



# Core Project MAUCO 2014-2024

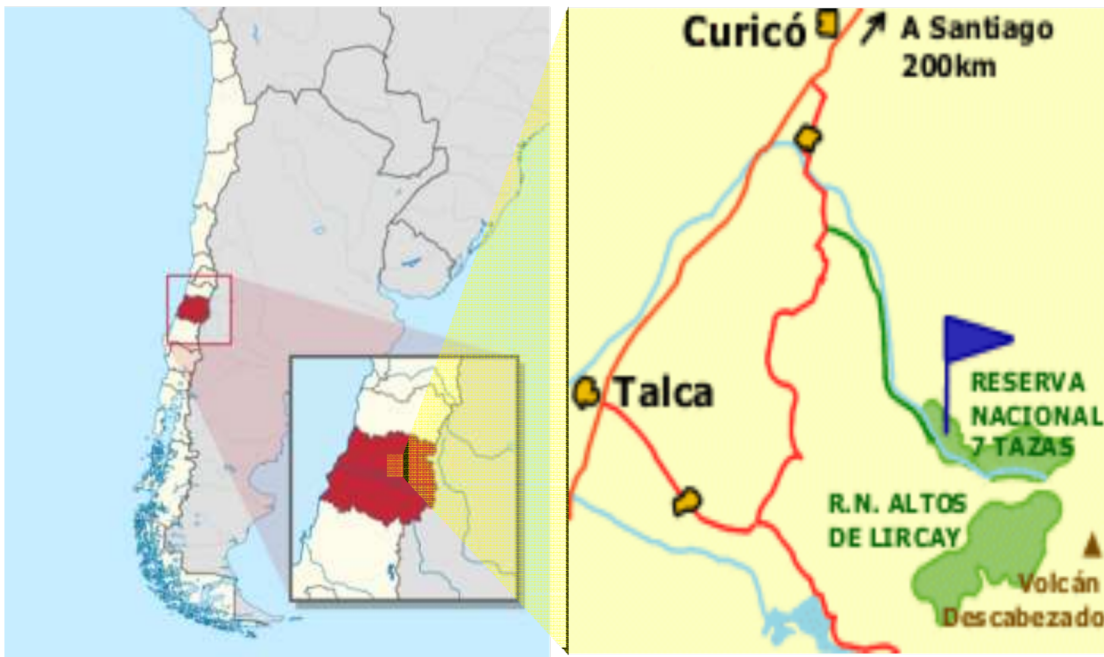
Catterina Ferreccio, Andrea Huidobro



# MAUCO objectives:

1. Assess **physical and mental health** at baseline, measure a wide range of **exposures associated with health and healthy aging**
2. Measure risk factors and **biomarkers**
3. Evaluate **changes in exposures, health conditions and biomarkers**





## Why Molina?

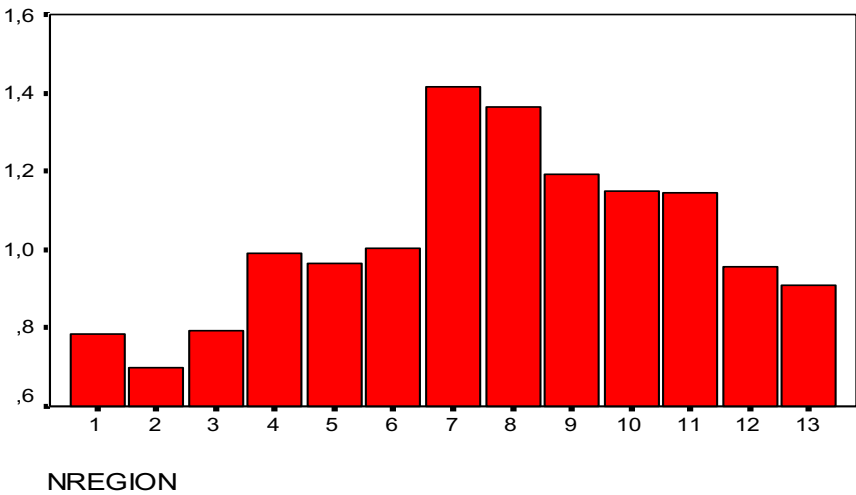
- **High risk of Cardiovascular disease and cancer**
- Represents population of **small agricultural counties** (40% of Chilean counties)
- Previous **successful cross-sectional gastric cancer** study
- **Low migration**
- **High potential for public health demonstration projects**

Study region: Highest national gastric cancer deaths rates for more than 30 years

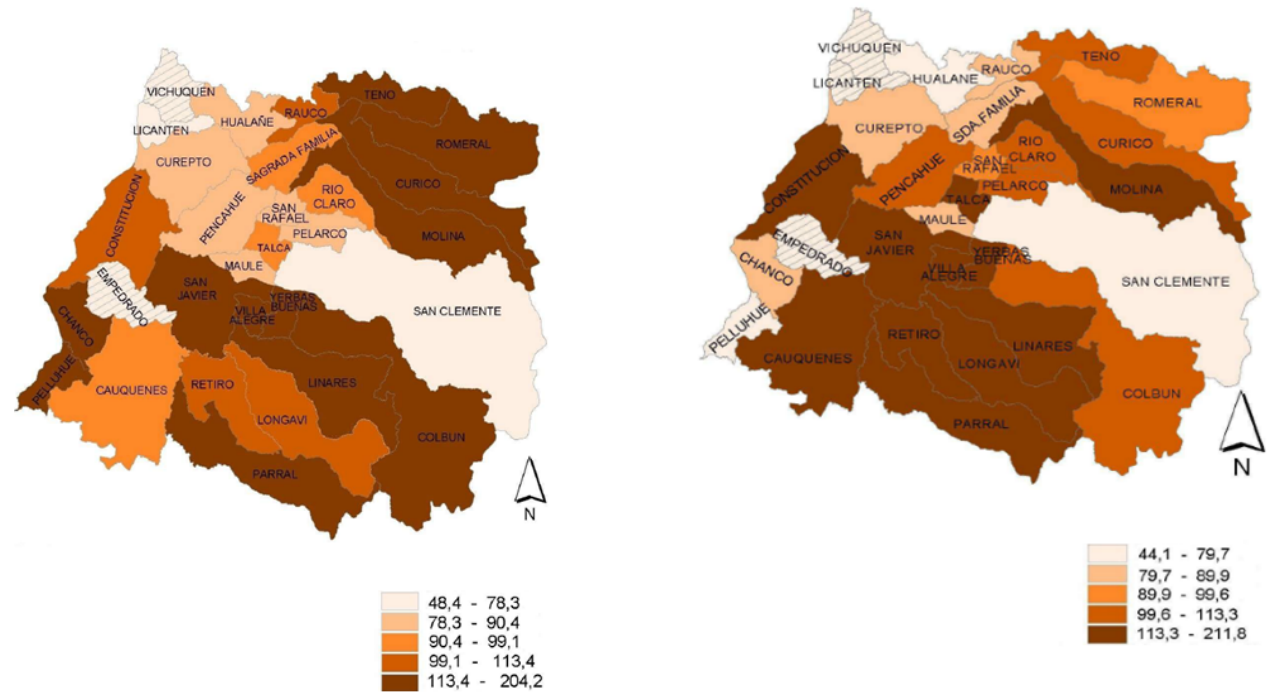
Highest national mortality of cardiovascular diseases  
Molina 1997-2003

Mean RR19852002

RR of Gastric Cancer by Region  
ENS2003



Ferreccio 2007



Ischemic heart disease

Icaza G

Cerebrovascular disease

Icaza G

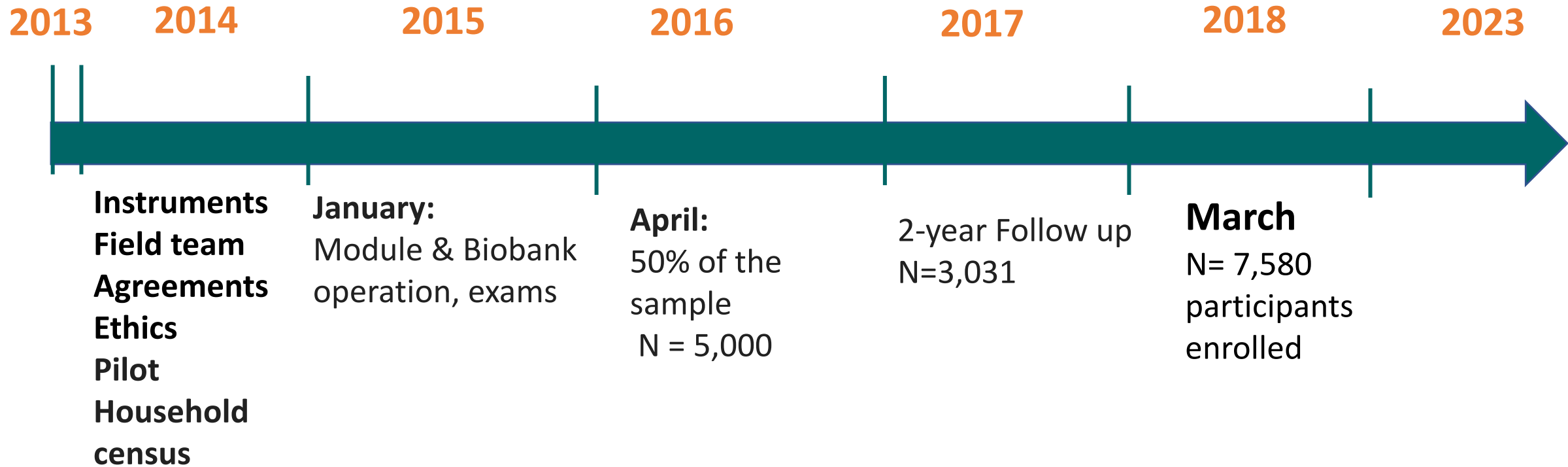
## Design & Methods



1. Baseline measurement 2014-2019
2. Follow-up: every 2 years
3. Health event surveillance: since enrollment
4. Biobanking

# MAUCO project timeline

Grant  
Begins



# Phase 0: Training





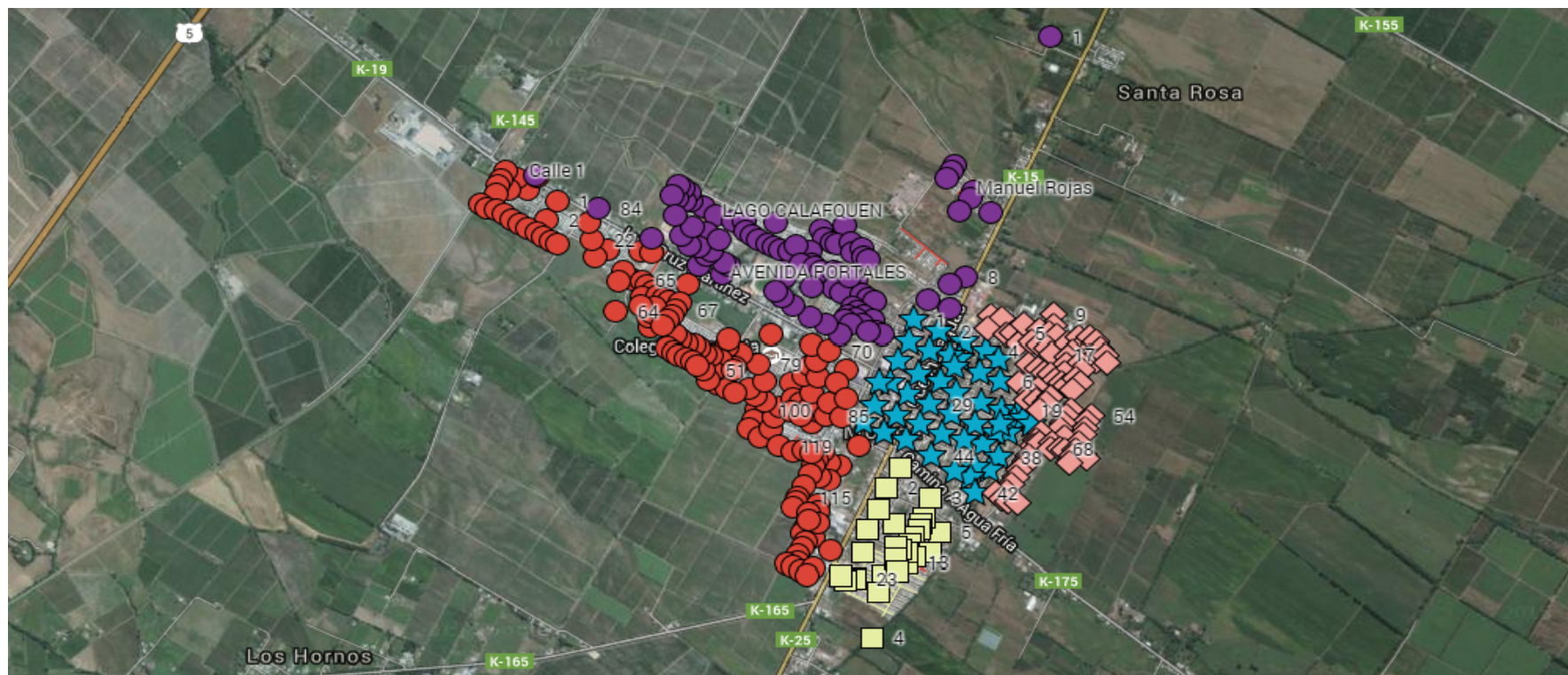
# Phase 1: Census of households, geocoding & Enrollment







## Field work enrollment by December 2015



## 2015-2016: Soil samples in Molina (metals)

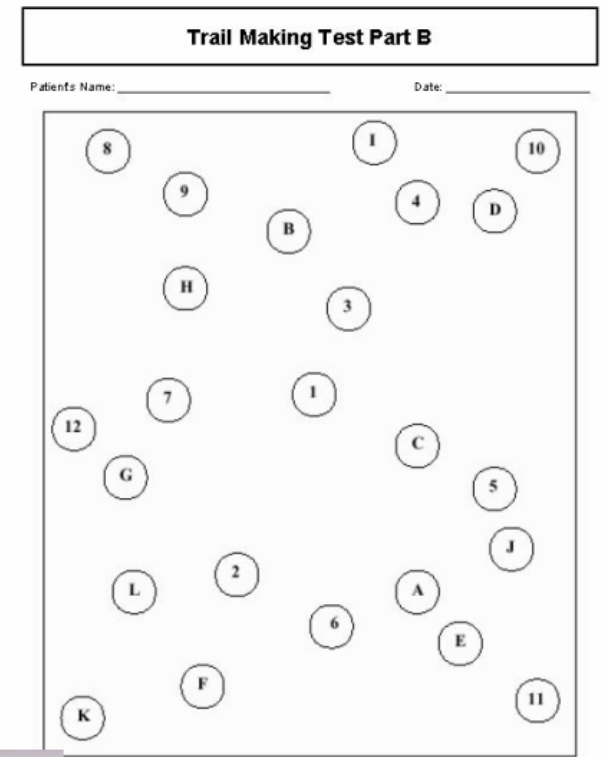


## 2015-2016: Passive air samplers for pesticides and organic chemicals

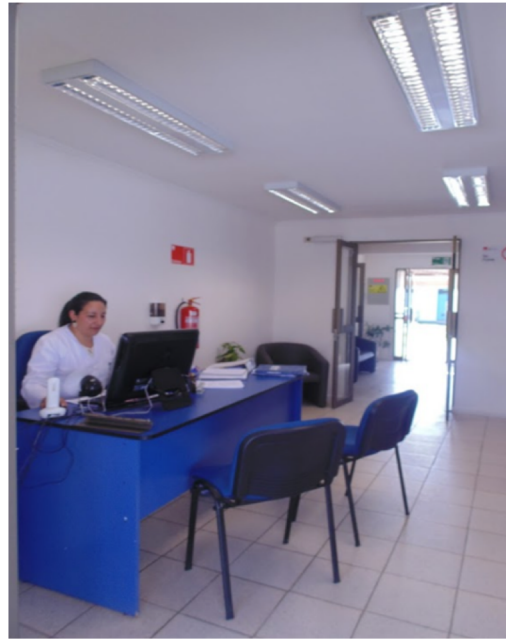




# Phase 2: Questionnaire & Cognitive Evaluation



# Phase 3. Health measurements: MAUCO clinical module





# Phase 3. Health measurements





# Samples management



# Phase 4: Results delivery and closure of baseline measurements

## Feedback to Participants:

- Authomated report
  - Analysis of blood samples results
  - Normal values
  - Recomendation according individual results
  - Recomendations of healthy life styles to every participant
- Medical Conclusions, Reference and Advise: Dr. Andrea Huidobro

# Phase 5. Longitudinal Prospective Follow-up

- Active follow-up every 2-years
  - **BRIEF CONTACT**, short interview to update data on
    - Risk factors
    - Contact data (address, phone number)
    - Events of interest
  - **FULL RE-EXAMINATION** OF PARTICIPANTS OF SPECIAL INTEREST
    - Diseases
    - Agricultural workers
- Surveillance of deaths, surgeries, hospitalizations since enrollment



# Interactions with social, economic and cultural environment.



Annual public MAUCO report & other activities in Molina and surroundings



# Social Representation of MAUCO study



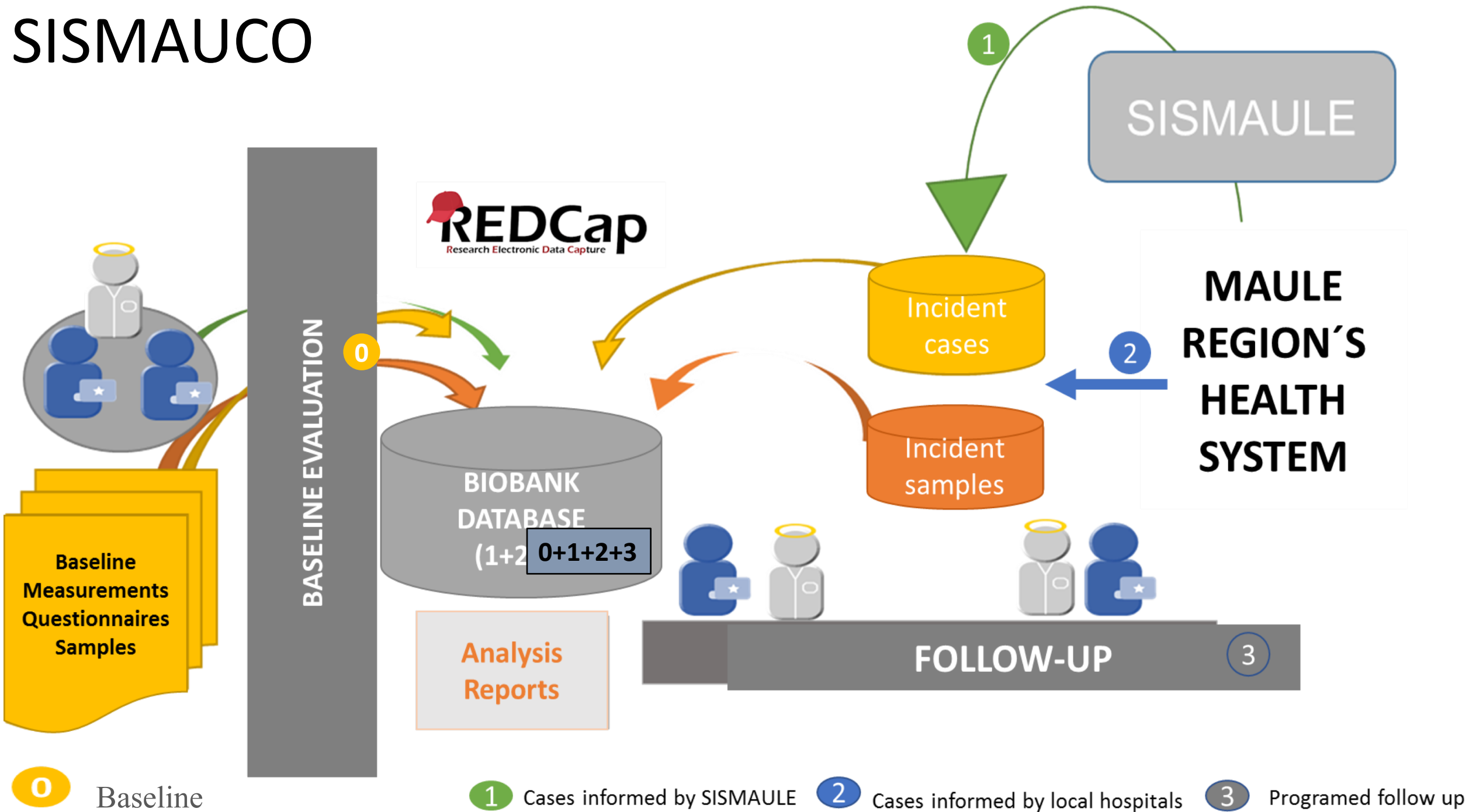
# Continuous training



# Academic activities



# SISMAUCO





# In Depth Analysis of Selected Topics

Themes	PI
<b>Pre-diabetes &amp; Healthy obesity</b>	A.Huidobro
<b>EKG</b> in an agricultural population	C. Vargas
<b>Pesticide exposure</b> in MAUCO	S. Cortés
<b>Environmental risk</b> assessment,	S. Cortés
Management of <b>DATA loss</b>	F. Paredes
<b>Depression &amp; CDs</b>	C. Caneo
<b>Cardiovascular Health</b>	C. Bambs

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# Nested Studies

# Cardiovascular study:

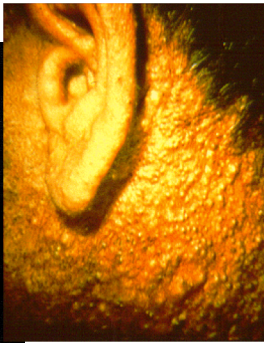
*Left atrial dysfunction in non-healthy cardiovascular health status population*



# SKIN EXAMINATION (N. Sabatini)



Sun exposure lesions





# Dental examination (C Saka)



# FUNDS MOBILIZATION FOR STUDIES NESTED IN MAUCO

TOPIC	PI	START	FUND
Gallstones:natural history	C. Ferreccio	2014	NCI/NIH
FRAILTY	N. Bustamante	2015	FONDECYT
Echocardiographic c	C. Matamala	2016	PUC
Sphingolipid Metabolic Pathway & ADHD	M.Henriquez	2016	FONDECYT
GWAS Mapping	R Verdugo	2017	FONDEF
Cholecystectomy and NAFLD	C. Ferreccio	2017	FONDECYT
Fecal-oral microbiome and biliary diseases	C. Ferreccio	2017	NCI/NIH

# MAUCO PROFILE MANUSCRIPT IN PREPARATION FOR THE IJE

# ENROLLMENT & FOLLOW UP 2014-2017

## Baseline examination

All 7.580;

Women = 4.291 (56,6);

Men= 3.289 (43,4)

## 2-years follow-up

All 3,031 (40% of enrolled)

Full Re-examination: 2,042

Follow-up survey, BP and BMI : 989



# Socio-demographic characteristics MAUCO participants 2014-2017.

	All N=7,350 100 %	Women N=4,285 58.3 %	Men N=3,065 41.7%	p-value sex difference
Age mean±SD	53.5±9.6	53.3±9.5	53.9±9.7	0.005
Chilean/Hispanic	97.3	97.7	96.8	0.038
Widowed	6.1	9.6	2.6	<0.001
School years (mean SD)	8.8±4.1	8.6±4.1	8.9±4.1	0.002
Public Health insurance	86.3	86.4	86.1	0.74
Currently Employed	61.9	41.8	81.9	<0.001
Agricultural Work (ever)	48.6	38.8	58.4	<0.001

# Health profile of the MAUCO participants

Health Conditions		All N=7,350 (%)
Self Reported Health status*	Fair and bad	56.4
Chronic Conditions	Diabetes	13.5
	Hypertension (Treatment/abnormal exam)	43.3
	Cardiovascular disease All	7.2
	Cancer	7.5
	Non-Infectious Digestive diseases	33.8
Metabolic syndrome		46.6

## Health profile of the MAUCO participants

Health Condition	%
Depression symptoms (PHQ-2) %	16.9
<b>BMI<math>\geq</math>30kg/m<sup>2</sup></b>	<b>39.6</b>
<b>Remaining teeth</b>	<b>18.8<math>\pm</math>9.1</b>
<b>Peak expiratory flow (PEF) &lt; 80%</b>	<b>48.7</b>
Low muscle strength	10.1
Abnormal EKG (N:6426)	5.4
<b>Fatty Liver (any degree)</b>	<b>48.3</b>
Cholecystectomized	18.7
Gallstones	11.1

# Lifestyle factors among MAUCO participants

Factor	%
<b>Binge drinking</b>	<b>29.5</b>
Sugary drinks consumption > twice/day	22.2
Eat processed meat >4 times/week	9.3
Healthy vegetable consumption	1.8
Healthy fruit consumption	2.0
Low leisure time physical activity	92.3
Current Smoker	30.5

# Causes of First Hospitalization in MAUCO participants 2014-2017

(ICD 10) <b>Main Causes</b>	<b>N= 532</b>	<b>%</b>
<b>(K) Digestive system</b>	<b>119</b>	<b>23,2</b>
<b>(N) Genitourinary system</b>	<b>73</b>	<b>14,2</b>
<b>(I) Circulatory system</b>	<b>62</b>	<b>12,0</b>
(S,T,W,X) Injury, poisoning and external causes	35	6,8
(C) Cancer + D008-48 neoplasm	31	6.1
(J) Diseases of the respiratory system	31	6,1
(E,M) Musculoskeletal/ Endocr, nutr, metabolic	42	8,1
(F, G) Mental, behavioral disorders /Nervous	19	3.8
Data not available	28	5,5

# Causes of Death

## MAUCO participants 2014-2017

(ICD-10) Deaths	N = 66	%
(C D) <b>Neoplasms</b>	22	33.3
(I) <b>Circulatory system</b>	17	25.8
(J) <b>Respiratory system</b>	8	12.1
(S T) Injury, Poison external causes	6	9.1
(K) Digestive System	4	6.1
(N) Genitourinary system	3	4.5
Other with 1-2 cases	6	9.1



# The Central Team





# The Field Team





# MUCHAS GRACIAS POR SU PRESENCIA BIENVENIDOS A COPLAS:

Cohortes Poblacionales Latinoamericanas. Quinamávida, abril 2018.



Conocernos, colaborar, y sumar por nuestra América Latina