

Health Along the U.S.- Mexico Border

TOMA Midwinter Conference
Feb. 1, 2020
Las Colinas, Texas

David E. Garza, DO, MS.MEdL, FCOFP, FAAFP
Assistant Professor, Office of Clinical Affairs
University of the Incarnate Word
School of Osteopathic Medicine
San Antonio, Texas



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Mission and Vision

▲ UIWSOM's mission is anchored by the founding call of the Sisters of Charity of the Incarnate Word to extend the healing ministry of Jesus Christ.



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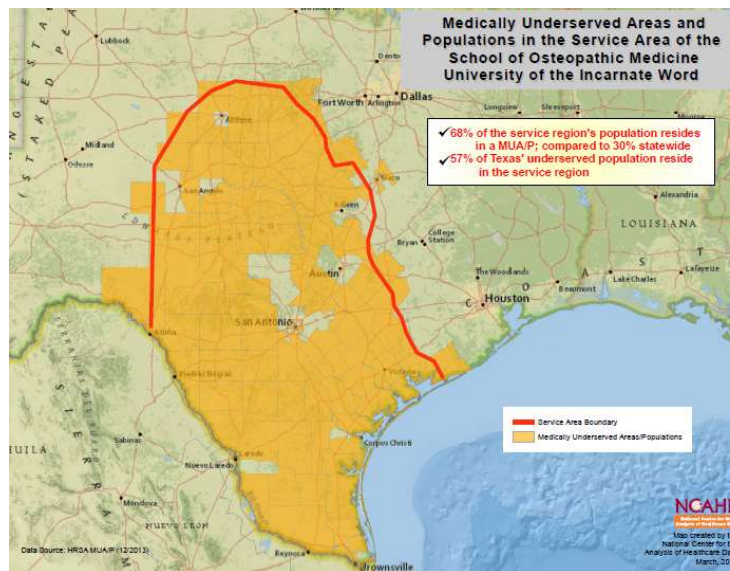
Mission and Vision

- ▲ Empowering the medical education community to achieve academic, professional and personal success
- ▲ Developing a commitment to lifelong learning through excellence in learner-centered, patient-focused education, justice-based research and meaningful partnerships of osteopathic clinical service across the spectrum of medical education (UME/GME/CME).
- ▲ Promotion of culturally, linguistically and community responsive care for all patients to enhance patient safety and improve patient outcomes.



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UIWSOM Service Area



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The UIWSOM Curriculum

- ▲Learner-centered
- ▲Patient-focused curriculum
- ▲Supporting the “whole learner” through a integrated curriculum model
 - ▲Foundational science knowledge for practice
 - ▲Patient-centered clinical correlates
 - ▲Osteopathic principles of medicine
 - ▲EBM practices
- ▲Empathic communication skills and humanistic/justice-oriented dimensions of medicine, vertically and horizontally integrated across four years of UME



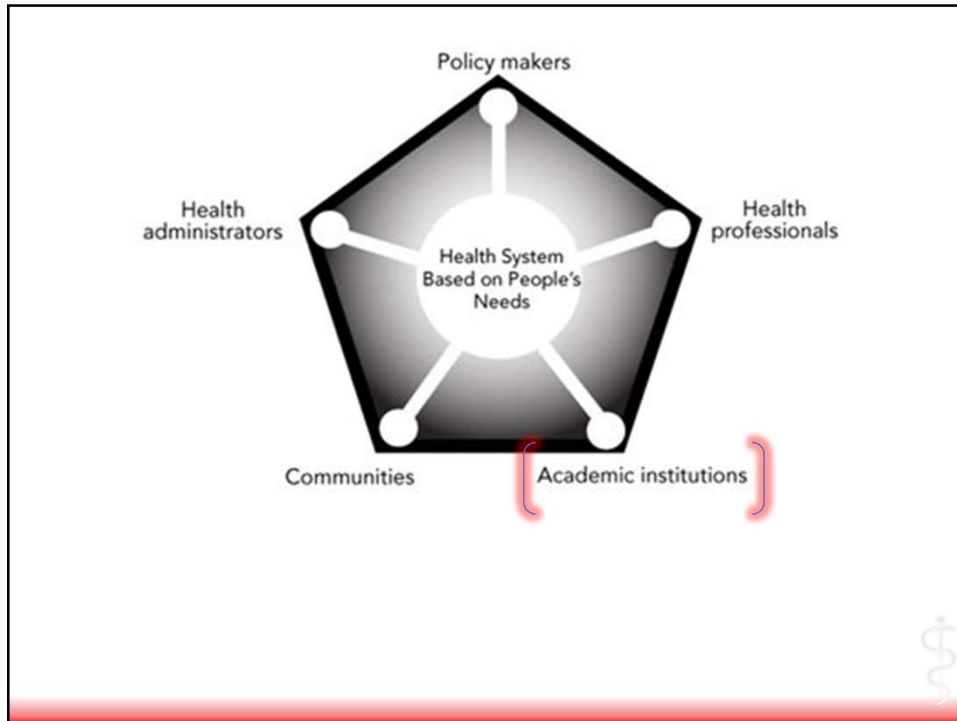
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The UIW SOM Curriculum

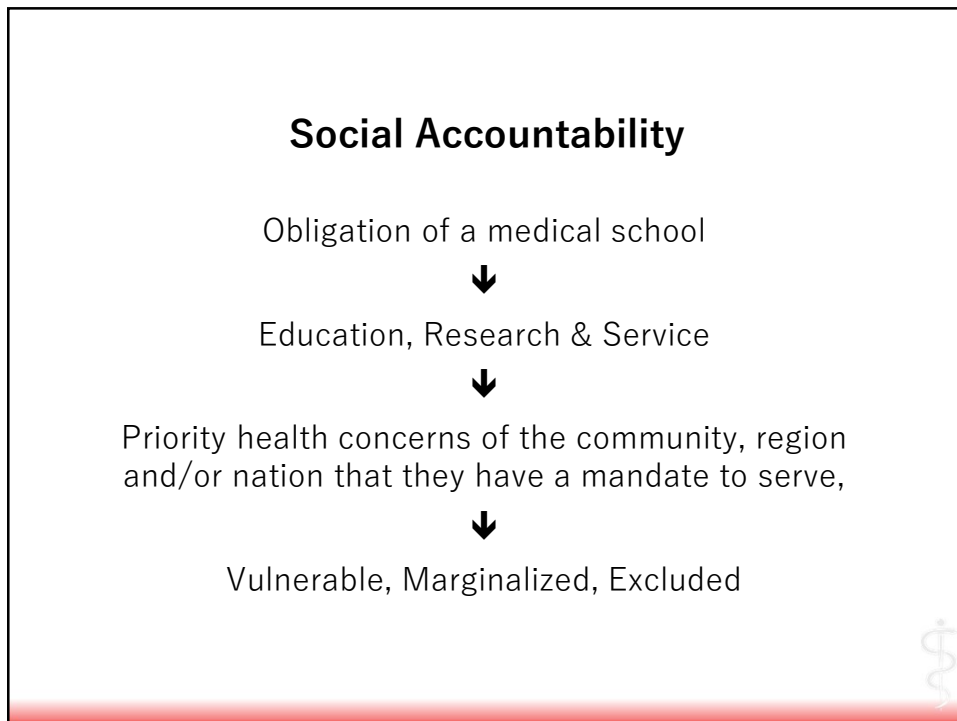
- ▲Participatory early clinical experiences reinforce classroom concepts and aid in professional identity formation through focused mentorship
- ▲Students spend 3rd and 4th years serving underserved communities, and provide linguistically and culturally responsive care



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The U.S. – Mexico Border



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Public Health on the Texas Mexico Border

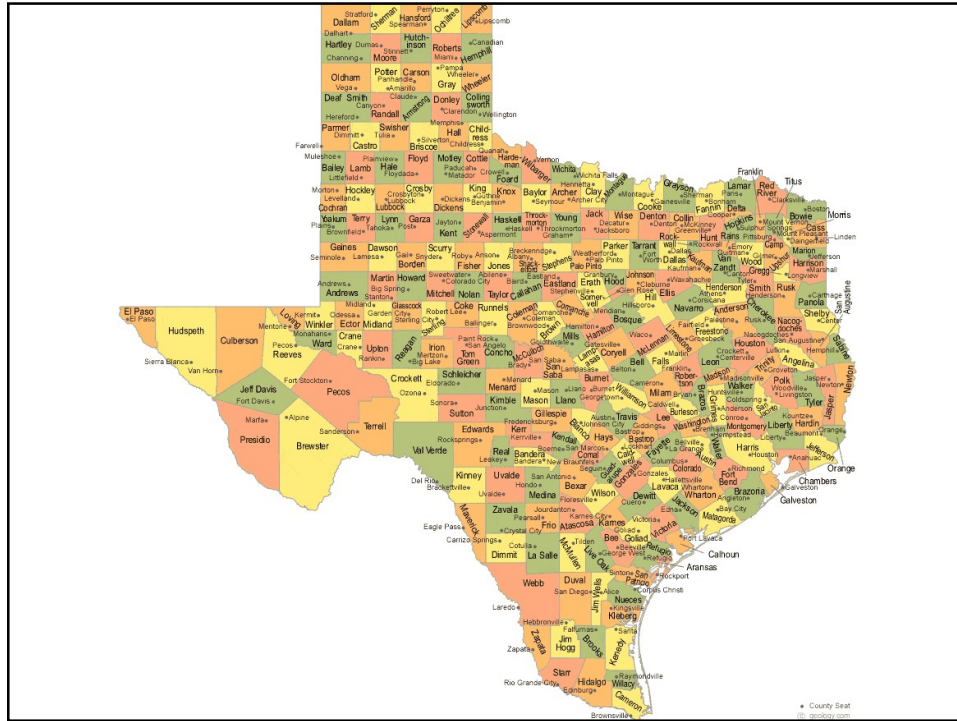


Joseph B. McCormick, MD

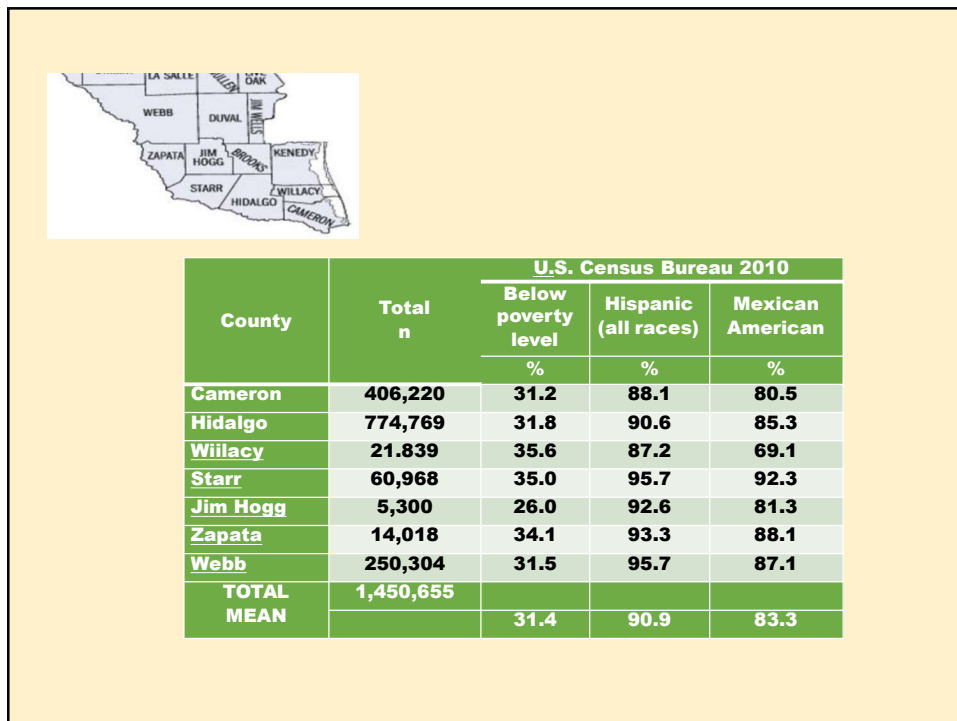
James Steele Professor

The University of Texas School of Public Health, Brownsville Campus
Professor of Epidemiology, UTHealth San Antonio
Professor of Medicine, UTHealth Houston McGovern School of Medicine
Professor, School of Biomedical Informatics, UTHealth Houston

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BROWNSVILLE, TX

A collage of six images on a blue background. Top left: 'Brownsville All-America City NATIONAL CIVIL LEAGUE 2001 / 2014' award logo. Top middle: A building with a red dome. Top right: A large white building with a clock tower. Middle left: A large stadium under construction. Middle: A map of Texas with major cities labeled, including Brownsville. Middle right: An aerial view of a park with a lake and greenery.

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Beautiful People and Wildlife

A collage of six images on a blue background. Top left: Dancers in red and white traditional attire. Top middle: A colorful parade float. Top right: A blue and yellow bird perched on a tree branch. Bottom left: A group of people, some wearing race bibs with numbers like 888 and 518. Bottom middle: A green parrot on a wire. Bottom right: A person fishing in a pond.

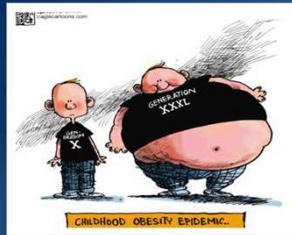
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Urban and Rural Areas

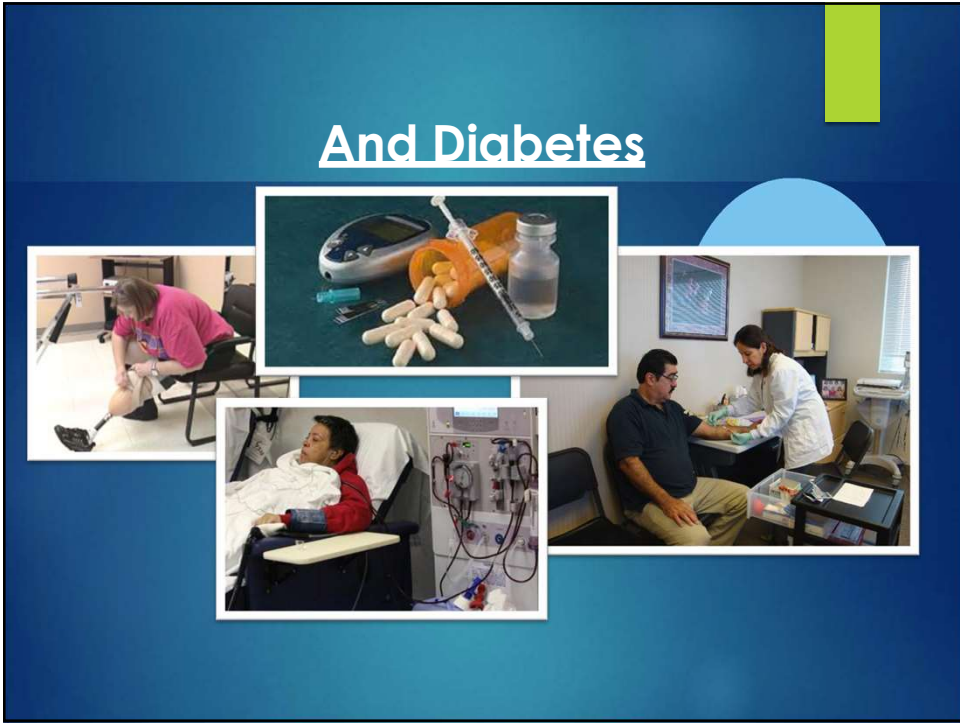


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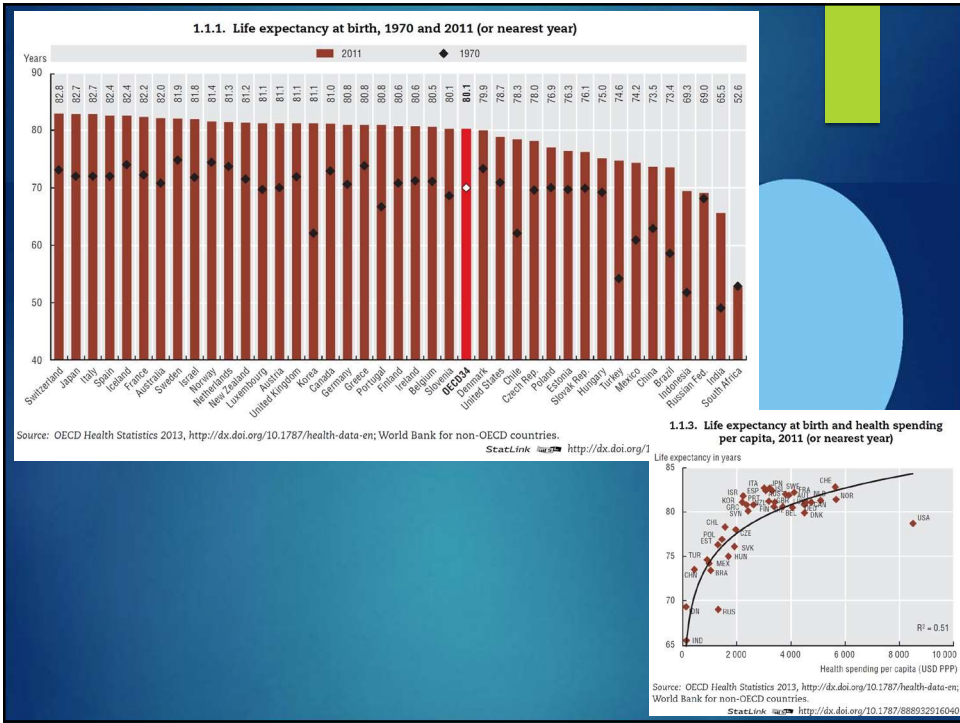
And Obesity



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Leading Causes of Death in Texas and the Border area

Texas			Border Area (4 counties)		
Rank	Causes	Total	Rank	Causes	Total
	All Causes	183,303		All Causes	7,327
1	Diseases of the Heart	41,293	1	Diseases of the Heart	1,693
2	Malignant Neoplasms	38,727	2	Malignant neoplasms	1,423
3	Cerebrovascular Diseases	9,852	3	Cerebrovascular diseases	320
4	Chronic Lower Respiratory Diseases	9,642	4	Diabetes mellitus	299
5	Accidents	9,598	5	Findings not elsewhere classified (excluding SIDS)	283
6	Alzheimer's Disease	6,755	6	Chronic liver disease/cirrhosis	282
7	Diabetes Mellitus	5,327	7	Total accident	276
8	Septicemia	4,102	8	Alzheimer's disease	261
9	Nephritis, Nephrotic Syndrome and Nephrosis	3,997	9	Chronic lower respiratory diseases	238
10	Chronic Liver Disease /Cirrhosis	3,663	10	Influenza and pneumonia	215
	All Other Causes	50,347		All Other Causes	2,037

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The Cameron County Hispanic Cohort





Created to Measure:

- **The Burden of obesity and diabetes**
- **Risk factors for obesity and diabetes**
- **Access to health services**
- **Complications related to obesity and diabetes (CVD, liver and renal disease, bone health, etc.**
- **Create a platform for nested and other studies including cancer**
- **Provide science base for intervention and prevention**

Dr. Susan Fisher-Hoch
Professor and Director
CCHC



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General characteristics of the cohort adults


	Mean (SE)
Mean age in years*	45.3 (0.8)
Annual income	\$18,598 (\$1,014)
Years education	10 (0.13)

The population remains **young, low income and limited education.**

66.5% of the participants were born in Mexico.

Fisher-Hoch, Rentfro, McCormick, Hanis, Reininger et al. 2010 Preventing Chronic Disease

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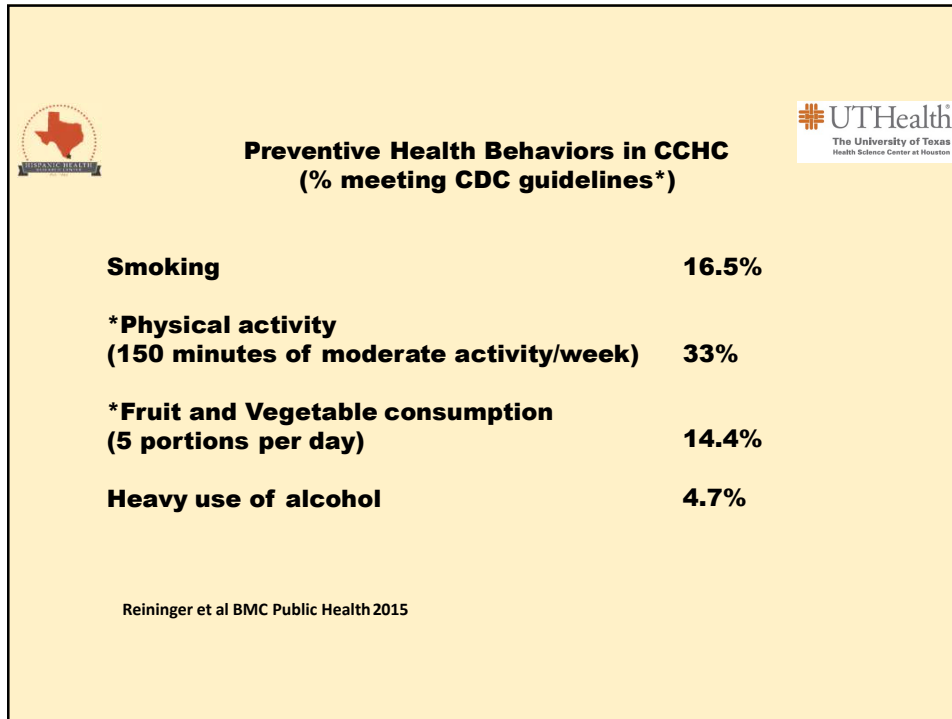


Ancestry Markers and Insulin Resistance

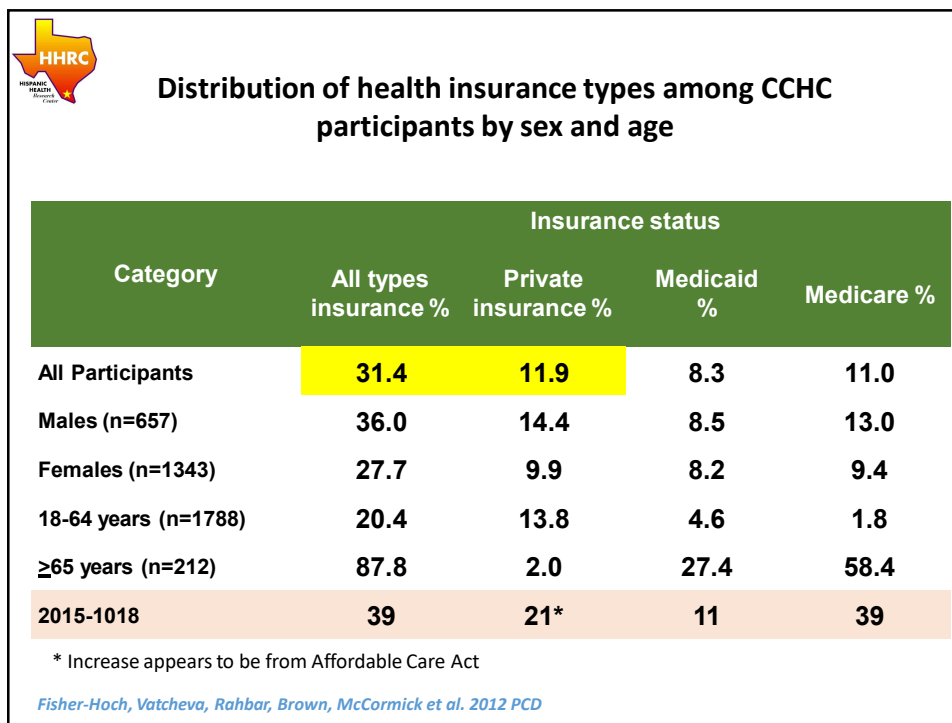
- **The Amerindian ancestral component is positively associated with elevated HOMA-IR levels:
 $\beta = 0.124$, $P = 1.64 \times 10^{-7}$.**

Qu, et al. Diabetes Care 2012



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Cameron County Hispanic Cohort

Obesity

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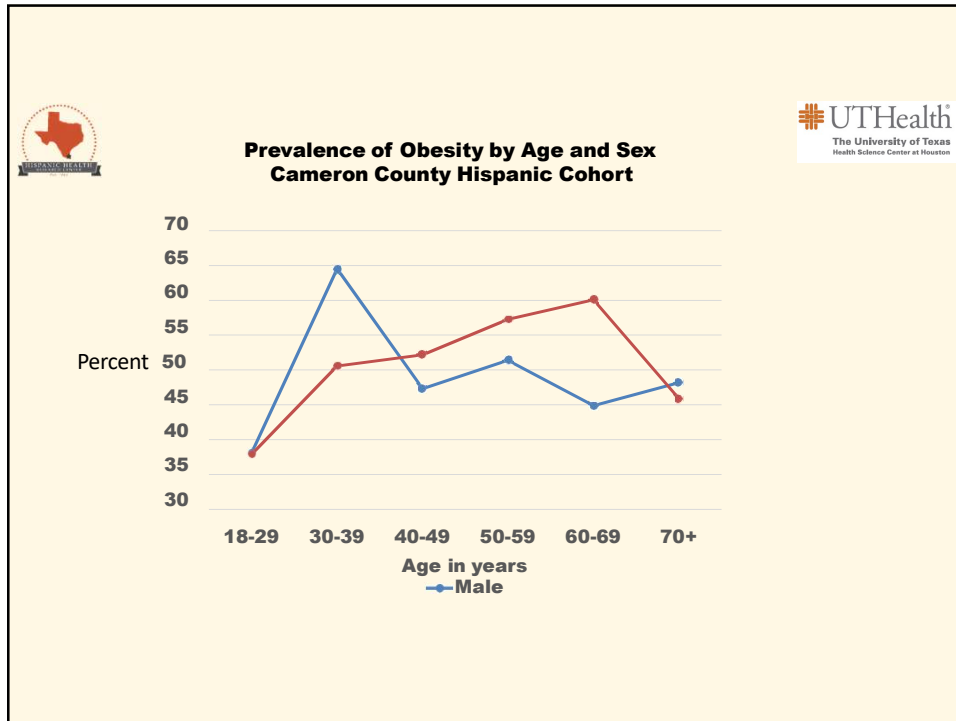



Prevalence of Obesity in the CCHC

Chronic Condition	Prevalence BH	Prevalence L
Obesity (BH)	40.7%	42.4
Morbid Obesity (BH)	9.6%	12.3%
Total Obese (BH)	50.3%	54.7
Overweight (BH)	34.0%	31.7%
Obese & Overweight (BH)	84.3%	86.4%

*Fisher-Hoch, Vatcheva, Hanis, McCormick et al 2012 PCD
 Fisher-Hoch, Vatcheva, Rahbar, McCormick 2015, PlosOne
 Jiao, Beretta, Fisher-Hoch, McCormick, Fallon et al, 2016 Plos One*

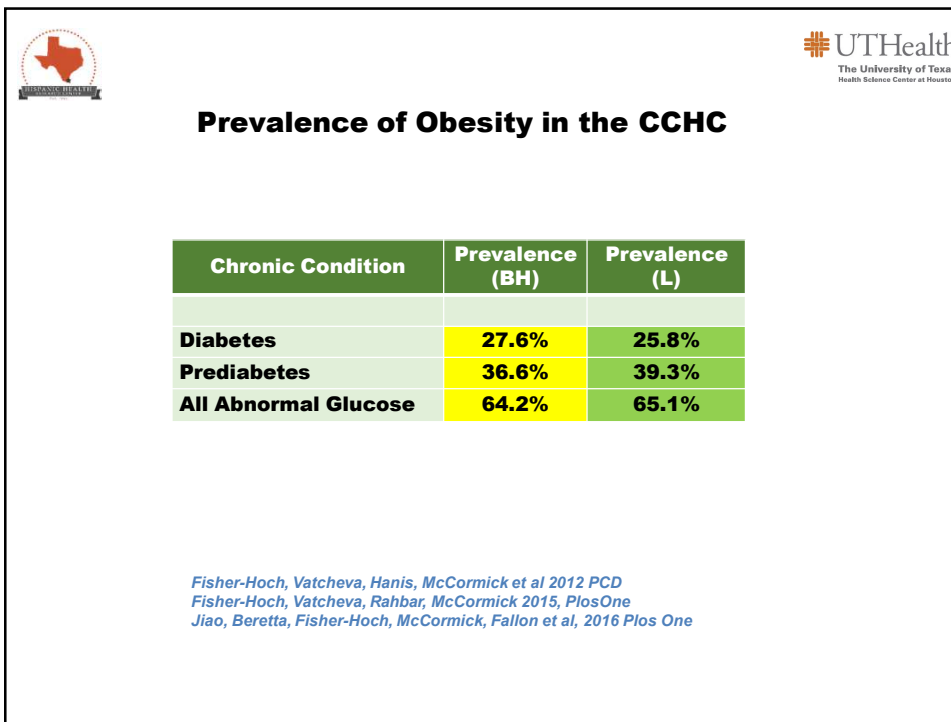
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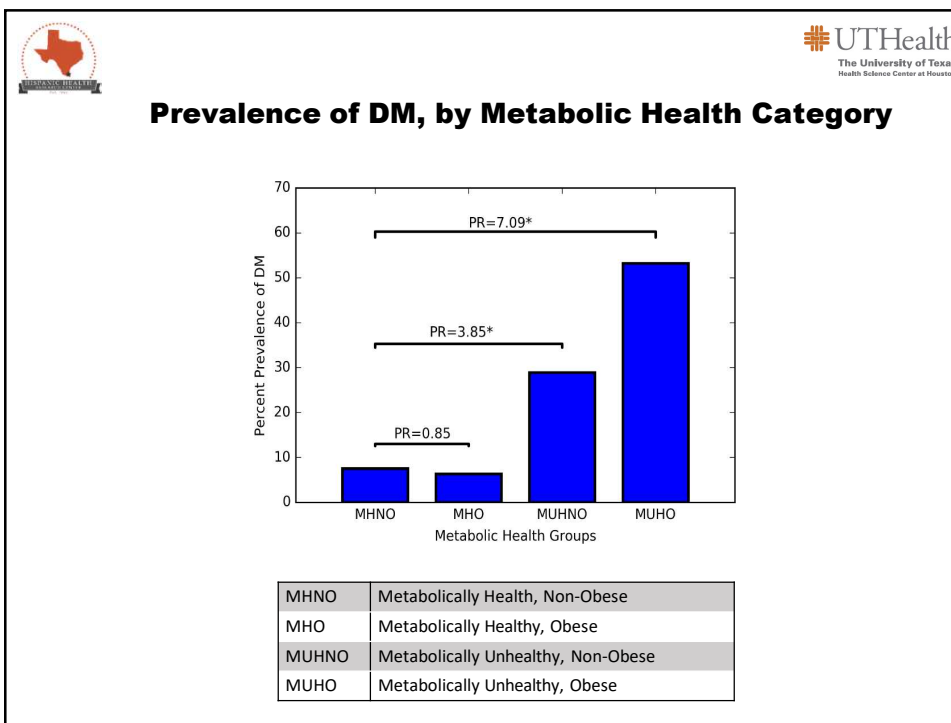
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Cameron County Hispanic Cohort Diabetes and Metabolic Diseases

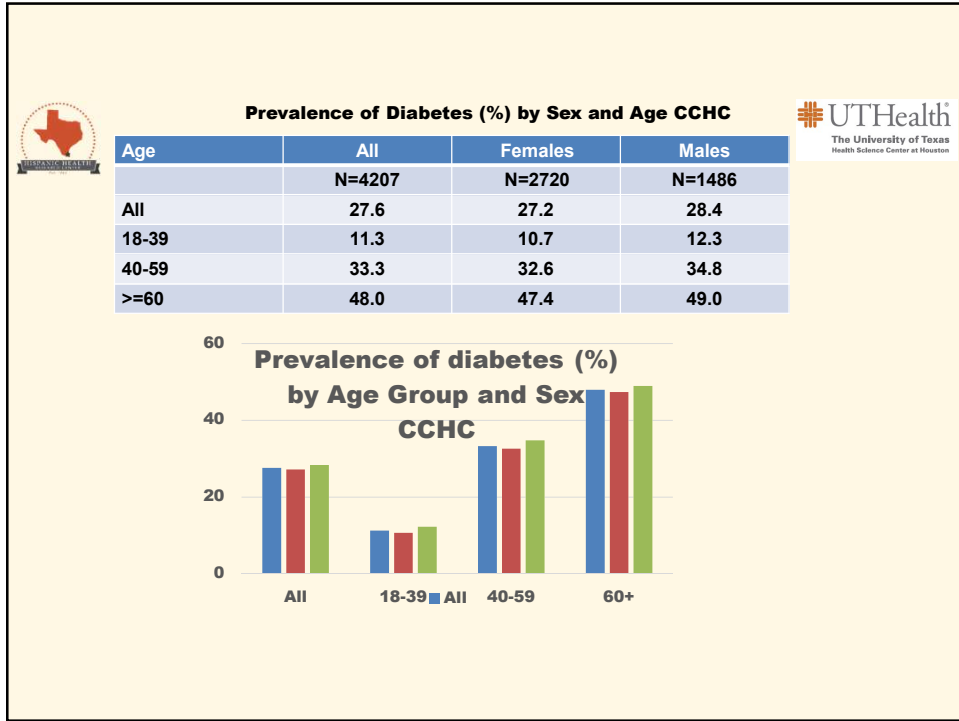
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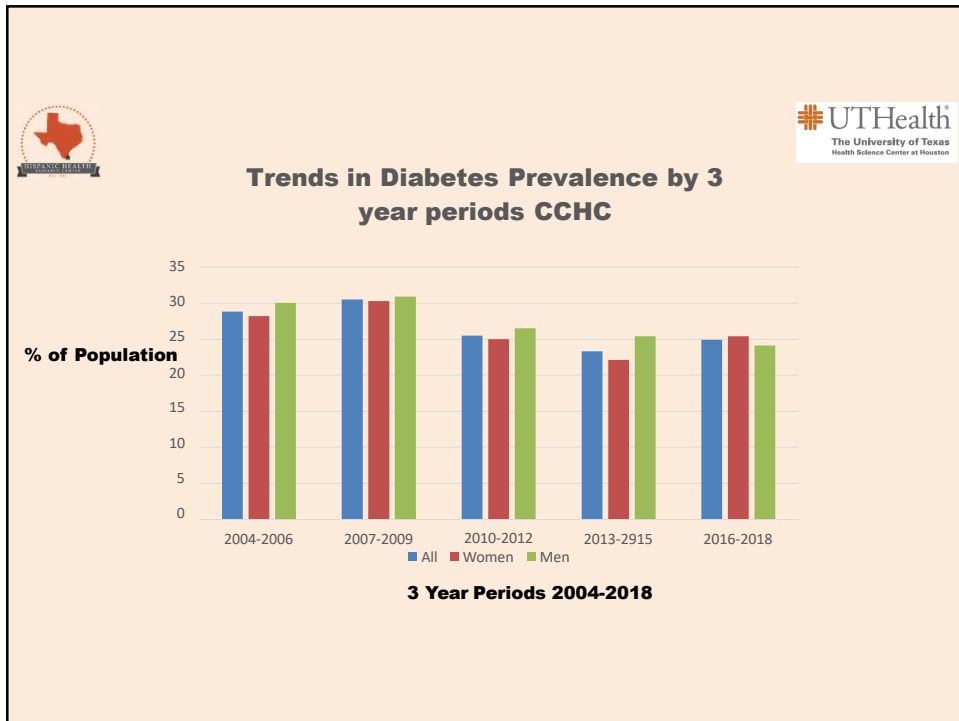
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The health of our Mexican American men is particularly precarious

- **Before age 35, 16.9% of men already have Type-II Diabetes**
- **Young men have a 70.2% prevalence of elevated liver function tests**
- **35.4% of young men are current smokers; this is higher than all other age groups.**

Watt et al 2016

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Cameron County Hispanic Cohort



Cardiovascular disease

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Left Ventricular Diastolic Dysfunction and Left Ventricular Hypertrophy

- There is a high prevalence of Stage B heart failure among Mexican Americans with 39% showing LVDD and/or LVH.
- This study presents evidence of independent differential relationships of diabetes, abdominal adiposity, dyslipidemia, and hypertension on LVH and LVDD in this asymptomatic Mexican American cohort.

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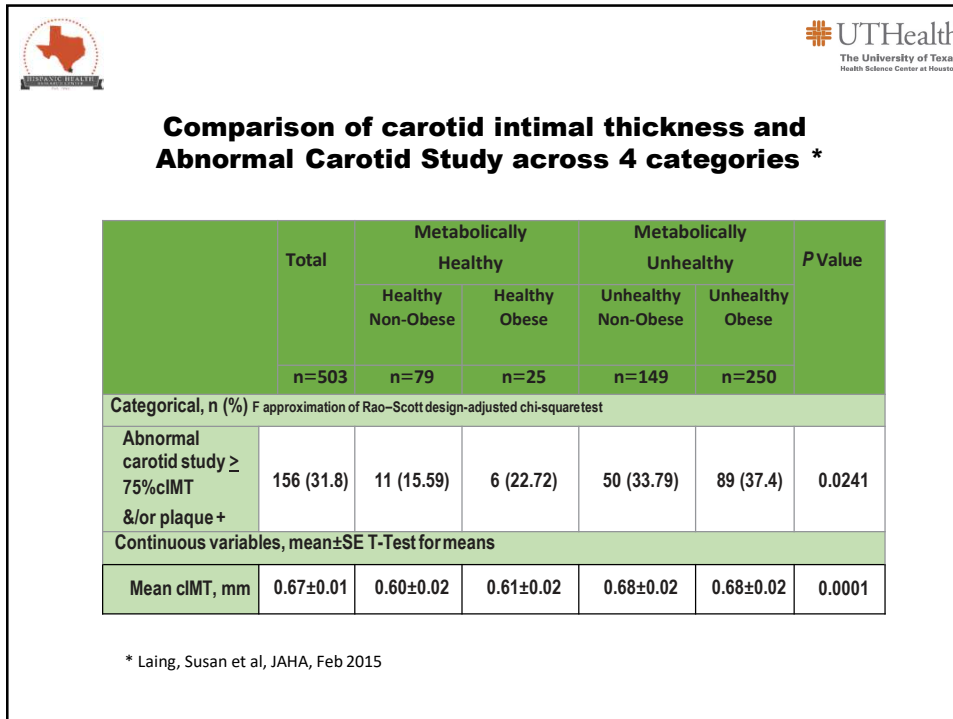
Ischemic Heart Disease is associated with many components of diabetes and the metabolic syndrome

	% with Ischaemic EKG	n (%) with Ischemic EKG (n=163)	n (% without Ischemic EKG (n=1,117)	OR (95%CI) of ischemic EKG in each group
Males	12.0	50 (31.3)	365 (32.7)	
Females	13.1	113 (68.7)	752 (67.3)	1.10 (0.75, 1.57)
Diabetes	18.5	68 (41.7)	300 (26.9)	1.95 (1.39, 2.73)
Hypertension	23.4	70 (42.9)	229 (20.5)	2.92 (2.07, 4.11)
Metabolic Syndrome	17.9	99 (60.7)	453 (40.9)	2.24 (1.60, 3.13)
Obese (BMI≥30)	15.1	98 (60.1)	551 (49.3)	1.55 (1.11, 2.16)
Smoker	14.2	50 (30.7)	302 (27.0)	1.19 (0.84, 1.71)

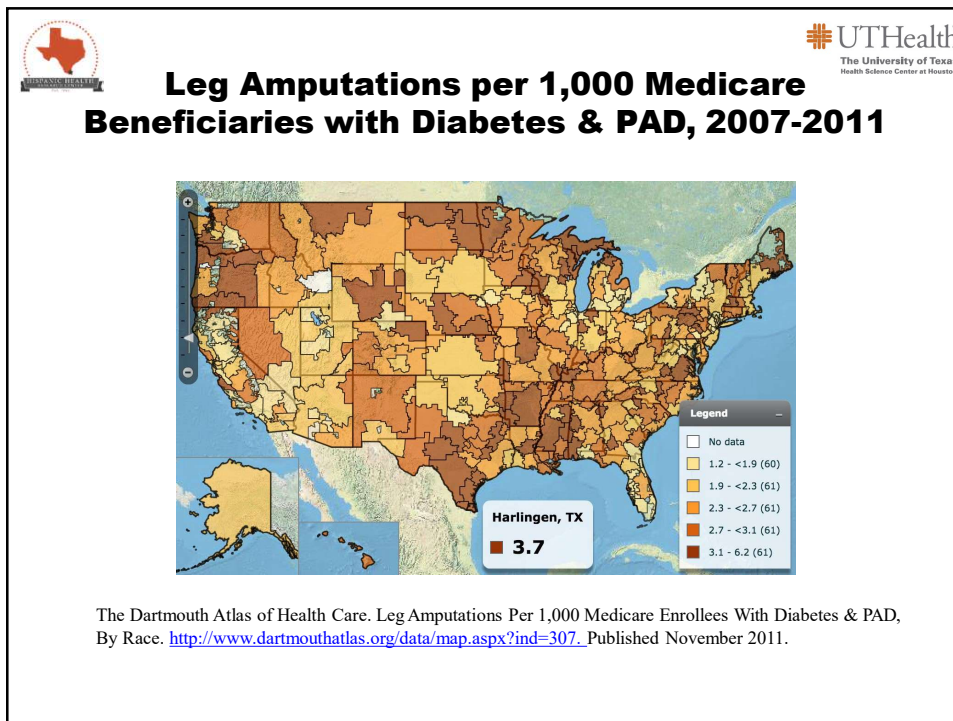
Metabolic syndrome, obesity and diabetes are stronger risk factors for ischemic heart disease than smoking

Queen, Laing, McPherson, McCormick, Rentfro, Vatcheva, Fisher-Hoch et al. World Journal of Cardiovascular Diseases 2012



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Metabolic factors associated with Diabetes

- **6.5% of those with pre-diabetes transition to diabetes each year. year.**
- **Each unit increase in BMI increased risk of diabetes by 8%**
- **Each acquisition of another metabolic condition increase risk by 80%**

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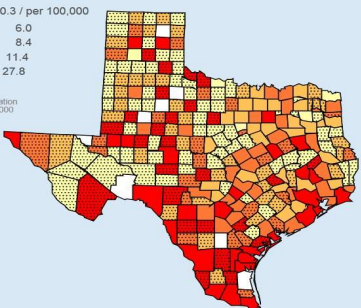



THE TEXAS/MEXICO BORDER HAS THE HIGHEST RATES OF LIVER CANCER IN THE COUNTRY

Age-Adjusted Invasive Cancer Incidence Rates in Texas
Liver and Intrahepatic Bile Duct, 2008 - 2012
By County
Age-Adjusted to the 2000 U.S. Standard Population
Texas Rate: 10.3 / per 100,000

0.0 - 6.0
6.1 - 8.4
8.4 - 11.4
11.5 - 27.8

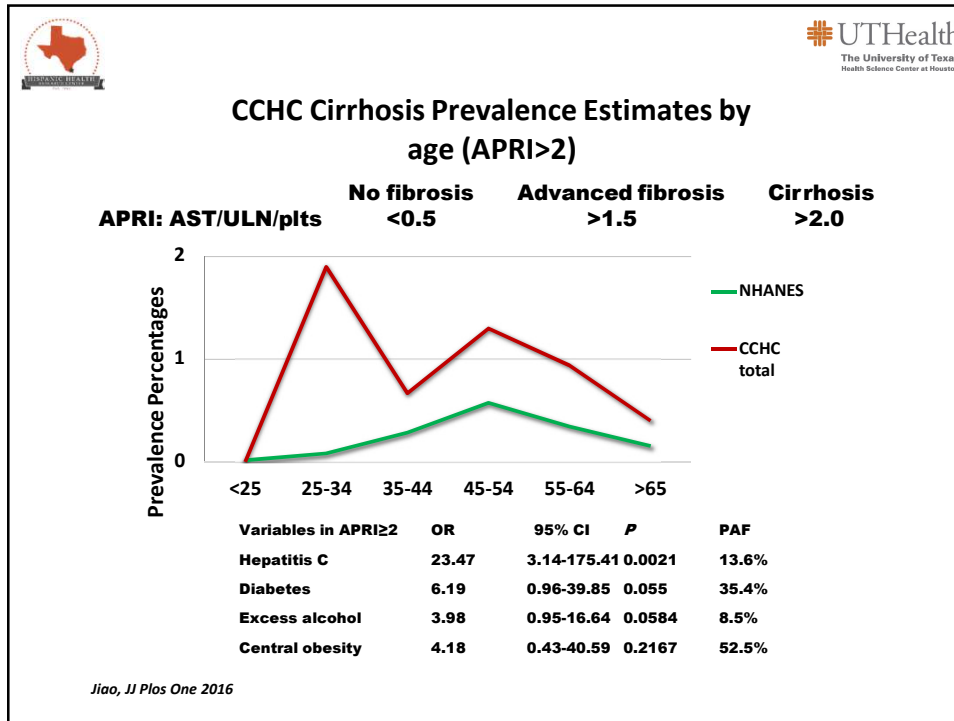
Unstable
Risk Population less than 1000



Liver Cancer: Age adjusted rates/100,000 (Texas Cancer Registry)

Site	Rate
Cameron	13.4
Hidalgo	11.6
Webb	14.4
Texas	10.3
United States	8.4

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Complications of Obesity and Diabetes (CCHC)
All associated with metabolic abnormalities.

- **39% of adults in the CCHC have evidence of early heart failure**
- **32% of participants (1338) have a cholesterol over 200, (80% unaware) (3% on statins)**
- **23% of CCHC adults elevated blood pressure (21% women, 27% men), 59% unaware. Only 65% of those diagnosed are on treatment.**
- **Poor blood flow in peripheral arteries (legs) is 10.4%; risking ulcers and amputation**
- **15% have fibrosis of the liver; risking cirrhosis and liver cancer**
- **About 1/3 of those with diabetes have retinopathy**

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CAMERON COUNTY HISPANIC COHORT Depression and Anxiety in obesity and diabetes

- **34% of cohort participants with diabetes are newly diagnosed**
- **People who KNOW they have diabetes are highly likely to be depressed.**
- **Depression is highly correlated with poor diabetes control;**
- **Not attending to depression appears to significantly affect the quality of control of diabetes in the cohort.**

Olvera, R et al. Plos One 2015
Olvera, R et al J Clin Psychiatry 2015
Kendzor D, et al. BMC Public Health 2014



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Obesity in the RGV and Economics

- **RGV Population over 18 years in 5 counties is 1,112,462 and so 559,568 are obese**
- **National medical cost of obesity is \$1723 excess per person so in RGV would be \$964,136,062**
- **The productivity cost per obese person is \$115 per year so cost in RGV would be \$73,863,007**
- **The total cost of obesity (not including overweight) based on national data \$1,037,999,069**
- **Cost per capita in RGV is \$631 or 4% of per capita income, but less than 1% nationally.**

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Diabetes in the RGV and Economics

- **RGV Population over 18 years in 5 counties is 1,112,462 and so 307,039 have diabetes**
- **National medical cost of diabetes in Hispanics is \$8050 excess per person RGV would be \$2,471,667,387**
- **The productivity cost per person with diabetes is \$ 2297 per year so cost in RGV would be \$705,269,564**
- **The total cost of diabetes (not including pre-diabetes) based on national data \$3,176,936,952**
- **Cost per capita in RGV is \$1931 or 12.7% of per capita income**
- **Cost per capita in US is \$1004 or 3% of per capita income**

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Summary of Disease and Disparities

- ▶ Diabetes and Obesity in our population are higher than most other areas of the US.
- ▶ Half of those with diabetes are undiagnosed primarily because of lack of health insurance therefore no access to health services.
- ▶ Only half of those who report having diabetes are under treatment

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Summary of Disease and Disparities

- ▶ Underlying heart disease and liver disease, and other manifestations of diabetes are extremely prevalent but undiagnosed.
- ▶ Diabetes underlies over 60% of hospital admissions for congestive heart failure, over 90% for renal disease, and nearly 100% for amputations.
- ▶ High costs of diabetes found in our population because of high prevalence, advanced disease because of lack of access.

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Social Accountability

Obligation of a medical school



Education, Research & Service



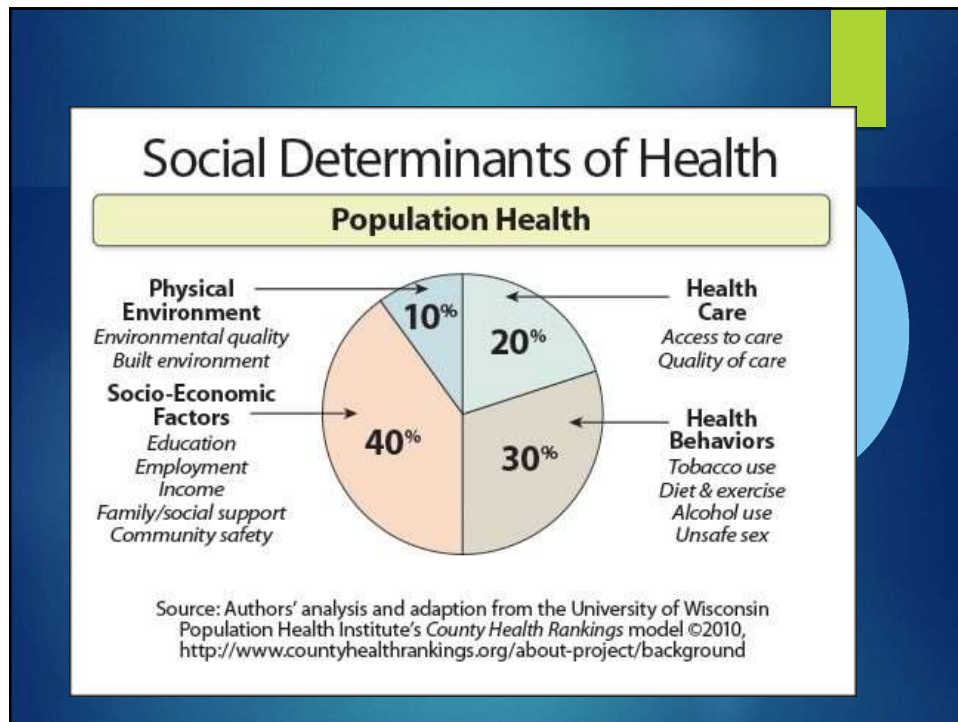
Priority health concerns of the community, region and/or nation that they have a mandate to serve,





Vulnerable, Marginalized, Excluded



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Science and the Culture of Health

- **Transforming physical activity into reality**
- **Changing the culture of food and diet**
- **Changing the habits of tobacco**
- **Making Health a daily part of life through**
- **Environmental and cultural changes**

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Impact of Physical Activity in the CCHC

- **Participants who met physical activity guidelines of reduced their risk for metabolic syndrome by 36%**
- **Participants who met physical activity guidelines reduced their risk for cancer by 83%.**
- **Metabolic Health has a greater impact on diabetes and cardiovascular disease than simple obesity, but being obese exacerbates disease**

Wu et al PLoS One. 2016 Apr 7;11(4)
Wu et al American Journal of Cancer Prevention. 2016, 4(1): 1-7

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Consumption of recommended levels of fruits and vegetables and mental health (CCHC)

Participants who met recommendations of 5 or more servings of fruits and vegetables per day were significantly less likely to have:

- **anxiety**
- **cognitive impairment**
- **increased risk of dementia**


Every portion increment of total fruit and vegetable intake was significantly associated with:

- **reduced risk of mental disorders by 11%**
- **reduced risk of cognitive impairment by 32%**

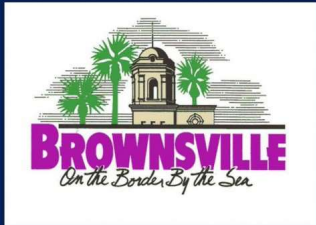
Wu, et al 2018

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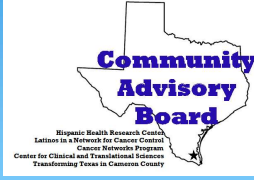
Creating a Culture of Health and Wellness Through Partnerships, Programs, Policies



UTHealth
The University of Texas
Health Science Center at Houston
School of Public Health
Brownsville Regional Campus



BROWNSVILLE
On the Border By the Sea



Community Advisory Board
Hispanic Health Research Center
Liaison to a Network for Cancer Control
Cancer Network Program
Center for Clinical and Translational Science
Transforming Texas in Cameron County

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CAB First Meeting September 2003





- Y Businesses
- Y HEB
- Y United Healthcare
- Y Local Government
- Y Cameron County Health Department
- Y City of Brownsville
- Y Universities and School Districts
- Y UT Health
- Y University of Texas Brownsville Faculty
- Y UTPA Faculty
- Y Brownsville ISD
- Y Harlingen CISD

Clinics, Hospitals, and Physicians

- Brownsville Community Health Center
- Nuestra Clinica del Valley
- Su Clinica Familiar
- Hope Family Health Center
- Valley Baptist
- South Texas Cancer Center
- El Milagro Clinic

Community Organizations

- Proyecto Juan Diego
- Infant and Family Nutrition Agency
- Migrant Health Promotion
- United Way
- Mano a Mano



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UTHealth
The University of Texas
Health Science Center at Houston
School of Public Health

Tu Salud ¡ Sí Cuenta!

Υ **Community Wide Campaign**
Υ **Lisa Mitchell-Bennett, MA, MPH**

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Description of the Media Campaign

Υ **Mass media TV-** Channel 7 Vallevisión Every Thursday morning featuring role models, experts, cooking & exercise demonstrations. Reaches audience of over 20,000.



Buenos Días

Televisa

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Community Gardens

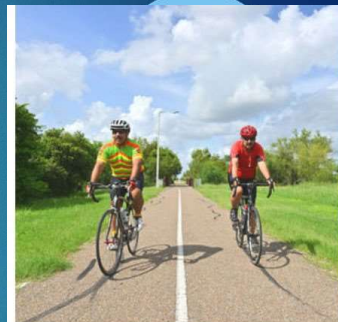
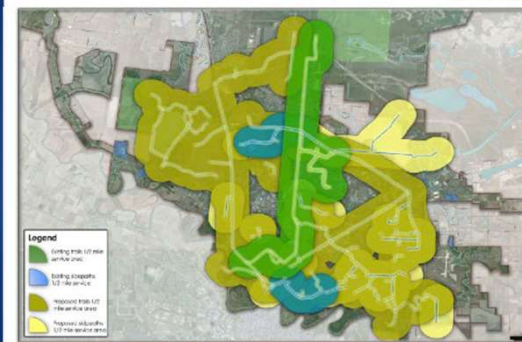
- ▶ Grant awarded from Texas Department of Agriculture to the Brownsville Farmers' Market in Partnership with the City
- ▶ Now established six fully subscribed community gardens



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City of Brownsville Award Winning Master Hike & Bike Plan

ULTIMATE PROXIMITY TO TRAILS AND SIDEPATHS



Miguel Roberts/The Brownsville Herald

Brownsville Police Chief Orlando Rodriguez, left, and Brownsville Fire Chief Lenny Perez ride down a bicycle trail near Ruben Torres Boulevard. They have joined a cycling group to stay fit and take advantage of Brownsville's bicycle trails.

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FREE Community-Wide Exercise Classes



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FREE Nutrition Classes



Brownsville Wellness Coalition

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Health Screenings



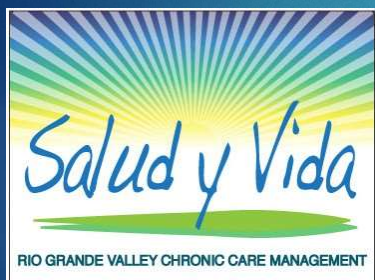
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Texas 1115 Waiver DSRIP Program

The UTSPH Brownsville Campus has implemented 8 DSRIP programs in our Region 5

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Implemented diabetes treatment and control services

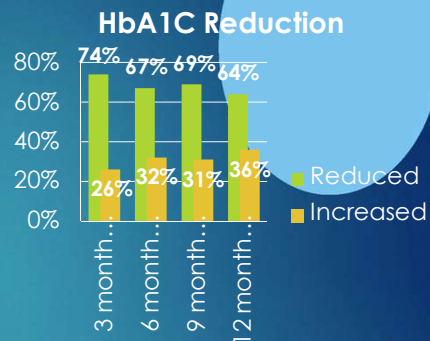
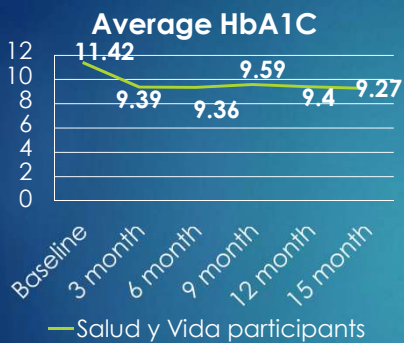


- ▶ Evidence based Wagner CCM model
- ▶ Regional partnerships for implementation
- ▶ Diabetes management program funded by 1115 waiver
- ▶ Served over 2000 clients
- ▶ Free DSME education
- ▶ CHW home visits
- ▶ Case management review
- ▶ Re-engagement with medical home
- ▶ Referrals and services for behavioral health
- ▶ Results show average A1c decreasing



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HbA1C Metrics



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Environmental and Policy Changes

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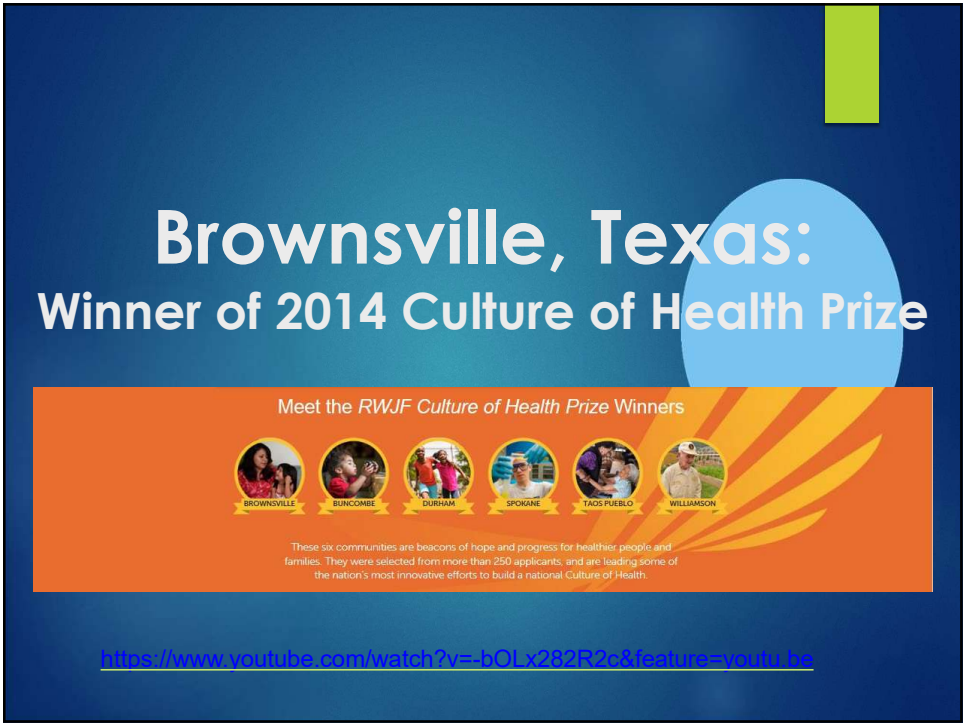
Recent Efforts include:

-  Sidewalk ordinance.....done
-  Complete streets ordinance.....done
-  Safe passingdone
-  Smoke free ordinance.....done
-  Bicycle/Pedestrian Coordinator.....in progress
-  Dedicated funds for bike/pedestrian infrastructure.....ongoing
-  Leveraging Dollars
-  Healthy concessions.....in progress

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The Approach Can be Replicated!

Town of Combes







City of
Rio Hondo







Los
Indios

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Brownsville School of Public Health Campus Research and Intervention Programs

Research PIs Susan Fisher-Hoch, Joseph McCormick, Belinda Reininger

Community Collaborators: Sister Phylis Peters, Dr. Rose Gowen, Art Rodriguez, and many many others.

Collaborators

UTHealth	David McPherson, Susan Laing, Mike Fallon, JJ Pan, Bev Smulevitz, Nahid Rianon, Yutao Xi, Anna Wilkinson, Hossein Rahbar, Shelton Brown
MDAnderson	K Schmeler, A Milbourne, S Black, L Beretta, E Baker
UCSD	Ariel Feldstein
UTMB	Jonathan Starkey, Bruce Luxon
UTHSCSA	D Williamson, R Olvera, A Prasad, R Fajardo
South Texas DOI	Sarah Williams-Blangero, J Blangero, M Johnson
BCM	Joseph Petrosino, Kristy Murray

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Laredo Medical Center and Gateway CHC join UIWSOM's efforts to bring graduate and undergraduate medical education to Laredo



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UIWSOM Brings Medical Education to Laredo



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Inaugural F.M. and I.M. Residents – July 2018



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Questions and Comments:



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