9%)		
TOTAL	411 (100%)	147 (100%)	134 (100%)	99 (100%)

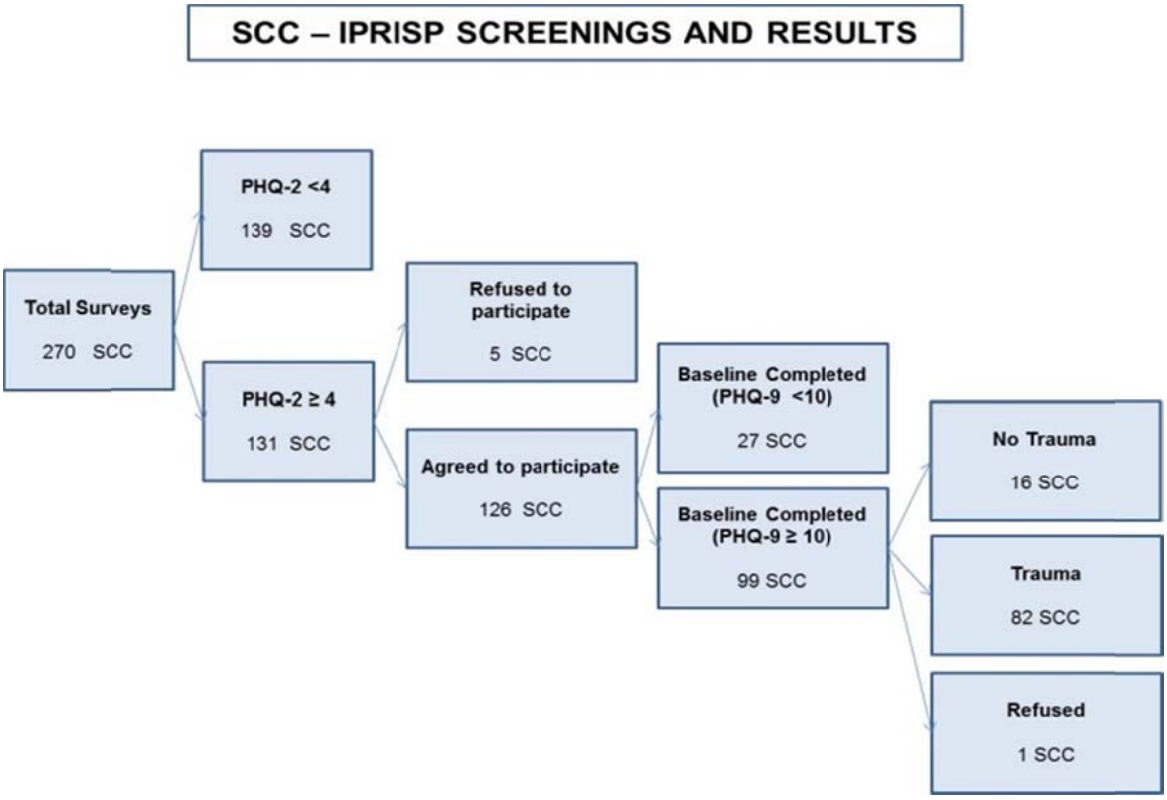
Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March, 2013

At Spanish Catholic Center, the data was simpler to collect and to process. Much less screenings were needed in order to reach the target goal of at least 100 qualified participants.

At Spanish Catholic Center Community Health Center out of the 270 screened patients, 139 were not eligible (PHQ-2<4) and 131 had a PHQ-2≥4, reflecting some kind of depression (mild, moderate or severe). Out of those eligible to participate, 5 refused to continue with the study and 126 signed the agreement and completed the baseline survey tool. The result of the PHQ-9 determined that 27 scored 10 or less, while the other 99 participants showed a PHQ-9 ≥ 10 and were eligible to move forward with a follow up intervention after 6 months of the initial interview. Within these 99 participants, only 16 did not have any related trauma and only one refused to follow up after 6 months since the participant was planning to return to his/her home country (Figure 2).

At SCC, besides that was needed 34% less screening than in Holy Cross, to identify the 99 participants, the prevalence of mental health illness was higher with 36% of the participants, from the original screening, been eligible or having decided to continue with the study (Table 8).

Figure 2: **SCC – Behavioral Health Study Screening and Results**



Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March, 2013

Table 8: **Spanish Catholic Center Community Health Center Behavioral Health Study Findings**

Spanish Catholic Center IP-RISP Findings

Patients	PHQ-2 Eligible (PHQ-9 ≥4)	Participated	PHQ-9 Eligible (PHQ-9 ≥10)	Trauma
No	139 (51%)		27 (21%)	16 (16%)
Yes	131 (49%)	126 (96%)	99 (79%)	82 (83%)
Refusals		5 (4%)		1 (1%)
TOTAL	270 (100%)	131 (100%)	126 (100%)	99 (100%)

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March, 2013

Social & Health Findings

In the principal research ("Improving Mental Health Services for Low-Income Latinos in Primary Care"), baseline data was collected from 198 participants attending mental health services in two community health clinic in Montgomery County, Maryland. A chart review for mental health treatment and chronic medical problems was conducted for each individual.

Study findings about the sample's general information - demographics, living conditions and economic situation, education levels, acculturation and language, as well as health condition – follow similar pattern as the overall situation of the Latino community in the County, as described in the section Understanding the Context.

In general, the total of the study sample was living with different level of depression, and 87% suffered from comorbid chronic care problems. Commonly reported conditions included: Hypertension, Obesity, and Diabetes Mellitus. Challenging family situations, poor work circumstances, and undesirable living environments, completed an adverse setting for this depressed sample.

Demographics

Demographic characteristics of the study population are presented in Table 9. Forty eight percent (48%) were between the ages of 21-49 while another half were older than 50 year old (50%) (29% between 50-59 years of age and 21% are ≥60 years old); only 2% were younger than 21 year old. Eighty one percent (81%) were female. More than half of the group were married or living with a partner (55%) while about another half (45%) were divorced/separated, widower or single (never married).

Participants were asked to self-identify their ethnicity and to indicate their nationality. Persons who self-identified as not American-born were asked about the length of time living in the U.S.

Overall, there were 184 Hispanics or Latinos (93%); while the other 7% was represented by Black/African American (3%), White or Caucasian (4%), and Asian/African (≥1%).

Table 9: Participant Demographic Characteristics (number and percentage)

Gender / Age / Marital Status Category		N=198 n	(100%) %
Gender	Female	160	81%
	Male	38	19%
Age	≥ 21	3	2%
	21-29	14	7%
	30-39	33	17%
	40-49	48	24%
	50-59	58	29%
	≤ 60	42	21%
	Not Specified	0	0%
Marital Status	Married/living with a partner	109	55%
	Never married	39	20%
	Separated or Divorced	37	19%
	Widowed	13	7%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

Regarding country of origin, similarly to the immigration pattern in the area, participants reported as being born in El Salvador (42%), Guatemala (15%), México (11%), Honduras (8%), Dominican Republic (5%), Nicaragua (2%), and other countries from South America (11%). Only 3% reported to be either from Asia or Africa while another 6% self-identified as American-born. Of those born outside the U.S. and representing the first immigrant generation in the country, the majority (63.2%) reported to be living in the country for more than 10 years, 27.3% reported being in the country less than 10 years and 6.6% less than 5 years. Only 2 persons (1%) had arrived less than one year ago.

Table 10: Participant's Ethnicity and Country of Origin (number and percentage)

Ethnicity / Country of Origin Category		N=198 n	(100%) %
Ethnicity	Hispanic/Latino	184	93%
	Black/African American	5	2.53%
	White	7	3.54%
	Asian	1	0.50%
	Other	1	0.51%
Country of Origin	North America (Mexico)	21	10.6%
	North America (U.S.)	12	6.1%
	Central America (El Salvador)	83	41.9%
	Central America (Guatemala)	29	14.6%
	Central America (Honduras)	15	7.6%
	Central America (Nicaragua)	3	1.5%
	Caribbean (Dominican Republic)	9	4.5%
	South America (Peru)	8	4.0%
	South America (Bolivia)	4	2.0%
	South America (Ecuador)	4	2.0%
	South America (Chile)	2	1.0%
	South America (Venezuela)	2	1.0%
	South America (Colombia)	1	0.5%
	Africa (Ethiopia)	2	1.0%
	Asia (India)	1	0.5%
	Not Specified	2	1.0%
Time Living in the U.S.	16 or more years	71	35.9%
	Less than 15 years	54	27.3%
	Less than 10 years	46	23.2%
	Less than 5 years	13	6.6%
	Less than a year	2	1.0%
	n/a (Born in the US)	12	6.1%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

Key informants at the clinics involved in the study (mental health counselor, medical provider, or nurse) agreed that almost all of their patients have suffered a trauma or loss, since they were exposed to different risks in their country of origin or on their way to the U.S., including: violence, war, oppression, traumatic loss of family members, homelessness, family

abandonment, and stress created by separation and reunification of families.

Family plays a very important role in the immigration and acculturation process as well as in the mental health wellness/illness of their members. Hence, participants were asked how many children under 18 year-old they have, and how many of them were living with them in the U.S. Also they were asked to answer the longest period of separation they had with their underage (younger than 18 year-old) children (Table 11).

Table 11: Family Situation (number and percentage)

Family Situation Category		N=198 (100%) n	%
Number of Children Under 18 year-old	0	116	59%
	1	27	14%
	2	24	12%
	3	15	8%
	4	8	4%
	5	1	1%
	Not Specified	7	4%
Number of Children Under 18 year-old living with them	0	138	70%
	1	24	12%
	2	20	10%
	3	11	6%
	4	3	2%
	Not Specified	2	1%
Number of Children Under 18 year-old living outside the U.S.	0	172	87%
	1	13	7%
	2	4	2%
	3	4	2%
	4	3	2%
	Not Specified	2	1%
Time of Separation	Childless	87	44%
	No Separation	52	26%
	6 months to 2 years	17	9%
	3 years to 6 years	14	7%
	7 years to 10 years	16	8%
	11 years to 15 years	9	5%
	Not Specified	3	2%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

Fifty nine percent (59%) of the participants did not have under-18-year-old children; this did not mean that they don't have children at all. Only 44% of the 198 participants revealed to be childless, and some of the other 15% reported to have adult sons/daughters from whom they have been separated since their childhood. A 26% reported to have between one (14%) or 2 (12%) children, and only a 13% reported to have more than 3 children (3 -8%-; 4 -4%-; 5 -1%).

When answering the question about how many of the underage children were living with them, the numbers expressed above changed, increasing the percentage of parent living without children to 70%, and decreasing to 22% those parents living with one (12%) or two (10%) children; and decreasing even more the percentage of parents living with more than three (3 -6%-; 4 -2%-; 5 -0%).

Separation was one of the hardest questions in the baseline survey; although most of them (70%) did not have any period of separation with their underage children, it was enough to wake many comparisons with relatives or friends who did. In this study 56 participants (29%) reported to currently be or had been separated from their under-18-year-old children; 9% reported a period of separation between 6 months to 2 years, 7% was separated during a period of 3 to 6 years, 8% ranged a period of 7 to 10 years, and a 5% had a separation of more than 11 years.

Living Conditions and Economic Situation

Latinos have the lowest per capita income in Montgomery County, live in poverty; they are disproportionately represented in occupations with higher risks of injury and fatality, and also live in environments with severe indoor and outdoor pollution (Kaiser Permanente National Diversity Council, 2001). Latino residents are more likely to live in old and poorly maintained buildings and may be exposed to mold, cockroaches, and lead paint and pipes (Maryland Department of Health and Mental Hygiene, 2006). Besides the educational level and work situation, participants were asked two questions: if they have enough resources to live

comfortably and enough food to feed their families.

Fifty percent (50%) reported to be jobless, 30% working part time (less than 20 hours per week) and 20% had a full time job.

Table 12: Living Situation (number and percentage)

Living Situation Category		N=198 (100%) n	%
Education Level	None	35	18%
Time of Separation	Elementary School	58	29%
	Junior-High/Middle School	25	13%
	High School	49	25%
	Vocational/technical education	10	5%
	University/college	17	9%
	Masters / Professional level and above	4	2%
Currently Working?	no	99	50%
	part-time	59	30%
	yes	40	20%
Economic Situation	Very few resources	87	44%
	Getting by	77	39%
	Doing well enough	29	15%
	Comfortable	3	2%
	Not Specified	2	1%
Do they have enough food?	no	25	13%
	yes	129	65%
	Food Bank	14	7%
	Not Specified	30	15%
Living Situation	Alone	20	10%
	With other family	51	26%
	With parent(s)	8	4%
	With partner/spouse	98	49%
	With unrelated other(s)	20	10%
	Not Specified	1	1%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

Despite of their working situation, 83% expressed to have very few resources or getting by (surviving) with minimal resources for them and their families. Another 15% felt that what they make is enough, and only 2% felt comfortable with their income.

For those with very few resources, only 13% responded as not having enough food for them and their families, and 7% reported to use the food bank.

Similarly with the living situation, only 10% of the participants lived alone, while the other 89% lived with other family members (26%), parents (4%), partners/spouses (49%), or with other unrelated individuals (10%).

Of all the respondents, 47% reported not having any level of education (18%) or just elementary (29%). Another 43% reported having middle school (13%), high school (25%) or any vocational/technical education (5%). Only 9% had university degree and 2% master degree.

Only 5.56% (11) of the participants reported English as their first language. The majority of them spoke Spanish (92%); Rumanian, Amharic, French and Tamil (2%); and their reported English proficiency was very poor, where only 8.08% of the non-native-English-speakers participants considered understanding/speaking English very well and another 16.67% considered their level of understanding/speaking English just well. 69.7% of the respondents did not speak English at all or not well.

Table 13: Language (number and percentage)

Language Category		N=198 n	(100%) %
Spoken Language	Spanish	183	92.42%
	English	11	5.56%
	Rumanian	1	0.51%
	Amharic (Ethiopia)	1	0.51%
	French	1	0.51%
	Tamil (South India and North-east Sri Lanka)	1	0.51%
English Proficiency	n/a (English main Language)	11	5.56%
	Not at all	57	28.79%
	Not well	81	40.91%
	Well	33	16.67%
	Very well	16	8.08%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

Health Situation

Participants provided authorization to review their medical records to answer specific questions regarding their health status. Those questions were about the abundant related factors that may influence in an individual's mental health, such as substance abuse, functional aspects and social support, health literacy, health functioning, and health behavior. Regarding functioning and well-being, only 6 participants considered their health was excellent or very good, which represents the 3% of the studied sample. The rest measured it as fair (60%) or less (Good – 14%; and Poor 23%); as shown in Table 14. Despite these perceptions about their health, their condition/s not had been an issue of interference with having a normal social activities, hobbies or recreational activities, household chores, errands and shopping, or taking care of themselves during the last 4 weeks. A minimum of 5% to 10% range of the participants responded that "almost all the time", while another 8% to 14% range answered "quite a bit". (Table 15)

Table 14: **Health Functioning (1) (number and percentage)**

Health Functioning N=198 (100%) **Category: In general, would you say your health is...**	**Baseline Survey**	**N**
Excellent	1%	2
Very Good	2%	4
Fair	60%	118
Good	14%	27
Poor	23%	45
Did not answer	1%	2

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

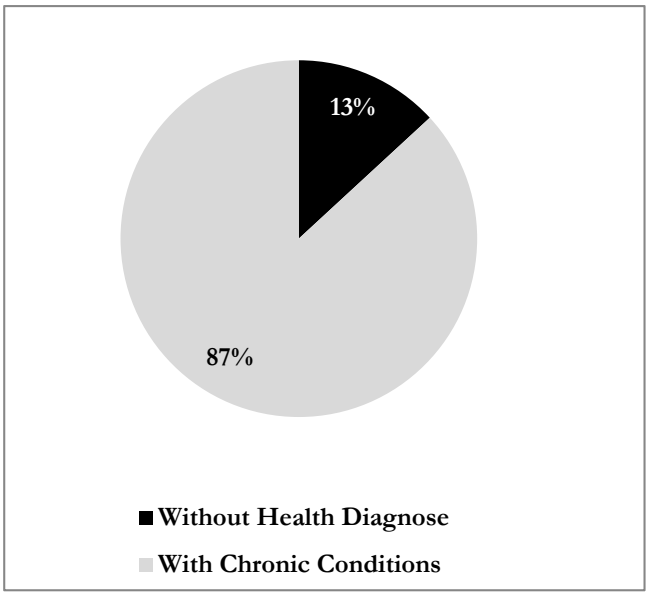
Table 15: **Health Functioning (2) (number and percentage)**

Health Functioning Category					N=198 (100%) Baseline Survey	
During the past 4 weeks, how much has your health interfered with your…	Not at all	Slightly	Moderately	Quite a bit	Almost All the Time	Did not answer
1. Normal social activities with family, friends, neighbors, or groups?	55%	10%	14%	13%	9%	0%
2. Hobbies or recreational activities?	58%	7%	10%	14%	10%	2%
3. Household chores?	59%	8%	11%	11%	10%	2%
4. Errands and shopping?	62%	5%	13%	10%	8%	4%
5. Taking care of yourself?	73%	4%	9%	8%	5%	2%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

In contrast, the chart review conducted revealed a shocking reality for these 198 participants, out of whom only 26 (13%) did not present any serious or chronic health condition, leaving the other 172 participants with some kind of chronic care problem; and unfortunately reporting two death in the time between the baseline interview and the follow up.

Graphic 3: **Health Problems (1) (percentage)**



Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

The majority of the sample suffered from at least a chronic condition associated with the social determinant of health (diabetes, hypertension, and obesity and its related diseases like heart disease); with the following prevalence: 25% of the participants have diabetes mellitus, 33% hypertension, 45% obesity (hyperlipidemia), 2% heart disease.

The health data collected also show that 18 (10%) participants suffered from them all (diabetes, hypertension and obesity), and three of whom were living with morbid obesity (BMI ≥ 40).

Less prevalent, other chronic conditions reported were cerebral infraction, asthma, renal problems, insomnia, cancer, alcoholic cirrhosis and alcoholic gastritis, migraines, chronic muscle or bone pain, HIV, and anemia.

Coincidentally, their habits and health behaviors statistics showed that they do not frequently do physical exercise, eat right or get enough sleep. (Table 17)

Table 16: Health Problems (2) (percentage)

CHRONIC HEALTH	N=172 (100%)
Diabetes Mellitus	25% (43)
Hypertension	33% (58)
Obesity	45% (77)
Heart Disease	2% (4)
Other	18% (32)

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

Table 17: **Health Behavior (percentage)**

Health Behavior Category How often are you able to practice good health habits in following areas?…	N=198 (100%) Baseline Survey			
	Rarely	Sometime	Most of the Time	Did not answer
Getting Exercise	48%	33%	18%	1%
Eating Right	26%	46%	27%	1%
Getting Enough Sleep	56%	24%	19%	1%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

Chronic Care Management

Chronic care management is crucial to maintain under control each health problem and to avoid further undesired consequences. It is also recognized and pointed out that many people struggling with any kind of mental illness find it hard to follow through a healthy path and to manage their own care. Table 18 show the number of visits to either a health provider or a behavioral health specialist. Showing that 16% visited the provider 1-2 times for their routing control appointment; 67% went between 3 and 9 times (with an average visit of once a month); and 5% needed more than 10 health visits during the last year. It is important to note that 16% of the participants walked in at the clinics for an urgent consult between 1 and 20 times during the past year.

Table 18: **Existing Health Conditions (1) (number and percentage)**

Existing Health Conditions Category Number of visits in the last year	N=198 (100%) Data from May 1, 2012 to July 31, 2013 Health Visits	Behavioral Health Visits
Not visits	1 (1%)	81 (41%)
1-2	32 (16%)	79 (40%)
3-5	98 (49%)	15 (8%)
6-9	36 (18%)	1 (1%)
10-15	8 (4%)	2 (1%)
≥ 15	1 (1%)	1 (1%)
Did not answer	22 (11%)	19 (10%)

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

There were also registered at least 3 participants needed hospitalizations, two of which ended up in the Intensive Care Unit (ICU); and 14 participants visited the Emergency Room at their nearby hospital 1 or 2 times during the last year.

Table 19: **Existing Health Conditions (2) (number and percentage)**

N=198 (100%) Data from May 1, 2012 to July 31, 2013 Hospitatilizations	Emergency Room Visits	Urgent Visits
3 (2%)	14 (7%)	31 (16%)

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

Chronic care management is also associated with personal care and individual understanding about their own health condition as well as community support; especially for depressed people. Seventy six percent (76%) of the participants reported feeling very confident to manage their own health, with the follow-up clarification: *"because I can go to the doctor"* (Table 20).

Another aspect of a controlled and managed disease is the understanding of the illness and following through medical indications and advice. Literacy is important to their level of knowledge of their health problem or any related; also to their confidence dealing with medical paper work and instructions.

As Table 21 is showing, percentages are evenly distributed through the different classification for each category. Only 38% rarely need help reading English written materials in a hospital or clinic; 43% feel very confident filling out medical forms by themselves; and 39% rarely have problems understanding English spoken or written information about their medical condition. The rest of the participants need different levels of help and support.

Table 20: Confidence Managing Health Problems (percentage)

Confidence Managing Health Problems Category	N=198 (100%)
How confident are you that you can control and manage most of your health problems?…	Baseline Survey
Very confident	76%
Somewhat confident	16%
Not very confident	6%
I do not have any health problems	
Did not answer	2%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

Table 21: Health Literacy (percentage)

Health Literacy Category		N=198 (100%)		
	Rarely	Sometimes	Usually	Don't Know
How often do you need help reading written materials in a hospital or clinic?	38%	22%	39%	1%
How confident are you filling out medical forms by yourself?	Never confident	Sometimes confident	Very confident	Don't Know
	29%	28%	43%	1%
How often do you have problems understanding spoken or written information about your medical condition?	Rarely	Sometimes	Usually	Don't Know
	39%	35%	25%	1%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

Substance Abuse

It is apparent that substance abuse is not an issue for this specific population. Statement not only evidenced by the data provided in Table 22 but also confirmed by key medical personnel at the clinics. Only 10 (5%) participants reported that someone during the last year recommended them to "cut back" drinking. Of the 198 participants, 195 (98%) denied using any kind of drugs, and only one reported to be told to "cut back" the use of drugs during the last year.

Table 22: Substance Abuse (percentage)

Substance Abuse Category	N=198 (100%)
How many cigarettes per day?…	Baseline Survey
Do not smoke	92%
1 - 5	4%
6 - 10	2%
≥ 10	1%
Did not answer	1%

Substance Abuse Category	N=198 (100%)
How many alcohol drinks per week?…	Baseline Survey
Do not drink	79%
1 - 2	15%
3 - 7	3%
8 - 11	1%
12 - 14	-
≥ 15	1%
Did not answer	1%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

Health Care Access

Participants provided additional information regarding their challenges navigating the healthcare system, and not having enough resources to continue with health treatments. Twenty-five

percent (25%) of the participants mentioned not being able to find a Spanish speaking mental health provider to go to while another 33% stated that lack of money was an issue to either show up or follow through a treatment. The following verbatim ilustraste these numbers:

> *"Usted hoy me pregunto sobre mi salud física y mi salud emocional, yo creo que mi salud física no se encuentra bien, porque mi salud emocional no se encuentra bien. Yo fui con la Psicóloga porque me refirieron ustedes luego de la entrevista y la Psicóloga me llamo para hacer cita con ella. Me gusto y fui algunas veces, pero luego deje de ir, porque no tenía trabajo y no podía pagar las consultas. Pero ahora que ya tengo trabajo tal vez voy a retomar, porque me ayudo."*
>
> *"Busque ayuda y no califique para el programa de Montgomery County; como no tengo dinero no insistí… me dijeron de algunos otros programas gratuitos… pero no puedo porque son en Inglés"*
>
> *"She did attempt to get metal/emotional support through Montgomery county therapist (the referral list we provided), but did not qualified. She also attempted to contact the clinic (SCC) to schedule an appointment with Angie but she was not able to get through the phone. She does want us to help her get through to the clinic, so that she may be seen by Angie or other therapist in Spanish".*
>
> *"She is now on a wheel chair because her physical condition got worst. However, her emotional condition has gotten better after we interviewed her. She has not sought therapy help at the clinic yet".*
>
> *"Fui diagnosticada con depresión hace un año, pero la psicóloga de la clínica no habla Español y no sé a dónde ir"*
>
> *"Si quiero decirles que estuve en emergencia en el hospital y no me encontraron nada. Llegué allá porque sentí fuertes punzadas en mi corazón y en mis piernas. Creo que estoy sufriendo de ansiedad y depresión y cada vez tengo más episodios que me causan mucha angustia, pero no sé dónde ir… no sé hablar Inglés."*

Accordingly to what participants expressed, based on their low income and lack of health insurance, these patients qualified to be served at the community health centers such as SCC

and HCCC. These centers operate in accordance with comprehensive federal standards, as commented in section "No-Quality Costs & the Primary Care Setting."

Services are provided at sliding fees (variable costs for services based on one's ability to pay), utilizing a health provider network (conformed by providers donating services) to refer out patients in need of specialty care.

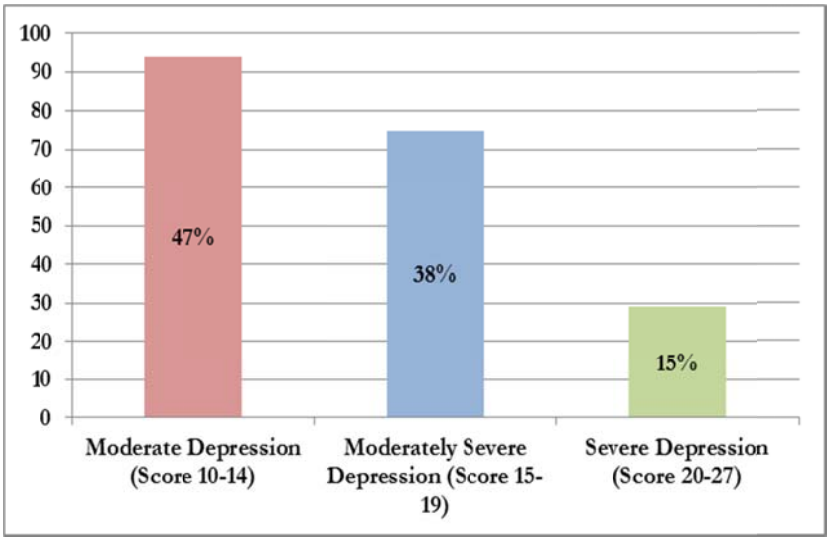
Mental Health

100% of the participants of this study suffered from different levels of depression.

The total number (198) of participants eligible for the principal study was identified as having depression and possibly PTSD.

Based on the baseline survey PHQ-9 scoring, 47% of the participant had *moderate depression* (PHQ-9 Score: 10-14); and the other 53% had *severe depression* (38% scored with moderately severe depression, and 15% with severe depression) (See Graphic 4)

Graphic 4: PHQ Depression Severity (percentage of participant and level of depression)



Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013 March 2014

Despite this evidence only 114 (58%) had a mental health diagnosis formally written in their health record; and only 40% has a behavioral record during the past year; showing a total of 1-2 range visits to the mental health specialist (Table 23).

Only 37% of the participants reported to have received some kind of treatment such as counseling (12%), counseling and medicine (13%), and only medicine (12%). Only a 1% received *acupuncture and medicine brought by a friend from their country of origin* and it was classified as "other" in the type of treatment received.

Table 23: Mental Health Treatment (number and percentage)

Mental Health Treatment Category	N=198 (100%)
What type of treatment did you receive in the last year?	Baseline Survey
Did not receive treatment	33%
Only Counseling / Therapy	12%
Counseling + Medicine	13%
Only Medicine	12%
Other	1%
Did not answer	30%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

Social Support

Depressed people need social support and depend on their family, relatives, friends, and neighbors to do some routinely activities. Social support aspects are also important to determine functioning and wellbeing.

As seen on Table 24, these people felt loved and perceived that someone is there for them to take them to the doctor, to help them clean or buy groceries when they are sick, to listen to them and provide good advice during a crisis; however, they did not perceive to have people who can help them with information or job referrals in the market.

Table 24: Social Support (percentage)

Functional Aspects of Social Support Category					N=198 (100%)		
How often do you count on…	Never	Rarely	Sometimes	Often	Always	I don't know	Did not answered
a) Someone to take you to the doctor if you couldn't go alone?	17%	12%	31%	10%	30%	1%	1%
b) Someone to help you at home with cleaning or groceries if you were sick?	21%	12%	23%	13%	30%	1%	1%
c) Someone you can count on to listen when you need to talk?	13%	12%	33%	11%	30%	0%	1%
d) Someone who can give you good advice in a crisis?	19%	10%	28%	14%	28%	0%	1%
e) Someone you can have fun with?	18%	14%	27%	14%	27%	1%	1%
f) Someone you love and who makes you feel loved?	11%	7%	16%	13%	52%	1%	1%
g) People who can help you get information about jobs, housing, or other economic support?	42%	18%	18%	8%	14%	0%	1%
h) Agencies or community organizations that help you to resolve problems?	29%	27%	20%	9%	15%	0%	1%

Own construction based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
March 2014

Pharmacotherapy

Although medication is an effective and efficient treatment for depression and PTSD, in the Latino community taking medication is stigmatized, is not clearly linked with alleviation of depression, or is otherwise misunderstood by patients, it is unlikely to be accepted as a treatment or adhered to for maximum benefit (Green, et al., Impact of PTSD comorbidity on one-year outcomes in a depression trial, 2006).

Showed in Table 22, 13% of the participants reported that they received counseling and medication during the last six months, and another 12% received only medication.

The most commonly antidepressant drugs prescribed were Amitriptyline, BusPIRone, Carbamazepine, Celexa, Citalopram, Clonazepam, Cymbalta, Diazepam, Fluoxetine, Prozac, Seroquel, Sertraline, Trazadona, Venlafaxine, and Wellbutrin.

The existence in the participant's medical record of a prescription did not reflect level of adherence from the patient. Certain inconsistencies in health record's registries presented some medications as "active medication" when in reality -at least in two of the participants' health records – those participants had expressed - during the medication discussion with the nurse at the health visit - that ***"they were not taking it"***. Additionally, despite that other 12 participants reported that they were taking medication; their health record did not show any medication prescription for their mental health problem. Then, effective adherence of pharmacotherapy remained uncertain.

Verbatim illustrating participants' reluctance to take antidepressant medication, state:

> *"Patient stopped his depression medication because he ran out of them. He was unsure of what to do; the new therapist at the clinic does not speak Spanish and it is hard to talk to her with an interpreter".*
>
> *"Con la medicina que estoy tomando, estoy teniendo efectos secundarios que para mí y mi esposa son desagradables (potencia sexual disminuida)".*

"La medicina que estoy tomando en realidad me hace sentir peor y a veces siento mucha desesperación."

CHAPTER 4

FINDINGS:

Economic Rationale & Cost Analysis

"You need a lot of money for any kind of mental health treatment (including depression). Many times people don't adhere to the medicine due to its cost." (A Participant at a Focus Group Feb 25, 2011)

"***Reflective Engagement in the Public Interest - A Collaborative Mental Health Research Agenda in the Community"*** (Kaltman, Goodie, Townsend, Watson, Campoli)

Economic Rationale

In order to explore and estimate "Depression Costs", observe its *controllability* and how that may impact in total depression costs, to finally verify that,

DTC = (↑) high

UDC = (↑↑) higher

DTC = Depression Treatment Costs
UDC = Untreated Depression Costs

The following formula was utilized for DTC and UDC,

Depression Costs **= DTC or UDC**
DTC or UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC

MHC = Mental Health Costs

CCC = Chronic Care Condition Costs (Comorbidity)
DLE = Disability and Loss of Earnings
SGC = Support Group Costs
CGC = Caregivers Costs
FCC = Family Costs

The sampling of three case scenarios on which the formula was computed was selected from the larger research group by chance with random picking. Possible candidates were identified among the participants suffering from different level of depression (moderate, moderately severe, and severe). These cases were also suffering from comorbid conditions in accordance with 98% of the study sample, and their health records did not show evidence of either mental health treatment or adherence to.

Due to the lack of data from private sector around mental health treatment, its association with comorbid conditions, and its costs; DTC were estimated using the Chronic Disease Cost Calculator. This tool provided an estimated annual cost for depression treatment combined with different chronic conditions, as well as absenteeism. (Centers for Disease Control and Prevention / developed by RTI International, 2013) (Appendix 2).

Life Expectancy was calculated using the World Life Expectancy calculator (https://www.livingto100.com/calculator/age).

Then those same randomly selected cases were carefully analyzed to determine the UDC, using assumptions and data collected from focus groups, interviews and literature review as explained in Appendix 1.

Direct and Indirect Costs: Informal Focus Group / Health Records

Direct and indirect costs were identified in several different ways:

1. An informal focus group with health promoters
2. Information registered in health records
3. Literature review and past experience

Informal Focus Group: In the month of April, 2015, a group of ten (10) health promoters were gathered with the goal of providing input on costs associated with depression. The following general questions were asked to them in order to verify if assumption previously made were correct and close to the participant's reality.

This section presents verbatim responses to the questions raised in the focus group.

Table 25: Focus Group Questions & Answers

What do know about depression?	**Sadness, unhappiness, heart pain. Some people may have suicidal feelings or thoughts.**
What are the main barriers to access depression treatments?	Beliefs, lack of family support, prejudice (other may think that they are crazy). High costs associated with depression treatment and medicine.
Do you know how much would it cost?	A lot… especially if you don't have health insurance.
What are the main costs involved in a depression treatment?	• Psychiatrist / Psychologist • Medicine • Transportation • Job loss
What kind of transportation the community members use to visit their medical providers?	• "Ridero" / Person who can give you a ride in exchange of a fare. • Metro • Bus
What are the most popular places to buy medicine?	• Walmart • CVS • Target Medicine Program • Community Clinic Medicine Program
Do you have any other comment?	People feel alone and vulnerable because they don't have Spanish-speaking providers to go to.

Own creation
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Health Records: Information such as diagnosis and treatment, mental health medication, labs, chronic care treatment and medicine, and emergency room medicine was collected from medical health records, depending upon availability and access to that data. This data was complemented and analyzed against health literature review and health benchmarks.

Literature Review: labor and quality data was gathered from literature review and documented cases from past experiences at community health clinics.

Costs Estimations & Assumptions

Table 26: Cost Estimations & Assumptions

Category	Measurement Base	Explanation
Diagnosis & Treatment	• 120 min session at $160	• The average cost of an individual 45-min session is $160 (highest price $300; median $120; lowest price $60) (Babakian, 2013). • Diagnosis can take up to 90 minutes. • Interpersonal therapy (IPT) is a short-term psychotherapy, normally consisting of 12 to 16 weekly sessions. For the purpose of this study, participants should have a weekly session for a year (Long, 2014). • Costs represent outpatient treatments, considering they are not at: (1) risk of suicide or homicide, (2) grossly reduced ability to care for food, shelter, and clothing, and (3) the need for medical diagnostic procedures (Long, 2014).
Mental Health Medication **(Data Source: http://www.goodrx.com/)**	• The average-price considered is based upon the combination of type of medication and treatment is $35.00 per 30 tablets	• Commonly antidepressant drugs recommended by providers: fluoxetine (Prozac), paroxetine (Paxil), fluvoxamine (Luvox), or sertraline (Zoloft) a. Prices for 30 capsules of fluoxetine 20mg (generic): cash price: $ 4.00 (Walmart) - $17 (CVS) b. Prices for 30 tablets of paroxetine 20mg (generic) - cash price: $ 4.00 (Walmart) - $33 (CVS) c. Prices for 30 tablets of fluvoxamine 100mg (generic) - cash price: $ 14.40 (Walmart) - $78 (CVS) d. Prices for 30 tablets of sertraline 100mg (generic) - cash price: $ 8.94 (Walmart) - $35 (CVS) • Most common antidepressant drugs prescribed are: e. Start fluoxetine (Prozac) or paroxetine (Paxil) at 10 mg at breakfast, then 3-5 days later increase to 20

		mg at breakfast. Experience has shown that starting with 20 mg causes unacceptable side-effects for many patients (and a 21% premature termination of treatment). f. Start fluvoxamine (Luvox) at 50 mg at bedtime (with food), then increase to 100 mg after 5-7 days. g. Start sertraline (Zoloft) at 50 mg daily (AM or PM), then increase to 100 mg after 5-7 days. • Comparisons made are between Walmart (the cheapest price in the surrounding area market and CVS the most accessible drug store with competitive prices similar to Target, Kmart, Walgreens, Rite-Aid)
Transportation **(Data Source: http://www.wmata.com/fares/metrorail.cfm)**	• Average cash price charge of $7 per ride, to attend a medical appointment it is necessary 2 rides.	• In Maryland, among the Latino community, there is an informal private transportation called *"el Ridero" (anglcism: from to ride or take a ride)*. This person acts like a taxi, picking the person up from their house and dropping them off at the clinic, and vice versa. The average price charged is $7 per ride (highest price $11, medium $5, lowest price $3) (Watson M. , Kaltman, Townsend, Goode, & Campoli, 2013). • Metrorail is another important transportation venue, because it allows combining metro train with bus rides around the city. Both community clinics are located metro/bus accessible. *Peak fares are in effect weekdays from opening to 9:30 a.m. and between 3:00 and 7:00 p.m. • $2.10 minimum + a $1 surcharge if a paper farecard is used • $5.75 maximum + a $1 surcharge if a paper farecard is used *Off-Peak Fares (all other times) • $1.70 minimum + a $1 surcharge if a paper farecard is used • $3.50 maximum + a $1 surcharge if a paper farecard is used *Metrobus Fares Metrobus fare for regular routes is $1.60 using a SmarTrip® card or $1.80 using cash. The fare for express routes is $3.65 using a SmarTrip® card or $4 using cash. Fare for seniors and a person with disabilities is 80¢ for regular routes, $1.80 on express routes.
Chronic Conditions **(Data Source: Care for Your Health**	• Estimated in US dollars, at its clinic rates, based on clinical practices	• Usually treated depressed people do not necessary deal with other chronic conditions. • It is considered an annual well visit at a range of $90 - Rate from Spanish Catholic Center Community Clinic and from Dr. Carlos

Community Clinic - Medicaid)	(identified in medical records)	Covarrubias, private practice. This price may vary depending on household total income and national level of poverty categorization. (+/- $30 approximately) • Usually the wellness screening or physicals administer vaccinations, conduct physicals and wellness screenings, and offer monitoring for chronic conditions. Including: a. Diagnose, treat and write prescriptions for common family illnesses such as strep throat, bladder infections, pink eye and infections of the ears, nose and throat b. Provide common vaccinations for flu, pneumonia, pertussis, and hepatitis, among others c. Treat minor wounds, abrasions, joint sprains and skin conditions such as poison ivy, ringworm and acne d. Provide a wide range of wellness services, including sports and camp physicals, smoking cessation and TB testing e. Offer routine lab tests, instant results and education for those with diabetes, high cholesterol, high blood pressure or asthma
Labs **(Data Source: Care for Your Health Community Clinic - Medicaid)**	• Estimated at its average cost of $86	• Laboratory screening is charged additionally at an average cost of $86, average costs per testing are listed below: a. Adeno $21 b. Blood sugar test $21 c. Flu test influenza A & B $33 each d. A1c $32 e. Mononucleosis (mono) test $22 f. Cholesterol screen (Lipid panel) $37 g. Negative quick strep $33 h. Pregnancy test $22 i. Quick strep $30 j. Urine dip stick $28" • In-lab price is considered the routine exam that include: k. Blood sugar test $21 l. Cholesterol screen (Lipid panel) $37 m. Urine dip stick $28
Chronic Care Medication	• Estimated at its commercial value	• Information regarding chronic care condition and medications were extracted from patient's medical record.

Emergency Room Visits	• Estimated at its average cost of $615 per a general consultation (limited access to emergency room health records)	• The average cost of an emergency room visit in the United States as of 2012 is $1318. The median cost is $615, meaning that that cost varies largely from hospital to hospital. Visiting a physician or walk-in-clinic is generally cheaper.
Annual Income	• Estimated in US dollars at its public rates.	• The Maryland minimum wage equals the Federal minimum wage when set below the Federal rate. In hourly basis it represents $7.50 *40 hrs. per week. In annual basis, salaries vary depend on the job and qualifications; since the studied population is in its majority low qualified, the following ranges of salaries were considered: $16,720 minimum wage salary (basic activities) / $26,000 medium wage salary for clerks (http://salaries-by-city.findthedata.org/d/a/Maryland). For the medium wage, the hourly payment would be $12.5.
Time off work (job productivity)	• Measured in time off work for treatment (including commute).	• Two (2) hours per week per the mental health visits during a year (including 45-min session and transportation), • Two (2) hours for wellness screen or health visit.
Not Value Added Time	• Measured in hours waiting after he/r appointment time.	• The ideal waiting time in the waiting room of the clinic should be 15 minutes; however, based evidence from this study and past quality improvement research shows that the not-value-added time at the clinic waiting room could reach the 2 hours period (Campoli, 2010).
Waiting List	• Measured in days expecting to gain access to the community health services (only applicable to new patients)	• The waiting time to access to different services was not considered since all participants were current patients at either clinic, having access to any given appointment within a week.
Life Expectancy	• Calculated in years	• Life expectancy was calculated using the online tool called "Life Expectancy Calculator" (https://www.livingto100.com/calculator/age)
YLL (Years of Live Lost)	• Not calculated for the chosen samples.	• Calculated by multiplying the number of deaths in each age group by a reference life expectancy at that age – so a disease that kills many young people will generate a greater YLL than a disease that

		kills older people.
YLD (Years lived with disability)	• Determined by the numbers of years living with the mental health problem,	• Calculated by multiplying the prevalence of a consequence of an illness by its disability weight. Disability weights are based largely on surveys of the general population – to determine how much disability is accounted for by blindness, for example, compared with being unable to walk.
DALY (Disability adjusted life years)	• Calculated using the World Life Expectancy calculator (https://www.livingto100.com/calculator/age)	• Represents the sum of the above two numbers – representing the entire amount of healthy life years lost due to premature death and impaired function caused by an illness

Own creation
March 2015

An Estimation of Depression Treatment + Costs Chronic Diseases

Based on the Chronic Disease Cost Calculator the individual costs for a well-controlled chronic health condition vary upon the disease and the combination of problems in each individual health.

Table 27 shows the estimates of annual individual costs for common chronic diseases. Stroke ($15,450.00), cancer ($10,380.00), congestive heart failure ($8,690.00), and coronary heart disease ($7,050.00) are at the top of the list with expenses greater than $500 a month. Following are diabetes ($5,870.00), depression ($3,390.00), arthritis ($2,510.00), hypertension ($1,920.00), and asthma ($1,910.00) (Center of Disease Control, 2013).

Table 27: **Chronic Care Costs (1) (Costs estimated in US dollars)**

CHRONIC CARE COSTS (Annual Costs)			
Category	**Cost per Person**		**Missed days Employee**
Arthritis	$	2,510.00	2.9
Asthma	$	1,910.00	2.1
Cancer	$	10,380.00	6.2
Congestive heart failure	$	8,690.00	7.4
Coronary heart disease	$	7,050.00	4.3
Hypertension	$	1,920.00	0.9
Stroke	$	15,450.00	23.8
Depression	$	3,390.00	3.3
Diabetes	$	5,870.00	2

Tool: ***Chronic Care Costs Calculator (2014)***
Calculated by Marcela Cámpoli, March 2014

As shown during the health analysis, the population studied in this research presented coexisting chronic conditions, more commonly hypertension, obesity (not measured by the Cost Calculator), asthma and arthritis, which are risk factors for other chronic conditions such as diabetes and coronary and congestive heart diseases - the second largest costs following cancer and strokes - with a cost greater than $10,000 per year.

Although the sum of different diseases may fluctuate due to rounding and cost calculation, since the Cost Calculator is based on rigorous modeling, it could be assumed that a person suffering from depression and other chronic condition can see his/her costs double-up during a given year (Table 28). As shown in Table 27, a well-controlled depression costs around $3,390.00 per year per person and represents 3.3 days absent of work, but that cost increases an 173% having diabetes and depression; and more than 50% with hypertension (↑57%), asthma (↑56%), or arthritis (↑74%); and they high-rocket when presented together with stroke (↑455%), developed cancer (↑306%), or any kind of heart disorder (congestive heart failure, ↑256%; and coronary heart disease, ↑207%).

Table 28: **Chronic Care Costs (2) (Costs estimated in US dollars)**

CHRONIC CARE COSTS (Annual Costs) Category	Cost per Person	Missed days Employee
Depression + Arthritis	$ 5,900.00	6.2
Depression + Asthma	$ 5,300.00	5.4
Depression + Cancer	$ 13,770.00	9.5
Depression + Congestive heart failure	$ 12,080.00	10.7
Depression + Coronary heart disease	$ 10,440.00	7.6
Depression + Hypertension	$ 5,310.00	4.2
Depression + Stroke	$ 18,840.00	27.1
Depression + Diabetes	$ 9,260.00	5.3
Depression + Diabetes + Hypertension	$ 11,180.00	6.2

Tool: *Chronic Care Costs Calculator (2014)*
Calculated by Marcela Cámpoli, March 2014

If Depression Costs are represented by Depression Treatment Costs estimated by the Chronic Disease Cost Calculator,

***Depression Costs* = DTC = MHC + CCC + DLE + PRO + SGC + CGC + FCC**

It would be appropriate to assume that in a well-controlled scenario of all the chronic conditions, with unlimited access to health services and excellent adherence to medical protocols, the sum of health treatment costs estimated throughout this section would be consolidated in MHC and CCC, keeping the rest of the costs under a relative control.

***Depression Costs* = DTC = MHC ↑ (high) + CCC ↑ (high) + DLE controlled + PRO controlled + SGC controlled + CGC controlled + FCC controlled**

Depression is a costly disease and when co-occurs with other medical illnesses, not only complicate diagnosis and treatment, worsen patients' prognosis, and hinder recovery; but also dramatically increase the costs of treatments. This statement may confirm the perception that low-income Latinos have regarding depression and costs ("they perceive that depression

treatment are expensive"); however, leaving depression untreated could represent the worst option that population may face.

Case-Study: Un-treated Depression Costs in Low-Income Un-insured Latinos

The following three sample cases were encountered in the larger depression study ("Improving Mental Health Services for Low-Income Latinos in Primary Care"). Cases at each level of depression (moderated, moderately severe, and severe depression) were randomly selected to illustrate the potential costs involved on the treatment of depression, and the proportional increase of those costs in the absence of treatment.

Direct and indirect costs were identified in an *informal focus group* with health promoters working within the Latino community. Cost mentioned were estimated utilizing the standard direct/indirect economic costs associated with depression and related comorbid chronic diseases; and it was estimated at two levels, (1) using the clinic cost; and (2) using public rates

Specification and assumptions for these case-studies are explained in Appendix 1.

Case # 1: Moderate Depression

Health Situation

Case#1 represents a 70-year-old male that had lived in the area for more than 16 years. His primary language was Spanish and did not speak English at all. He counted on very few resources, fed out of food banks provisions, and lived with other unrelated family who provided financial assistance and health support. He never married. This person was unemployed[16]. He worked as an hourly-paid worker[17], and did not contribute to social security or retirement; therefore he did not receive Social Security benefits. His PHQ-9 score was 13 – correspondent to moderate depression -. During the interview he expressed that in the last two weeks he felt little interest or pleasure in doing things-almost every day-. He did not reported trauma exposure and did not have symptoms of post-traumatic stress disorder. Besides moderate depression, this participant suffered from uncontrolled Diabetes Mellitus with ophthalmic complications, hypertension, and asthma. His health record did not show any evidence of a mental health diagnosis and treatment. This person had been living with chronic conditions for the last 25 years, and during the last year visited 31 times (approximately once every-other week) the community clinic seeking urgent care (19 times) or outpatient care (not-urgent) (12 times); additionally. Case#1 sought emergency care at least once during the last year, and it could not been determined whether this person was hospitalized.

Health indicators showed uncontrolled levels of Hemoglobin A1c (HA1C) in reference to his diabetes. Health records did not contain evidence neither of referrals to ophthalmologists to treat the eye complications from diabetes nor of mental health referral or counseling.

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[16] Having confronted educational and employment barriers throughout their younger years, many Hispanics have been unable to accumulate sufficient wealth to sustain them in their later years. Hispanic Americans are also more likely to be unemployed than black American and white elderly. As a consequence, elderly Hispanics, especially those 75 and over, are found to experience high rates of poverty. Hispanic Elderly are also less likely to receive Social Security benefits. Those that do receive this supplemental income are more likely to be dependent on it, as a lifetime of hard work in skilled labor positions, with deficient or non-existent retirement programs, have left many unprepared to sustain themselves independently. (Maldonado, 1990)

[17] Due to her age, disability and loss of earning factors as wells as productivity were considered at minimum wage since this participant under normal circumstances would qualified as **working class.** Based on her level of education (elementary education) it was assumed that she would be qualified for basic tasks (cook, housework, others) at minimum wage (U$S 7.5 per hour).

Based on the World Life Expectancy, for this individual, the life expectancy - under current circumstances – would be approximately 76 year-old, which represents 6 additional years living with mental health problems and suffering the consequences of unknown comorbid complications.

Economic Analysis

Firstly, the annual cost of the Case#1's chronic conditions was estimated through the Chronic Disease Cost Calculator. In this case, it would be $9,700.00 for the combined well-controlled chronic condition scenario conformed by Diabetes Mellitus, Hypertension and Asthma. Adding the cost of depression ($3,390) to the mentioned conditions the sum increases to $13,090. This cost represents the total estimated expense this participant may have each year if he adheres to an effective mental health treatment and has a well-managed chronic condition program that maintain his overall health under control.

However, Case#1 did not comply with those conditions, consequently using the UDC formula; the total annual cost reaches $29,903.00; which represents a ↑128% greater than a well-controlled depression and comorbid conditions treatment.

If Depression Costs are represented by Untreated Depression Costs the estimation would involve,

$$\textit{Depression Costs} = \text{UDC} = \text{MHC} + \text{CCC} + \text{DLE} + \text{PRO} + \text{SGC} + \text{CGC} + \text{FCC}$$

Analyzing separately the different components of the Untreated Depression Costs (UDC), it can be observed that individual costs are distributed differently from those in a well-controlled treatment:

1. *MHC:* since this patient did not receive any mental health treatment, direct and indirect costs associated with it does not exist ($ 0). In fact the patient was not diagnosed with depression and did not attend any mental health session.

   MHC = Direct Costs + Indirect Costs
   MHC = (Diagnosis + Treatment + Medication) + (Transportation + Miscellaneous (parking, tips, other))
   MHC = $ 0

2. *CCC:* Case#1 suffered from uncontrolled comorbid conditions demonstrated by the Diabetes Mellitus with ophthalmic complications, hypertension and asthma. To treat these conditions this patient did not follow a medical protocol, but sough outpatient medical care (OV=12), urgent (UC=19) and emergency care (ER=1) without appointments (with a total of 32 health visits – OV+UC+ER -). Community clinics provide services at sliding fees to poor and underserved people, then OV and UC are charged at a minimum of $90 each, while ER in private hospitals are charged at a minimum average of $651. Medical records showed that during those visits this patient had 3 blood tests ($86 each). Participant was taking medication[18] for his conditions at $25 monthly dose. Two-hour-commute was estimate for each visit[19]. Transportation was estimated using the basic rate per ride of $7 (2 rides). The cost of the CCC ascended to $4,927.00

   CCC = Direct Costs + Indirect Costs
   CCC = (Health Visits + Labs + Medication + Urgent Care + Emergency Care + Hospitalization) + (Transportation + Miscellaneous (parking, tips, other))
   CCC = ($1,080 + $258 + $300 + $1,710 + $651) + ($448 + $480)
   CCC = $4,927.00

3. *DLE:* For Case#1 YLD and DALY were not calculated due to internal changes at the community clinics involved in the research that did not allow access to health information from previous years). YLL was not applied to this case. This participant was an unemployed hourly-paid worker who - under different circumstances - would have

[18] Zestril (lisinopril); ACE Inhibitors; Glucophage (metformin) Biguanides; Singulair (montelukast); Leukotriene Receptor Antagonists
[19] One (1) hour from home to health care provider + One (1) hour from health care provider to home

been working. Due to his age (70 year old), disability and loss of earning factors as well as productivity were considered at minimum wage. Based on his level of education (elementary education) it was assumed that he would be qualified for basic tasks (grass mowing, cleaning, and other) at minimum wage ($ 7.5 per hour). Thus the disability and loss of earning was estimated in $15,600.

DLE = YLL + YLD + DALY + LOSS OF EARNINGS
DLE = N/A + N/A + N/A + $15,600 per year
DLE = $15,600

4. *PRO:* Absenteeism does not apply for Case#1 since this participant was an unemployed hourly-paid worker. Time off work, however, was estimated – as opportunity cost - at the minimum wage ($7.5 per hour) multiplied by the number of hours that this person dedicated to attend each clinic visit (1 hours of health visit (average) + 2 hours of not-value-added time (average) + 2 hours of commute) . Waiting time to access an appointment with a health provider did not apply to this case, since health record showed that participant walked-in without appointment. Being current patient of the clinic, he did not need to wait to be accepted as patient to access their services (waiting list). Thus the productivity cost was estimated in $1,215.00.

PRO = Absenteeism + Time Off Work + Not-Value-Added-Time + Waiting Time + Waiting List
PRO = N/A + $735 + $480 + N/A + N/A
PRO = $735 + $480
PRO = $1,215.00

5. *SGC*: Case#1, lived with an unrelated family who would lend him a room to stay for a value of $300 (approximately). Participant reported that housekeeping and errands were included in the services/help provided by the support group at no cost.

Support Group Costs (SGC) = Housekeeping Hours + Errands Hours + Baby/Children Sitter
Support Group Costs (SGC) = Included in Rent + N/A + N/A
Support Group Costs (SGC) = $0

6. *CGC:* this participant reported to count on one person accompanying him to doctor's visits (health/urgent/emergency). Moreover, this patient would need 8.2 days a year of assistance (based on the Chronic Disease Cost Calculator estimation for the combined comorbid condition of Depression, Diabetes Mellitus, Hypertension, and Asthma). The caregiver's loss of earning and productivity was estimated at a minimum rate of $7.5 due to the lack of access to the caregiver job/income information. Additionally, Case#1 reported to receive from his caregivers an extra sum of $200 as financial support per month, and the provision of a room to sleep in ($300 per month approximately). Two-hour-commute was estimate for each visit (1 hour from home to health care provider + 1 hour from health care provider to home). Transportation was estimated using the basic rate per ride of $7 (2 rides). Thus the caregiver's costs were estimated in $8,641.00.

CGC = CG Loss of Earnings and Productivity + Financial Support
CGC = $498 + $735 + $2,400 + $3,600 + $480 + $448
CGC = $8,161.00

7. *FC:* Case#1 never married and had no children; however, he is living with an unrelated family group, whose personal information this study did not have access to. The family costs remained uncertain.

FC = ∑ Individual "DTC"/"UDC" per family member or close relative

In summary,

UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC
UDC = $ 0 + $4,927 + $15,600 + $1,215 + $8,161

Depression Costs = UDC = $ 29,903.00

This application of the UDC formula can be seen in Tables 29 & 30.

Table 29: **Untreated Depression Costs – Case#1 (1) (Costs estimated in US dollars)**

NON-TREATMENT COSTS (UDC)		Moderate Scenario (15≥PHQ-9≥10)	
CASE#1 Category		Monthly	Annual
	General Situation		
Mental Health Problem	Not diagnosed / Never attended Mental Health sessions		
PHQ-9	13		
PTSD	0		
Job Statuts	Without Present Job		
	Mental Health Costs (MHC)		
Mental Health Diagnosis	Diagnosis= 1 session (120 minutes session)*$160	$ -	$ -
Mental Health Treatment	$160 per session	$ -	$ -
Mental Health Drugs	$35 (monthly dose) - Not prescribed	$ -	$ -
Transportation	*=2 rides * $7 * 0 MH visits	$ -	$ -
Commute	*=2 hours * $7.5 * 0 MH visits	$ -	$ -
	Chronic Care Condition Costs (CCC)		
Health Visits	*=12 health visits * $90	$ -	$ 1,080.00
Labs	*=3 Labs * $86	$ -	$ 258.00
Medication	Zestril (lisinopril) ACE Inhibitors+Glucophage (metformin) + Singulair (montelukast)+ Leukotriene Receptor (monthly dose - average)	$ 25.00	$ 300.00
Urgent Care	*=19 UC visits*$90	$ -	$ 1,710.00
Emergency Care	$651 (1 ER visit)	$ -	$ 651.00
Transportation	*=2 rides * $7 * 32 visits	$ -	$ 448.00
Commute	*=2 hours * $7.5 * 32 visits (OV+UC+ER)	$ -	$ 480.00
	Disability and Loss of Earnings (DLE)		
YLL (Year of Live Lost)	N/A	$ -	$ -
YLD (Years Living with Disability)	25 years living with chronic conditions	$ -	$ -
DALY (Disability Adjusted life year)	25 years	$ -	$ -
Life Expectancy (with current conditions)	76 year-old	$ -	$ -
Physically and Mental Unhealthy Days	20 days a months	$ -	$ -
Adjusted Gross Income	$7.5*40hs a week*52 weeks a year	$ -	$ 15,600.00
	Productivity (PRO)		
Absenteeism	8.3 days/year	$ -	$ -
Time Off Work	Diabetes+depression+Hypertension+Asthma (*1hs health visit*31 visits + 3hs ER visit * 1 visit + 2 hs commute * 32 OV+IC+ER)*$7.5	$ 735.00	$ 735.00
Not Value Added Time	2hs*$7.5*32 visits (average)	$ 480.00	$ 480.00
Waiting Time	Walked in / Without Appointment	$ -	$ -
Waiting List	Current patient	$ -	$ -
	Support Group Costs (SGC)		
Housekeeping Hours	Included in Room Rent	$ -	$ -
Errands Hours	Included in Room Rent	$ -	$ -
Baby/Children Sitter	N/A	$ -	$ -
HEALTH CARE EXPENDITURES	ESTIMATED TOTAL (1)		**$ 21,742.00**

Own computation based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
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Table 30: **Untreated Depression Costs – Case#1 (2) (Costs estimated in US dollars)**

NON-TREATMENT COSTS (UDC) CAREGIVER COSTS (CGC) Category			Moderate Scenario (15≥PHQ-9≥10) Monthly	 Annual
	Loss of Earnings & Productivity			
Absentism	8.3 days/year Diabetes+depression+Hypertension+Asthma		$ -	$ 498.00
Time off work	((*1hs visit+*2hs waiting)*31 visits + ER Visit (5hs.))*$7.5		$ -	$ 735.00
Financial Assistance	Financial Assistance: $200 a month + Rent:$300 per month		$ 500.00	$ 6,000.00
Commute	*=2 hours * $7.5 * 32 visits			$ 480.00
Transportation	*=2 rides * $7 * 32 visits (OV+UC+ER)			$ 448.00
CAREGIVERS' EXPENDITURES	ESTIMATED TOTAL	**(2)**		**$ 8,161.00**

NON-TREATMENT COSTS (UDC) FAMILY COSTS (FCC) Category			Moderate Scenario (15≥PHQ-9≥10) Monthly	 Annual
	∑ Individual "untreated depression costs" per family member or close relative			
MHC	Not Available Data		$ -	$ -
CCC	Not Available Data		$ -	$ -
DLE	Not Available Data		$ -	$ -
PRO	Not Available Data		$ -	$ -
SGC	Not Available Data		$ -	$ -
CGC	Not Available Data		$ -	$ -
FCC	Not Available Data		$ -	$ -
FAMILY EXPENDITURES	ESTIMATED TOTAL	**(3)**		**?**

TOTAL UDC	(1) + (2) + (3)	**$29,903.00**

Own computation based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
Feb 2015

Case # 2: Moderately Severe Depression

Health Situation

Case#2 represents a 47-year-old woman who moved to the United States less than 10 years ago. Her primary language was Spanish and did not speak English at all. Her self-reported economic situation was "well enough"- which meant that she was able to provide for the basic necessities of their family. She was living with her husband and two under-18-year-old children, from whom she was never separated. She was unemployed *"due to her health problems"* (participant comment)[20].

With PHQ-9 score was of 19 – correspondent to moderately severe depression -, this participant also reported trauma exposure (PTSD). During the interview she expressed that she felt little interest or pleasure in doing things, feeling down, depressed, or hopeless, having trouble falling or staying asleep, feeling tired or having little energy, over-eating, and feeling bad about herself almost every day. Medically diagnosed with depression and post-traumatic stress disorder, this participant also suffered from obesity, hypertension, and arthritis. This person had been living with chronic conditions for the last 20 years, and during the last year visited the community clinic 34 times seeking urgent care (10 times), and outpatient care (not-urgent) (24 times). Additionally, Case#2 sought emergency care 3 times during the last year. It could not been determined whether this person was hospitalized. Regarding mental health, she attended only three sessions for diagnosis and treatment. Mental health medication was not prescribed.

Other health indicators showed morbid obesity (uncontrolled), which represented a risk factor for diabetes and heart diseases. Health records did not show evidence neither of referrals to a nutritionist to treat the obesity nor of mental health counseling follow-up.

[20] Due to her age, disability and loss of earning factors as wells as productivity were considered at minimum wage since this participant under normal circumstances would qualified as **working class.** Based on her level of education (elementary education) it was assumed that she would be qualified for basic tasks (cook, housework, others) at minimum wage.

Besides her family members (husband and 2 underage children) - this participant counted on a person to help with house chores and children care. Additionally, other person would be responsible for accompanying her to medical appointments.

Based on the World Life Expectancy, for this individual, the life expectancy - under her current circumstances – would be 75 year-old, which represents 28 additional years living with mental health problems and suffering the consequences of unknown comorbid complications.

Economic Analysis

Similarly to the first case, the annual cost of the Case#2's chronic conditions was estimated through the Chronic Disease Cost Calculator. In this case, it would be $4,330.00 for the combined well-controlled chronic condition scenarios conformed by Arthritis and Hypertension. Adding the cost of depression ($3,390) to the mentioned conditions the sum increases to $7,820. This cost represents the total estimated expense this participant may have each year if she adheres to an effective mental health treatment and has a well-managed chronic condition program that maintain her overall health under control.

However, Case#2 did not comply with those conditions, consequently using the UDC formula; the total annual cost reaches $42,421.47; which is a ↑442% greater than a well-controlled depression and comorbid conditions treatment.

If Depression Costs are represented by Untreated Depression Costs the estimation would involve,

Depression Costs **= UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC**

Analyzing separately the different components of the Untreated Depression Costs (UDC), it can be observed that individual costs are distributed differently from those in a well-controlled treatment:

1. *MHC:* for Case#2, direct and indirect costs associated with mental health treatment and diagnosis, are very low ($ 570.18) since this patient attended one (1) mental health session for diagnosis and two additional sessions for treatment before dropping off treatment.

   MHC = Direct Costs + Indirect Costs
   MHC = (Diagnosis + Treatment + Medication) + (Transportation + Miscellaneous (parking, tips, other))
   MHC = $ 480 + $ 90.18
   MHC = $570.18

2. *CCC:* Case#2 suffered from uncontrolled comorbid conditions (Arthritis and Hypertension). To treat these conditions this patient did not follow a medical protocol, but sough outpatient medical care (OV=24), urgent (UC=7) and emergency care (ER=3) without appointments (adding up a total of 37 health visits – OV+UC+ER-). Participant was taking medication for her conditions ($25 monthly dose)[21]. Two-hour-commute was estimate for each visit[22]. Transportation was estimated at $7 flat rate per ride (2 rides per visit). Community clinics provide services at sliding fees to poor and underserved people, then OV and UC are charged at a minimum of $90 each, while ER in private hospitals are charged at a minimum average of $651. Medical records showed that during those visits this patient had 3 blood tests ($86 each). The cost of the CCC ascended to $6,683.22

   CCC = Direct Costs + Indirect Costs
   CCC = (Health Visits + Labs + Medication + Urgent Care + Emergency Care + Hospitalization) + (Transportation + Miscellaneous (parking, tips, other))
   CCC = ($2,160 + $258 + $300 + $900 + $1953) + ($518 + $594.22)
   CCC = $6,683.22

3. *DLE:* For Case#1 YLD and DALY were not calculated due to internal changes at the community clinics involved in the research that did not allow access to health information from previous years). YLL was not applied to this case. This participant was

[21] Zestril (lisinopril) ACE Inhibitors; prednisone Corticosteroids
[22] One (1) hour from home to health care provider + One (1) hour from health care provider to home)

unemployed due to her health issues. Based on her level of education (elementary education), disability and loss of earning factors as well as productivity were considered (as opportunity cost) at minimum annual wage ($8.03 per hour * 40 hrs. a week * 52 weeks a year). It was assumed that she would be qualified for basic tasks (housekeeping, cooking, and babysitting). Thus the disability and loss of earning was estimated in $16,720.

DLE = YLL + YLD + DALY + LOSS OF EARNINGS
DLE = N/A + N/A + N/A + $16,720 per year
DLE = $16,720

4. *PRO:* Absenteeism does not apply for Case#2 since this participant was unemployed. Time off work, however, was estimated – as opportunity cost - at the minimum wage ($16,720 per year and $8.03 per hour) multiplied by the number of hours that this person dedicated to attend each clinic visit (1 hours of health visit (average) + 2 hours of not-value-added time (average) + 2 hours of commute). Numbers changed for the ER visit (2 hours of health visit + 3 hours of not-value-added time (average). Waiting time to access an appointment with a health provider did not apply to this case, since health record showed that participant walked-in without appointment. Being current patient of the clinic, she did not need to wait to be accepted as patient to access their services (waiting list). Thus the productivity cost was estimated in $1,758.57.

PRO = Absenteeism + Time Off Work + Not-Value-Added-Time + Waiting Time + Waiting List
PRO = N/A + $735 + $480 + N/A + N/A
PRO = $1,164.35 + $594.22
PRO = $1,758.57

5. *SGC*: Case#2, lived with her husband and two underage children. She reported to have a person helping her with housekeeping, errands and childcare during regular hours (full time – estimated at hourly based minimum rate - $7.5).

Support Group Costs (SGC) = Housekeeping Hours + Errands Hours + Baby/Children Sitter
Support Group Costs (SGC) = $5,400 + $1,800 + $7,200

Support Group Costs (SGC) = $14,400

6. *CGC:* this participant reported to count on one person accompanying her to doctor's appointments (health/urgent/emergency care visits). Additionally, the caregiver would need 7.1 days a year to assist this person who is unable to function by herself (Based on the Chronic Disease Cost Calculator estimation for the comorbid condition of Depression + Hypertension + Arthritis). Caregiver's loss of earnings and productivity were estimated at a minimum rate of $7.5 per hour due to the lack of access to the caregiver job/income information. Two-hour-commute was estimate for each visit (1 hour from home to health care provider + 1 hour from health care provider to home). Thus the caregiver's costs were estimated in $2,844.50.

   CGC = CG Loss of Earnings and Productivity + Financial Support
   CGC = $426 + $877.50 + $0 + $510 + $476
   CGC = $2,289.50

7. *FC:* Case#2 is married with two children exposed to a moderately severe depressed mother surviving with comorbid chronic conditions and who needs social support to be able to take care of her family. This study did not have access to the individual information of the family members; consequently the family costs remained uncertain.

   FC = ∑ Individual "DTC"/"UDC" per family member or close relative

In summary,

UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC
UDC = $ 570.18 + $6,683.22 + $16,720 + $1,758.57 + $14,400 + $2,289.50

Depression Costs = UDC = $ 42,421.47

This application of the UDC formula can be seen in Tables 31 & 32.

Table 31: Untreated Depression Costs – Case#2 (1) (Costs estimated in US dollars)

NON-TREATMENT COSTS (UDC) CASE#2 Category		Moderately Severe Scenario (16≥PHQ-9≥20) Monthly	Annual
	General Situation		
Mental Health Problem	Depression + PTSD		
PHQ-9	19		
PTSD	5		
Job Statuts	Unemployed due to health issues		
	Mental Health Costs (MHC)		
Mental Health Diagnosis	Diagnosis= 1 session (120 minutes session)*$160	$ -	$ 160.00
Mental Health Treatment	*=2 MH sessions (1-hour-session)*$160	$ -	$ 320.00
Mental Health Drugs	$35 (not prescribed)	$ -	$ -
Transportation	*=2 rides * $7 * 3 MH visits	$ -	$ 42.00
Commute	*=2 hours * $8.03 * 3 MH visits	$ -	$ 48.18
	Chronic Care Condition Costs (CCC)		
Health Visits	*=24 outpatient visits*$90	$ -	$ 2,160.00
Labs	*=3 Labs * $86	$ -	$ 258.00
Medication	Zestril (lisinopril) ACE Inhibitors + prednisone Corticosteroids (monthly dose - average)	$ 25.00	$ 300.00
Urgent Care	*= 10 UC visits*$90	$ -	$ 900.00
Emergency Care	$651*3 ER visits	$ -	$ 1,953.00
Transportation	*=2rides * $7 * 37 visits	$ -	$ 518.00
Commute	*=2 hours * $8.03 * 37 visits (OV+UC+ER)	$ -	$ 594.22
	Disability and Loss of Earnings (DLE)		
YLL (Year of Live Lost)	N/A	$ -	$ -
YLD (Years Living with Disability)	25 years living with chronic conditions	$ -	$ -
DALY (Disability Adjusted life year)	25 years	$ -	$ -
Life Expectancy (with current conditions)	76 year-old	$ -	$ -
Physically and Mental Unhealthy Days	20 days a months	$ -	$ -
Adjusted Gross Income	minimum wage salary (basic activities) = $8.03 per hour * 40 hs a week * 52 weeks	$ -	$ 16,720.00
	Productivity (PRO)		
Absenteeism	7.1 days/years Depression+Hypertension+Arthritis	$ -	$ -
Time Off Work	(*1hs visit*34 visits + 3hs.*3 ER visits + 2hs commute*37 visits) *$8.03 per hour	$ 1,164.35	$ 1,164.35
Not Value Added Time	2hs *$8.03*37 visits - Average	$ 594.22	$ 594.22
Waiting Time	Walked in / Without Appointment	$ -	$ -
Waiting List	Current patient	$ -	$ -
	Support Group Costs (SGC)		
Housekeeping Hours	3 hours a day * $7.5 minimum housekeeping wage	$ 450.00	$ 5,400.00
Errands Hours	1 hour a day * $7.5 minimum wage	$ 150.00	$ 1,800.00
Baby/Children Sitter	After school care - 4 hours a day *$7.5 minimun wage	$ 600.00	$ 7,200.00
HEALTH CARE EXPENDITURES	ESTIMATED TOTAL (1)		$ 40,131.97

Own computation based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
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Table 32: **Untreated Depression Costs – Case#2 (2) (Costs estimated in US dollars)**

NON-TREATMENT COSTS (UDC) CAREGIVER COSTS (CGC) Category			Moderately Severe Scenario (16≥PHQ-9≥20) Monthly	Annual
	Loss of Earnings & Productivity			
Absentism	7.1 days/year (Depression+Hypertension+Arthritis) * $7.5 per hour minimum wage		$ -	$ 426.00
Time off work	((*1hs visit+*2hs waiting)*34 visits + 3 ER Visit * 5hs)*$7.5		$ -	$ 877.50
Financial Assistance	Not Reported		$ -	$ -
Commute	*=2 hours * $7.5 * 34 visits			$ 510.00
Transportation	*=2rides * $7 * 31 visits (OV+UC+ER)			$ 476.00
CAREGIVERS' EXPENDITURES	ESTIMATED TOTAL	(2)		$ 2,289.50

NON-TREATMENT COSTS (UDC) FAMILY COSTS (FCC) Category			Moderately Severe Scenario (16≥PHQ-9≥20) Monthly	Annual
	∑ Individual "untreated depression costs" per family member or close relative			
	∑ (UDC Husband + UDC Child #1 + UDC Child #2)			
MHC	Not Available Data		$ -	$ -
CCC	Not Available Data		$ -	$ -
DLE	Not Available Data		$ -	$ -
PRO	Not Available Data		$ -	$ -
	SGC			
CGC	Not Available Data		$ -	$ -
FCC	Not Available Data		$ -	$ -
FAMILY EXPENDITURES	ESTIMATED TOTAL	(3)		?

TOTAL UDC	(1) + (2) + (3)			$ 42,421.47

Own computation based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
Feb 2015

Case # 3: Severe Depression

Health Situation

Case#3 represents a 36-year-old woman who moved to the United States less than 10 years ago. Her primary language was Spanish with high proficiency levels in English. Her self-reported economic situation was "living with very few resources", which meant that she and her family had great difficulty every month and sometimes could not pay for necessities. She was living with her husband and two under-18-year-old children, from whom she was never separated. She was unemployed *"due to her health problems"* (participant comment)[23]. With a PHQ-9 score of 23 – correspondent to severe depression - and trauma exposure, during the interview she expressed she felt little interest or pleasure in doing things, feeling down, depressed, or hopeless, having trouble falling or staying asleep, feeling tired or having little energy, over-eating, and feeling bad about herself almost every day. Diagnosed with depression disorder, this participant also suffered from obesity, and Diabetes Mellitus. This person had been living with chronic conditions for the last 15 years, and during the last year visited the community clinic 22 times seeking urgent care (12 times) or outpatient care (not-urgent) (10 times). Additionally, Case#3 sought emergency care two (2) times during the last year. It could not been determined whether this person was hospitalized. Regarding mental health, she attended 4 sessions for diagnosis and treatment. Medication was not prescribed.

Health indicators showed uncontrolled diabetes and unattended obesity - risky combination for a number of other chronic conditions. Health records did not show evidence neither of referral to a nutritionist nor of mental health counseling follow-up.

This participant reported that either his husband or her children would accompany her to the health services, as well as they would contribute with house chores and errands.

[23] Due to her age, disability and loss of earning factors as wells as productivity were considered at medium wage based on Maryland Department of Labor since this participant under normal circumstances would qualified as **working class**, and hear level of education (professional or master) would qualify her at least for "clerk" jobs, with an income of $12.5 per hour.

Based on the World Life Expectancy, for this individual, the life expectancy - under current circumstances – would be 71 year-old, which represents 35 additional years living with mental health problems and suffering the consequences of unknown comorbid complications.

Economic Analysis

For the third case, the annual cost of the Case#3's chronic conditions was estimated through the Chronic Disease Cost Calculator. In this case, it would be $5,870.00 for a well-controlled Diabetes Mellitus. Adding the cost of depression ($3,390) to the mentioned conditions the sum increases to $9,260. This cost represents the total estimated expense this participant may have each year if she adheres to an effective mental health treatment and has a well-managed chronic condition program that maintain her overall health under control.

However, Case#3 did not comply with those conditions, consequently using the UDC formula; the total annual cost reaches $34,699.00; which is a ↑274% greater than a well-controlled depression and comorbid conditions treatment.

If Depression Costs are represented by Untreated Depression Costs the estimation would involve,

Depression Costs **= UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC**

Analyzing separately the different components of the Untreated Depression Costs (UDC), it can be observed that individual costs are distributed differently from those in a well-controlled treatment:

1. *MHC:* for Case#3, direct and indirect costs associated with mental health treatment and diagnosis, are low since this patient attended one (1) mental health session for diagnosis and three additional sessions for treatment before dropping off treatment.

   MHC = Direct Costs + Indirect Costs
   MHC = (Diagnosis + Treatment + Medication) + (Transportation + Miscellaneous (parking, tips, other))
   MHC = $160 + $480 +$56 +$100

MHC = $796.00

2. *CCC:* Case#3 suffered from uncontrolled comorbid conditions (Obesity and Diabetes Mellitus). To treat these conditions this patient did not follow a medical protocol, but sough outpatient medical care (OV=10), urgent (UC=12) and emergency care (ER=2) without appointments. Participant was taking medication[24] for her conditions ($25 monthly dose). Two-hour-commute was estimate for each visit[25]. Transportation was estimated at $7 flat rate per ride (2 rides per visit). Community clinics provide services at sliding fees to poor and underserved people, then OV and UC are charged at a minimum of $90 each, while ER in private hospitals are charged at a minimum average of $651. Medical records showed that during those visits this patient had 1 blood test ($86 each). The cost of the CCC ascended to $6,683.22

   CCC = Direct Costs + Indirect Costs
   CCC = (Health Visits + Labs + Medication + Urgent Care + Emergency Care + Hospitalization) + (Transportation + Miscellaneous (parking, tips, other))
   CCCC = ($900 + $86 + $300 + $1,080 + $1,302) + ($336 + $600)
   CCCC = $4,604.00

3. *DLE:* For Case#1 YLD and DALY were not calculated due to internal changes at the community clinics involved in the research that did not allow access to health information from previous years). YLL was not applied to this case. This participant was unemployed due to her health issues. Based on her level of education (highs school education), disability and loss of earning factors as well as productivity were considered (as opportunity cost) at medium annual wage ($12.50 per hour * 40 hrs. a week * 52 weeks a year). It was assumed that she would be qualified for basic administrative tasks (reception desk, phone calls, and related). Thus the disability and loss of earning was estimated in $16,720.

   DLE = YLL + YLD + DALY + LOSS OF EARNINGS

[24] Glucophage (metformin) and Biguanides
[25] One (1) hour from home to health care provider + One (1) hour from health care provider to home)

DLE = N/A + N/A + N/A + $26,000 per year
DLE = $26,000

4. *PRO:* Absenteeism does not apply for Case#3 since this participant was unemployed. Time off work, however, was estimated – as opportunity cost - at the medium wage ($26,000 per year and $12.50 per hour) multiplied by the number of hours that this person dedicated to attend each clinic visit (1 hours of health visit (average) + 2 hours of not-value-added time (average) + 2 hours of commute). Numbers changed for the ER visit (2 hours of health visit + 3 hours of not-value-added time (average). Waiting time to access an appointment with a health provider did not apply to this case, since health record showed that participant walked-in without appointment. Being current patient of the clinic, she did not need to wait to be accepted as patient to access their services (waiting list). Thus the productivity cost was estimated in $1,758.57.

PRO = Absenteeism + Time Off Work + Not-Value-Added-Time + Waiting Time + Waiting List
PRO = N/A + $735 + $480 + N/A + N/A
PRO = $1,164.35 + $594.22
PRO = $1,758.57

5. *SGC*: Case#3, lived with her husband and two underage children. Family members and children would help with housekeeping and errands.

Support Group Costs (SGC) = Housekeeping Hours + Errands Hours + Baby/Children Sitter
Support Group Costs (SGC) = $0 + $0 + $0
Support Group Costs (SGC) = $0

6. *CGC:* this participant reported that either her husband or her children would accompany her to doctor's appointments (health/urgent/emergency care visits). Additionally, caregivers would need 5.3 days a year to assist this person who is unable to function by herself (Based on the Chronic Disease Cost Calculator estimation for the comorbid condition of Depression + Diabetes Mellitus + Obesity). Caregivers' hours off work and loss of earning were estimated at a minimum rate of $7.5 due to the lack of access to the caregiver job/income information. Two-hour-commute was estimate for each visit (1

hour from home to health care provider + 1 hour from health care provider to home). Thus the caregiver's costs were estimated in $1,749.00.

CGC = CG Loss of Earnings and Productivity + Financial Support
CGC = $318 + $735 + $0 + $360 + $336
CGC = $1,749.00

7. *FC:* Case#3 is married with two children living exposed to a severe depressed mother surviving with uncontrolled comorbid chronic conditions. The family is responsible for helping out with house chores and errands, and is the one providing care when the mother is unable to function by herself. This study did not have access to the individual information of the family members; consequently the family costs remained uncertain.

FC = ∑ Individual "DTC"/"UDC" per family member or close relative

In summary,

UDC = MHC + CCC + DLE + PRO + SGC + CGC + FCC
UDC = $ 796 + $4,604 + $26,000 + $1,550 + $1,749

Depression Costs = UDC = $ 34,699.00

This application of the UDC formula can be seen in Tables 33 & 34.

Table 33: Untreated Depression Costs – Case#3 (1) (Costs estimated in US dollars)

NON-TREATMENT COSTS (UDC)			Severe Scenario (PHQ-9≥21)	
CASE#3 Category			Monthly	Annual
	General Situation			
Mental Health Problem	Depression + PTSD			
PHQ-9	23			
PTSD	53			
Job Statuts	Unemployed due to health issues			
	Mental Health Costs (MHC)			
Mental Health Diagnosis	Diagnosis= 1 session (120 minutes session)*$160		$ -	$ 160.00
Mental Health Treatment	*=3 MH (1-hour-session)*$160		$ -	$ 480.00
Mental Health Drugs	$35 (not prescribed)		$ -	$ -
Transportation	*=2 rides * $7 * 4 MH visits		$ -	$ 56.00
Commute	*=2 hours * $12.5 * 4 MH visits		$ -	$ 100.00
	Chronic Care Condition Costs (CCC)			
Health Visits	*=10 OV *$90		$ -	$ 900.00
Labs	*=1 Labs * $86		$ -	$ 86.00
Medication	Glucophage (metformin) Biguanides (monthly dose)		$ 25.00	$ 300.00
Urgent Care	*= 12 UC visits * $90		$ -	$ 1,080.00
Emergency Care	$651 * 2 ER visits		$ -	$ 1,302.00
Transportation	*=2 rides * $7 * 24 visits		$ -	$ 336.00
Commute	*=2 hours * $12.50 * 24 visits (OV+UC+ER)		$ -	$ 600.00
	Disability and Loss of Earnings (DLE)			
YLL (Year of Live Lost)	N/A		$ -	$ -
YLD (Years Living with Disability)	25 years living with chronic conditions		$ -	$ -
DALY (Disability Adjusted life year)	25 years		$ -	$ -
Life Expectancy (with current conditions)	76 year-old		$ -	$ -
Physically and Mental Unhealthy Days	20 days a months		$ -	$ -
Adjusted Gross Income	minimum wage salary (basic activities) = $12.50 per hour * 40 hours a week * 52 weeks		$ -	$ 26,000.00
	Productivity (PRO)			
Absenteeism	7.1 days/year (Depression+Hypertension+Arthritis)		$ -	$ -
Time Off Work	(*1hs visit*22 visits + 3hs.*2 ER visits + 2 hs commute*24 visits) *$12.50 per hour		$ 950.00	$ 950.00
Not Value Added Time	2hs * $12.50 * 24 visits - Average		$ 600.00	$ 600.00
Waiting Time	Walked in / Without Appointment		$ -	$ -
Waiting List	Current patient		$ -	$ -
	Support Group Costs (SGC)			
Housekeeping Hours	Not reported		-	-
Errands Hours	Not reported		-	-
Baby/Children Sitter	Not reported		-	-
HEALTH CARE EXPENDITURES	ESTIMATED TOTAL	(1)		$32,950.00

Own computation based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
Feb 2015

Table 34: **Untreated Depression Costs – Case#3 (2) (Costs estimated in US dollars)**

NON-TREATMENT COSTS (UDC) CAREGIVER COSTS Category			Severe Scenario (PHQ-9≥21) Monthly	Annual
	Loss of Earnings & Productivity			
Absentism	5.3 days/year (Depression+Diabetes Mellitus) * $7.5 per hour minimum wage		$ -	$ 318.00
Time off work	((*1hs visit+*2hs waiting)*22 visits + 2 ER visits * 5hs.)*$7.5		$ -	$ 735.00
Financial Assistance			$ -	$ -
Commute	*=2 hours * $7.5 * 24 visits (OV+UC+ER)			$ 360.00
Transportation	*= 2 rides * $7 * 24 visits (OV+UC+ER)			$ 336.00
CAREGIVERS' EXPENDITURES	ESTIMATED TOTAL	(2)		$ 1,749.00

NON-TREATMENT COSTS (UDC) FAMILY COSTS Category			Severe Scenario (PHQ-9≥21) Monthly	Annual
	∑ Individual "untreated depression costs" per family member or close relative			
	∑ (UDC Husband + UDC Child #1 + UDC Child #2)			
MHC	Not Available Data		$ -	$ -
CCC	Not Available Data		$ -	$ -
DLE	Not Available Data		$ -	$ -
PRO	Not Available Data		$ -	$ -
	SGC			
CGC	Not Available Data		$ -	$ -
FCC	Not Available Data		$ -	$ -
FAMILY EXPENDITURES	ESTIMATED TOTAL	(3)		?

TOTAL UDC	(1) + (2) + (3)	$34,699.00

Own computation based on "Improving Mental Health Services in Primary Care" , CAP-MH, 2012-2013
Feb 2015

CHAPTER 5

RESULTS & FINAL REMARKS:

The Burden of the Disease

"Millions of people who suffer from depression are left without help, even though therapies exist which could lift at least half out of their misery. Shame keeps their misery a secret. And the individual and social costs exceed the cost of cure. -…- We need to admit that it exists in one third of our families, that it is a major national problem, and that we are not doing even a half of what we should be doing."

(Layard, et al., 2006)

Baseline data collection was completed in a sample of 198 patients with depression and possible PTSD. Demographic collected revealed them as 93% Hispanic/Latino (42% from El Salvador); of an average age of 48.4 years; 81% female; and 55% Married or Living with Partner; with 9.4 years of education and an average of 4 years living in the U.S. The majority's primary language was Spanish (93%) and 70% did not speak English or did not speak it well.

Very few of them reported to be living separated from their underage children; however, they were in the past or knew someone who was living in that condition and cannot avoid feeling sympathy.

Of the total number of participants, 50% was unemployed and another 30% was working in part time/hourly-paid labors. Forty four percent (44%) was living with very few resources and had great difficulty every month to afford their necessities. Thirty percent (13%) did not have enough food for them and their families. Qualifying to be served at the community health centers, participants had low income and did not have health insurance.

On the subject of health, 97% self-reported their health as fair, good or poor; and their health record analysis showed that 87% was diagnosed with a chronic care problem. Commonly reported conditions included Diabetes Mellitus, Hypertension, and Obesity; as well as other chronic diseases such as Heart Disease, Asthma, Cancer, HIV, alcoholism related illnesses, to name same.

Despite the fact that the 100% of the sample suffer from moderate or severe depression, only 58% had a mental health diagnose formally written in their health record, and merely 35% received any kind of mental health treatment during the last year. Health records showed a low rate of antidepressant prescriptions (only 30 out of 198); additionally, health records inconsistencies could be noticed, especially in respect to mental health medication prescribed and not taken by the patient, or medication prescribed at their country of origin and not registered in their medical records in the US.

Seven economic elements and its sub-components were identified as key health expenses associated to depression: mental health treatment costs, chronic care condition costs, disability and loss of earnings, productivity, support group costs, caregivers' costs, and costs incurred by family members or close relatives. Through the study it was observe that these economic elements would react differently if depression costs were DTC or UDC.

Depression Costs **= MHC + CCC + DLE + PRO + SGC + CGC + FCC**

Under the assumption of a well-controlled chronic care management the 25% of the studied population, who suffered depression and diabetes mellitus, would have an estimated combined total annual cost of $9,260.00[26]; other 33% living with depression and hypertension, would have an estimated combined total annual cost of $5,310.00[27], and the 2% who reported congestive heart failure and depression, would have an estimated annual budget of $12,080.00[28] per year to cover medical expenses. For the 10% of the sample living with depression, diabetes, hypertension and obesity, the estimated annual medical expenses would be $11,180.00[29]. These estimates - in many cases - represent the annual household income of the families that participated in the research.

If the three case-studies selected for this study, had access to an effective mental health treatment and adhered to a well-controlled chronic care management program that allowed them to maintain their health indicators on normal levels; the DTC - estimated through the Chronic Disease Cost Calculator – would have directly depended on the number and complexity of the chronic conditions that co-occurred with depression. Total amounts would have varied based on services prices and type of treatment.

Case#1 → DTC = $13,090	**Case#2 → DTC = $7,820**	**Case#3 → DTC = $9,260**
Diabetes Mellitus + Asthma + Hypertension + Depression	**Arthritis + Hypertension + Depression**	**Diabetes Mellitus + Depression**

Although costly, adherence to health protocols would focus all the expenses in health treatments while keeping under a relative control other variables that may affect not only those living with

[26] Chronic Disease Cost Calculator estimation
[27] Chronic Disease Cost Calculator estimation
[28] Chronic Disease Cost Calculator estimation
[29] Chronic Disease Cost Calculator estimation

depression but their family members or close friends. Participants may have even under control the final decision of what kind of health services represent a better fit to their health conditions.

Therefore, if depression costs were represented by DTC (Depression Treatment Costs),

***Depression Costs* = DTC**

DTC = MHC ↑ (high) + CCC ↑ (high) + DLE controlled + PRO controlled + SGC controlled + CGC controlled + FCC controlled

The additional analyses conducted in the three different depression cases, showed that the three of them were living with untreated depression and uncontrolled chronic conditions without a medical plan or chronic care management program. Mental health costs and chronic care condition costs were a direct reflection of the individuals' low adherence to health treatments and observance to medical protocols; consequently mental health costs were low, while chronic care condition costs were high and unpredictable.

These results are aligned with the mental health cost estimates provided by the World Health Organization (2004) in its report "Investing in Mental Health" adapted. These participants had low-nonexistent effective mental health treatment costs and high-uncontrolled costs in treatment of comorbid chronic conditions. They also had high informal care-giving and great emotional costs in family, friends and caregivers; with low productivity and economic contribution to their subsistence. The costs associated with community support and public services showed to be highly uncontrolled and uncertain.

***Depression Costs* = UDC**

UDC = MHC ↓ (Low) + CCC ↑ (high & unpredictable) + DLE uncontrolled + PRO uncontrolled + SGC uncontrolled + CGC uncontrolled + FCC uncontrolled/increasing overtime

Observing each component of the formula developed for this study, we can see that the MHC + CCC - estimated at clinic rates[30] and the one estimated through the Chronic Disease Cost Calculator, it is noticeable that untreated depression costs associated with mental health and chronic cares were relatively lower.

Case#1 → DTC = $13,090	**Case#2 → DTC = $7,820**	**Case#3 → DTC = $9,260**
UDC=MHC+CCC= $4,927	**UDC=MHC+CCC= $7,253**	**UDC=MHC+CCC= $5,400**
↓37%	**↓92%**	**↓58%**

It is necessary to remind, that community clinics do provide medical and mental health services at lower prices than private health practices (based on market public value); fact that might have impacted in the final estimation.

Additionally the chronic care condition costs were distributed among greater number of unplanned (walk-in) outpatient visits (OV), urgent care (UC) and emergency care visits (ER) during the previous year. Despite the number of visits to the clinic, year-long health indicators showed that chronic conditions were still not under control, and health records did not show evidence of referral neither to health specialists nor to mental health counseling. Effectiveness of the treatment received also remained uncertain.

Disability, loss of earnings, and productivity played a key role in the final estimation. The three study-cases were unable to work (disable) and therefore living out of the caregivers/support group financial provision and comfort. The younger the sufferer the long-lasting the consequences of the mental health illnesses while the higher the education the greater the economic lost due to inability to work. These costs represented between a 52% and a 75% of the

[30] Community clinics provide services at sliding fees prices

total estimated costs for Case#1 and Case#3. Meanwhile for Case#2, who needed full time assistance the loss of earning percentage decreased to a 39% of the total cost.

Additionally, productivity was a combination of opportunity costs and no-quality health system costs. On one hand, by being depressed, participants were unable to function by themselves and produce income or support to sustain their families; both negative aspects affected their efficiency and quality of life. On the other hand, other productivity concepts like not-value-added time, waiting time and waiting list, represented the current health system efficiency level at which these participants had access to (at low economic costs, as shown before). These no-quality costs ended up being paid for by the participant with reduced productivity and longer time dedicated to procure solutions to their health. This cost represented the 4% of the total UDC, for all cases.

The social support group costs (SGC) were also relevant, since the participants' capacity to function by them demonstrated that the higher the incapacity the greater the need of social support, and consequently the costs associated with it. For families living under poverty level, having the obligation to hire full time help and invest $14,400 per year in hired support, may represent a hard financial burden. For Case#2, SGC represented 34% of the total UDC.

Additional third party costs were characterized by the caregivers' costs, representing the expenses that other individuals may pay due to the low-functioning level of the depressed individuals. The caregiver costs represented an additional 5% of the total estimated costs for young adults with household income procured by their husbands; however, for the elder participant - with additional financial support from caregivers - this cost reached an additional 27% of the total estimated costs. Since the caregiver is that person accompanying participants to the clinic or to the emergency room, the more visits the patient does or the more economic support the caregivers provide, the higher the impact on this cost.

Family Costs (FCC) were the last but not least of the seven economic components associated with depression identified as key. Since this study did not have access to the history of the family, it was not possible to estimate Family Costs. Although absence of the economic estimations, FCC are critical in the overall depression spectrum. The impact of depressed mothers on their underage children health is questionable, especially when evidence showed that any mental health disorder affects sufferer's direct social environment and early mental disorders disrupts education and early careers (Kessler & al., 1995). The consequences in adulthood can be enormous if effective treatment is not provided (Maughan & Rutter, 1998). Thus, it is important to observe that the lower the functioning levels of the individual living with depression, the greater the impact on those family members/close relatives/friends exposed to the illness. Emotional costs, although not estimated in monetary terms, would not be ignored in the general illustration and in the economic context.

Based on the World Life Expectancy, the two women (Case#2&Case#3) could expect to live 30 more years (in average). This means additional 30 years living with untreated depression and suffering the consequences of unpredictable complications from their comorbid diseases. This may also mean extra years representing an economic burden for caregivers and financial supporters and spreading potential mental health issues among their family members. In the long term, under the current circumstances, these individuals will be able to accumulate "catastrophic" sums of money unwisely wasted on ineffective chronic care, while their depression is just ignored and left behind.

During this study, it was observed that low-income Latinos living with depression incurred in great economic costs. Additionally, the total out of pocket expenses of a depression treatment was likely to increase exponentially if the person suffered from another chronic health condition, such as diabetes, hypertension, and obesity or heart disorder. Consequently,

Depression Costs = DTC = high Depression Costs = UDC = higher

This statement can be shown in numbers, as follow,

Case#1	Case#2	Case#3
DTC = $13,090	**DTC = $7,820**	**DTC = $9,260**
UDC = $29,903.00	**UDC = $42,421.47**	**UDC = $34,699.00**
↑128%	**↑442%**	**↑274%**

Therefore, beside the perception that Latinos may have regarding the costs associated with depression and its treatment - and the reality that the depression is a costly chronic care condition - through these three cases it was evident that Depression Costs are very high and become unpredictable and uncontrolled when depression is left untreated. These costs are also expected to increase overtime, if indirect costs of comorbid conditions, productivity, and family costs are considered and carefully analyze.

In summary,

Table 35: Results: Case#1; Case#2; Case#3

	Case#1	Case#2	Case#3
MHC	Nule	Very Low	Low
CCC	Uncontrolled	Uncontrolled	Uncontrolled
DLE	Walk-in/Urgent Care	Walk-in/Urgent Care	Walk-in/Urgent Care
PRO	Unable to work	Unable to work	Unable to work
SGC	In-Kind donation / no cost	High	High / At no cost
CGC	High	High	High
	27%	5%	5%
FCC	Uncertain	Uncertain	Uncertain
UDC 〉DTC	**↑128%**	**↑442%**	**↑274%**

Own construction based on *Research Study "Cost of Depression" (2015)*
Feb 2015

Additionally, it is important to understand that depression is often undetected or undertreated where it appears most commonly in the primary care setting. Many of the costs associated to depression are not patient's responsibility, but the aftereffect of a low efficiency system to which the patient living with depression have access to; they are known as "not quality costs", which were analyzed in Chapter 2 of this document. The original study ("Improving Mental Health Services for Low-Income Latinos in Primary Care") was conducted at two community health centers: SCC and HCCC. Both clinics have a limited behavioral health program and were actively collaborating with the research project - by reviewing carefully all the PHQ-9 positive diagnosis - . However their internal process, these clinics were unable to handle several adverse events observed during the study due to deficiencies in the diagnosis and intervention processes. Effectiveness of the health treatment received at community clinics also remained uncertain.

Other considerations may complicate intangible elements in these results such as the lack of control over health and resources of an un-treated severe depressed person that could develop further complications to their own health and the wellbeing of family and friend. The economic burden of the disease would be affected not only by the development of new chronic conditions but also due to the unwise investment of their limited resources in urgent and emergency care instead of in a planned/managed care program.

General Discussion

Immigration, poverty, and depression are three different conditions that usually coexist and affect millions of people's lives around the world.

Immigration is a global, high-impact phenomenon in the public sector. It is a vital stressor for both the immigrants and the "locals". It was estimated that during the last decade, 190 million people (approximately 3% of world population) were immigrants (Hossain, 2007). This

phenomenon has a direct impact on quality of life and mental and emotional health of the individuals.

In the U.S., one of the main challenges associated with this phenomenon is the rapidly growing number of people who are part of racial or ethnic minorities. Racial and ethnic groups who are not "White" represent more than a third of the U.S. population (Humes, K. R., Jones, N. A., y Ramirez, R. R., 2011) and it is estimated that by the year 2050 will represent almost 54% of the U.S. population (U.S. Census Bureau, 2008). Racial and ethnic minority groups (e.g., African Americans, Asians, Latinos, Indians and Pacific Islanders), along with sexual minority groups (e.g., lesbian, gay, bisexual, transgender), youth in transition, elders, and people with disabilities constitute a large segment of the U.S. population; and they are usually in disadvantage in terms of access and utilization of health services and mental health.

Latinos come from many countries with unique histories, politics, climates, landscapes, foods and ways of living. While shared personal or family experiences of immigration are part of the Latino identity, many Latinos have a past rooted in the United States for several generations while others are recent arrivals. Many Latinos are bilingual, some only speak English, and some only speak Spanish, while others may speak one of the hundreds of indigenous languages still existing in Latin America. Although the Latino community is heterogeneous and in constant flux it shares a strong sense of cultural identity and Spanish and family remains a common unifying bond.

But not all is pink-colored. Inadequate education results in poor stimulation at an early age, reduced readiness for school, and low education attainment. Insecure employment, hazardous work, and inadequate compensation increase stress and disease risk (Adler & Newman, 2002) (Wilkinson & Marmot, 2003). Unsafe neighborhoods experience more violence and become markets targeted for unhealthy products such as cigarettes, alcohol, and fast foods (Williams & Jackson, 2005). The harmful consequences of inadequate access to services and nutritious food,

poor air quality, insufficient transportation, and physical environments that do not promote activity exacerbate the negative effects on individual and community health. The marginalization of people through poverty, unemployment, discrimination, hostility, disabilities, and homelessness result in stress, continuing anxiety, insecurity, low self-esteem, social isolation, and lack of control over work and family life (Wilkinson & Marmot, 2003). All these factors have a negative impact on health status and life expectancy.

The system of care of Montgomery County, Maryland, known as "Montgomery Cares" serves approximately 112,000 low-income uninsured persons, of which about 64% are Latinos, with 97% within this group being immigrants. Depression is increasingly becoming a serious health concern in Montgomery County; given Latino immigrants in this community face unique stressors that impact mental health.

As we are aware of, mental health and depression as well as other chronic diseases are among the most prevalent, costly, and preventable of all health problems. Medical spending has grown rapidly in recent years and is placing a significant burden on those suffering from any chronic condition. Measures of economic burden are especially helpful for understanding the financial consequences of mental health as a chronic disease and understand how much lower annual medical expenditures paid by for each payer and absenteeism would be in the absence of the disease. Such information is essential for making informed investment decisions for chronic disease prevention, resource allocation, and disease management programs.

Depression costs are large and escalate when co-existing with other comorbid chronic care conditions; a situation commonly present among the research population. Middle aged, low income, and low literate people who had been suffering from mental health depression for long period of times and who are expected to survive – many more years - living with the untreated condition. Large amount of money are hidden behind absenteeism and low productivity, lack of work, family and community support.

Costs of depression treatment at any given year are very high. Depression – as a mental illness – has an economic impact that includes: the burden of illness (direct costs, indirect costs), impact on the family, lifetime costs, adjustments for severity (comorbidity), and treatment effectiveness. This monetary factors not only sways on the personal income of the persons with mental disorders, but also in their ability and their caregivers to work and make productive contributions to the national economy; therefore, the family burden cannot be ignored in the economic evaluation of the disease.

Indirect depression costs to society - lost employment, decreased productivity, accidents, and social welfare programs – can reach billionaire sums of money per year. From the individual perspective the direct cost is very important to their domestic economy; however, there are other intangible costs such as discrimination against, stigmatism, and mortality cost that are also very high and very difficult to measure. Additionally, it should be assumed the existence of extra *hidden care costs* (transportation, medication, and treatment of correlated chronic conditions); *hidden lack of treatment costs* (low adherence to medication, avoidable healthcare and emergency visits, and welfare services); and, *hidden social costs* reflected in the increasing number of family members with medical disorders.

Depression is the leading cause of disability among nonfatal medical conditions in the United States (Laurence, 2014). Depression also increases the possibility of losing income due to inability to work or low productivity. The health loss can be measured through different indicators such as years of lost life, years lived with disability, disability adjusted life years, and physically and mentally unhealthy day. These terms can be compared to healthy life expectancy.

One other aspect, being physically and mentally unhealthy may or may not prevent a person to go to work; however the time off work and absenteeism (Goetzel, et al., 2004) are two aspects of depression becoming more important every day. Time off work and absenteeism, together with an overwhelmed primary care system that does not allow patients to access an effective health

care service in timely manner (Davis, Schoenbaum, & Audet, 2005) have a direct impact on the productivity and income, especially when that individual is a hourly-based paid-worker.

Other aspects impacting in level of absenteeism are the Not-Value-Added Time – Waiting Time – Waiting List that – although not being directly related to depression treatment – is linked to appropriate and timely access to services. These aspects not only may increase loss of productivity or income but also may prevent people from seeking help or attending sessions.

Mortality and morbidity costs cannot be ignored either. The increase of coexistent illnesses and the premature death due to suicide, substance abuse or risky behaviors have a dramatic impact on the family and the society in both human and financial terms.

When depression is left untreated, total out of pocket expenses are not directly linked with either the level of depression or with the complexity of comorbid conditions. Depression can render people disabled in their work life, family life, and social life. Additionally, depressed people who are not accessing mental health treatments not only deal with other related uncontrolled chronic conditions - that could have been prevented by being a patient in a health-controlled setting - but also are at risk of developing further complications if circumstances do not change. The impact is visible in the increase of social support, number of avoidable health and emergency room visits.

Therefore, although confirmed that costs of depression are in general very high; it is evident that when the depression is left untreated those economic concept turn out to be volatile and wild; inclining to exacerbate the economic burden of the disease.

This study provided an exploratory approach to the economic burden of depression disorders for low-income un-insured Latinos in Montgomery County. While direct and indirect economic costs are only one aspect of the burden of disease, they showed to be a valuable perspective to observe the expending of the current very limited individual resources and the potential increase

in health expenditures. At the end, it also answered the initial hypothesis, showing how high depression costs are, and how much higher they may increase if depression is left untreated.

In order to better understand the different costs that any person with mental health problems are incurring during a regular year; this economic analysis was developed around the evidence that other chronic diseases such as heart diseases, hypertension, diabetes or asthma usually coexist with depression or other mental condition, as we could see happened in the population studied in this document.

The three show-cases studied, showed the younger the person the higher the individual direct cost of the illnesses, the more complex the impact in their family members (usually young children), and further intricate the loss of earnings.

The hundred percent (100%) of the participant suffer from depression and possible PTSD, at different severity level; still, 63% of them have not received any kind of treatment during the past year, while the other 37% left the treatment at the beginning of it.

With a high level of awareness, participants recognized the connection between mental health and physical health, and understood the importance of the mental health treatment in order to improve or maintain their holistic health; however, their limited resources and the priority competence between multiple needs made them to choose alternative venues to deal with it/or not deal with it.

Among this group, 60% rated their health as good, fair or poor; and 87% suffering from multiple chronic conditions are not having effective results in managing them.

With at least 77% of the population among working age class (between 21 and 59 year old), although 85% with low educational levels, the loss of income due to incapacity to work full time/full potential become a critical barrier among those living with very few resources.

Then people are investing unwisely their time and money seeking ineffective medical help, and they are –somehow–aware of it.

Limitations of this study narrowed down some economic generalizations; thus it become necessary to further explore these case-studies. Including actual cost of living and having access to family health and economic history may allow a better estimate of the total amount of money that depression may represent for low-income Latinos and their families. Having access to private practices rates and cost as well as protocols, may provide us with benchmarks to compare.

Treatment costs are critical to any economic estimation, especially to compare with "non-treatment costs", and community investment in social support. Additional costs that fall to the social care, education, housing, and criminal justice and social security systems, once identified may shed light about the multimillion dollar public budgets and expenses that represent participants' inability to work or to provide food and comfort for the group of reference due to untreated depression.

Other results and findings revolved around the type of treatment and health services that low-income Latino persons with depression are receiving.

Latinos with depression, similarly to underserved racial and ethnic groups in the U.S., experience significant mental health disadvantages. Limited "linguistically and culturally competent" providers and treatment costs are the key barriers to access and receive effective treatments. Thus, stigma and low literacy about mental health problems prevent them to seek help, and when they do seek help for depression, they are more likely to do so in the primary care setting than in specialty mental health services.

Evidence-based, cultural-competent mental health interventions are usually incorporated into local family care services. Despite evidence-based treatments available for depression, many members of the Hispanic community who suffer a depressive illness struggle to seek and receive

treatment. Cultural values influence the way Latinos think about depression and treatment for depression.

Additionally, poor chronic care management, move them to seek urgent/emergency care instead to engage with a long-term mental health treatment; investing unwisely their time and money in questionably effective health visits. Under these circumstances their health situation usually does not change overtime and the unhealthy life expectancy increases; while the impact on family and friends remains uncertain.

Furthermore, there is a portion of productivity costs – such as the not-value-added costs; waiting-time; or the wait-lists – directly linked to the no-quality costs of a low-efficient health system to which these participants have limited access to, that are paid by for sufferers or their families and are not recognized as depression costs. Moreover, evidence showed that people living with depression used more frequently – and without appointments – the health system, being exposed to a higher number of times to those inefficiencies. Many observers may say that community clinics are excellent provider of low-cost care to low-income population. However, several questions remained answered: Is this a natural inefficiency of the community health system? Is it a resulting consequence of the depression illness and its system's over-utilization trend? Who should pay for such inefficiency?

The implementation of cultural-appropriate effective/efficient interventions may be the focus of additional future research; however, it is important to consider the social determinants of health. The World Health Organization states that mental health can be enhanced by effective public health interventions. Depression can be affected by and affect non-health policies and practices, for example housing, education, and child care. This accentuates the need to assess the effectiveness of policy and practice interventions in diverse health and non-health areas. Collective action depends on shared values as much as the quality of scientific evidence. A climate that respects and protects basic civil, political, economic, social, and cultural rights is

fundamental to the promotion of mental health, especially among high-depression-prevalence immigrant communities.

The World Organization in its Report *"Promoting Mental Health"* (World Health Organization, 2004) expresses that mental health not only contributes to all aspects of human life but *there is no health without mental health*. Mental health is described by WHO as a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (WHO 2001). In this positive sense mental health is the foundation for well-being and effective functioning for an individual and for a community. This core concept of mental health is consistent with its wide and varied interpretation across cultures and throughout the experiences of this study.

In summary, the study showed that depression is a common but serious illness that has high human and monetary costs. It can lead to greater financial burdens for individuals and families, and when left untreated its economic variables became "unpredictable or uncontrolled."

More sophisticated economic analyses can guide our costs of depression studies in the future. So far the real cost savings and highest quality care will come with real and effective treatment, by investing in educating the Latino community around key concepts of mental health and depression, and improve their access to mental health services by working on the cultural barriers preventing Latinos from seeking depression counseling.

Main Conclusions

- Depression disorders are widespread among un-insured low income Latino/Hispanic adults in Montgomery County Maryland, and community-dwelling long-term care recipients. It is critical to realize the importance of a well-controlled and treated depression as it touches human, emotional, and economic costs.

- Uninsured low-income Latinos with depression in Montgomery County struggle to use mental health services. Some barriers to individual access include: lack of health insurance, lack of immigration documents ("undocumented"), stigma, the preference for informal sources of health care, individual responsibility for health care management, and reduced knowledge about mental health.
- Limited access to primary care setting prevents providers to timely diagnose depression and provide effective treatment; promoting health services over-utilization and lower overall health outcomes with exponential presence of comorbidities.
- When access to mental health services was granted the quality of that treatment was generally not very good or "engaging".
- The cost of depression poses a significant economic burden to the "depressed" individuals and their families. The results from this study confirm that depression is a major concern to the individual and the community.
- Direct and indirect costs associated with depression and related comorbid chronic diseases go beyond the cost of depression treatment, also involve: out-of-pocket" expenses, mortality and morbidity costs, work disability and loss of earnings, psychotropic medication costs, and avoidable health and emergency room visit costs.
- The main difference between treated and untreated depression is the level of control that each individual has over the different economic factors. Whereas the patient is complying with an effective treatment the higher the governance this person has over his/her health and resources, and greater the ability of this person and his/her family to cope with the problem. Better self-care management translates in lower impact on family's and friends' health and productivity; decreased dependability on social welfare and community support; and higher income to afford treatments.

- Better detection, prevention, treatment and patient management are imperatives to reduce the burden of depression and its costs.

Future Studies

Discussions and conclusion around cost of depression should stimulate the debate around the so much needed community investment in culturally appropriate mental health and depression treatments. Especially when, based on the Chronic Care Cost Calculator, for the years 2010-2020 it is predicted an increase in cost of depression of 63.60% at national level and 62.10% at State level with reported medical costs of $2,132 million dollars. These percentages surpass the increase foreseen in all other chronic with an increase greater than 60% at both national and state level.

Key players should be interested and actively involved in taking responsibility for the establishment of effective approaches to long-term support for mental health problems such as the government, community clinics, and private foundations. Whoever takes the lead must not disregard research groups and mental health agencies.

There are different aspects of cost of depression that would be interesting to continue studying.

Future research should invest time and money in collecting valuable data in Latino population and the mental health treatment they receive; along with specific economic/financial data on family members and social support groups. Additional information on public welfare may also shed light on the public indirect investment on this matter. Other patient groups and interview formats could also be used to investigate about individual costs and services usage in order to receive or access mental health treatment. Economic concepts such as indirect costs and productivity may provide a better estimate of the total out-of-pocket expenses that individual may face due to their untreated conditions.

It would also be interesting to measure the economic variables identified in this work in other populations and clinics that provide mental health services, and to look at the specificity of mental health investment instead of medical costs and emergency care due to untreated depression. In other words it is possible that the correlation between health outcomes and depression treatment improve over time when there is mental health investment in the population served.

Another area to study would be the comparison between depression treatments versus non-treatment costs. A related question would be how much people suffering from depression and the community in general (family, social support, and welfare) would save by providing timely, culturally appropriate and effective mental health treatment. As shown throughout this study, low-income uninsured Latinos continue to struggle to qualify in any form of health insurance that may help afford any medical condition treatment; therefore, it would be interesting to study how much - patients with low access - are more likely than patients with high access to feel that their depression treatment has been hindered by insurance issues and a limited amount of treatment options.

The macroeconomic perspective of the investment in mental health and depression treatments would be another area to explore, especially considering the total costs that these three individuals incurred into. It would be advisable to understand how much (in dollars) would be saved by them per each dollar invested in mental health and depression programs in the community. The macroeconomic analysis should include treatment and/or approach effectiveness and mental health outcomes since, as we observed in these three case-scenarios, the issue to access mental health services to treat depression was not related to lack of available services (even though limited the services were provided) but the understanding, perception, and adherence to them.

Finally, although many researches were conducted around the impact of beliefs and stigmatism on cultural understanding of depression treatments; it would be necessary to explore a qualitative perspective motivated on how much it would cost to society the lack of understanding of depression and its treatment and the low mental health literacy in the Latino community. In order to put in place different mechanisms that helps this community to seek help when needed.

Hopefully this mix between quantitative and qualitative approaches will inform our understanding costs of depression and the importance of the existence of culturally appropriate approaches that not only provide effective care in timely manner but also instill the idea that depression is not madness and can be prevented and overcome.

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APPENDIX 1: "Improving Mental Health Services for Low-Income Latinos in Primary Care" - Questionnaires

PHQ-2 - Assent Questionnaire

Today's Date _____ Clinic _____

Over the last 2 weeks, how often have you been bothered by any of the following problems?	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
Numeric Value	**(0)**	**(1)**	**(2)**	**(3)**
a. Little interest or pleasure in doing things.....……	☐	☐	☐	☐
b. Feeling down, depressed, or hopeless.……..…	☐	☐	☐	☐

Total Score: _____

Now we would like to get some information about your background:

Age: _____

Gender: ☐ Male ☐ Female

Race/Ethnicity:

☐ Hispanic/Latino ☐Black/African American ☐White ☐Asian ☐Other

Marital Status:

☐Married/living with a partner ☐Widowed ☐Divorced ☐Never married

Years of Education: _____

Are you currently working?

☐Yes ☐ Part-time or temporary ☐No

Based on your responses:

___ We would like to invite you to learn more about the study ____ Accepted
___Refused

___ ***We are unable to invite you to be part of our study because we are looking for individuals who have the symptoms we have been asking about. Thank you so much for your time.***

Formal Questionnaire

- **Demographics**

1. Age
2. Gender
3. Race/Ethnicity
4. Marital Status
5. What level of schooling have you completed?
6. What is your country of birth?
7. If not born in the U.S., how long have you lived in the U.S.?
8. What languages do you speak?
9. What language do you speak most of the time?
10. If you speak other languages (other than English); How well do you feel you speak English?
11. Are you currently working?

- **Substance Use**

1. Do you smoke? Y/N
2. How many cigarettes do you smoke each day [1 pack=20 cigarettes]? Cigarettes per day
3. How many drinks of wine, beer or other alcoholic drinks do you usually have in a week including weekdays and/ weekends?
4. During the past year, has anyone told you that you should cut back on drinking alcohol? Y/N
5. During the past year, have you used any drugs other than those prescribed for medical reasons? Y/N
6. During the past year, has anyone told you that you should cut back on using drugs? Y/N

- **Finances and Living Situation**

  1. Economically, do you consider yourself and your family to be:
  2. Wealthy, we have all that we need and can afford many extra luxuries
  3. Comfortable, we have all we need and can afford extras
  4. Doing well enough, we can always buy our necessities
  5. Getting by, but we can only afford the most necessary items
  6. Very few resources, we have great difficulty every month and sometimes cannot pay for necessities
  7. Do you have enough food for your family? Y/N

- **Living arrangement (*What is your living situation?)***

  1. Do you have children under 18? Y/N
  2. How many of your children (under 18) currently live with you?
  3. How many of your children (under 18) currently live outside of the United States
  4. Have you ever had a long period of separation from any of your children (ages 1-18)? Y/N

- **PHQ-9 DEP**

Over the <u>last 2 weeks</u>, how often have you been bothered by any of the following problems?	**Not at all 0**	**Several days 1**	**More than half the days 2**	**Nearly every day 3**
c. Little interest or pleasure in doing things.....……	☐	☐	☐	☐
d. Feeling down, depressed, or hopeless.……..…	☐	☐	☐	☐
e. Trouble falling or staying asleep, or sleeping too much.....……..…	☐	☐	☐	☐
f. Feeling tired or having little energy.....…….....…..	☐	☐	☐	☐
g. Poor appetite or overeating.....…….….	☐	☐	☐	☐
h. Feeling bad about yourself — or that you are a failure or have let yourself or your family down.……..	☐	☐	☐	☐
i. Trouble concentrating on things, such as reading the newspaper or watching television.…….	☐	☐	☐	☐
j. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual.....……..	☐	☐	☐	☐
k. Thoughts that you would be better off dead or of hurting yourself in some way.....……	☐	☐	☐	☐
Total:			**_____/10**	

- **Stressful Life Events Screening Q**

1. Have you ever been physically attacked, like being hit, kicked, or beaten up?

   Y/N

2. Have you ever been forced to have sex against your will? Y/N
3. Were you ever present when another person was killed, seriously injured, or sexually or physically assaulted? Y/N
4. Has a parent, domestic partner, or family member controlled most or all of your daily activities?

5. Have you ever been in any other situation that was extremely frightening or horrifying, or one in which you felt extremely helpless, that you haven't reported? Y/N

- **PTSD Symptom Checklist – Specific Event (PCL-S)**

In the past month, how many times have you had or felt…?	***Not at all***	***A little bit***	***Moderately***	***Quite a bit***	***Extremely***
1. Repeated, disturbing *memories, thoughts, or images* of the stressful experience?	1	2	3	4	5
2. Repeated, disturbing *dreams* of the stressful experience?	1	2	3	4	5
3. Suddenly *acting or feeling* as if the stressful experience *were happening again* (as if you were reliving it)?	1	2	3	4	5
4. Feeling *very upset* when *something reminded you* of the stressful experience?	1	2	3	4	5
5. Having *physical reactions* (e.g., heart pounding, trouble breathing, sweating) when *something reminded you* of the stressful experience?	1	2	3	4	5
6. Avoiding *thinking about or talking about* the stressful experience or avoiding *having feelings* related to it?	1	2	3	4	5
7. Avoiding *activities or situations* because *they reminded you* of the stressful experience?	1	2	3	4	5
8. Trouble *remembering important parts* of the stressful experience?	1	2	3	4	5
9. *Loss of interest* in activities that you used to enjoy?	1	2	3	4	5
10. Feeling *distant or cut off* from other people?	1	2	3	4	5
11. Feeling *emotionally numb* or being unable to have loving feelings for those close to you?	1	2	3	4	5
12. Feeling as if your *future* somehow will be *cut short*?	1	2	3	4	5
13. Trouble *falling or staying asleep*?	1	2	3	4	5
14. Feeling *irritable* or having *angry outbursts*?	1	2	3	4	5
15. Having *difficulty concentrating*?	1	2	3	4	5
16. Being "*superalert*" or watchful or on guard?	1	2	3	4	5
17. Feeling *jumpy* or easily startled?	1	2	3	4	5
Score _____					

Health Functioning

How often do you count on…	Never	Rarely	Sometimes	Often	Always	I don't know
a) Someone to take you to the doctor if you couldn't go alone?	1	2	3	4	5	9
b) Someone to help you at home with cleaning or groceries if you were sick?	1	2	3	4	5	9
c) Someone you can count on to listen when you need to talk?	1	2	3	4	5	9
d) Someone who can give you good advice in a crisis?	1	2	3	4	5	9
e) Someone you can have fun with?	1	2	3	4	5	9
f) Someone you love and who makes you feel loved?	1	2	3	4	5	9
g) People who can help you get information about jobs, housing, or other economic support?	1	2	3	4	5	9
h) Agencies or community organizations that help you to resolve problems?	1	2	3	4	5	9

- **Health Literacy Qs**

1. How often do you need help reading written materials in a hospital or clinic?

   Rarely/Sometimes/Usually

2. How confident are you filling out medical forms by yourself? Very

   Confident/Sometimes / Never

3. How often do you have problems understanding spoken or written information about

   your medical condition? Never/Sometimes/Usually

- **Health Behavior**

  How often are you able to practice good health habits in following areas?

  1. Getting exercise: Rarely/Some of the time/Most of the time
  2. Eating right: Rarely/Some of the time/Most of the time
  3. Getting enough sleep: Rarely/Some of the time/Most of the time
  4. How confident are you that you can control and manage most of your health problems? : Very confident/Somewhat confident/Not very confident/I do not have any health problem

INTENTIONALLY LEFT BLANK