MEXICAN HEALTH AND AGING STUDY (MHAS)
& COGNITIVE AGING ANCILLARY STUDY (MEX-COG)
2021

- With this sixth edition, the Mexican Health and Aging Study (MHAS) completes 20 years of follow-up with persons from the original wave completed in 2001.[1]

- In 2021, the illnesses that most affected the population aged 53 years and older were: hypertension (43.3%), diabetes (25.6%) and arthritis (10.7%).

- Of persons aged 53 and older, 62.3% perceived that their health was poor to fair. In 2021, 89.9% of women aged 53 and older and 84.6% of men within the same range received at least one dose of a vaccine against COVID-19.

- Among the population aged 60 years and older who had COVID-19, an increase in the prevalence of symptoms of depression was identified. In 2018, 26.4% of these older adults were identified as having depression, and this increased to 35.5% in 2021. Of the population aged 60 and older who did not have COVID-19, 29.3% were identified as having symptoms of depression in 2018, compared to 26.9% in 2021.

- Of the population aged 53 years and older, 25.0% listed caring for a child under 12 years of age among their activities, and 18.4% cared for an adult.

- The Cognitive Aging Ancillary Study[2] revealed that, of the population aged 58 years and older, 94.3% correctly identified the day of the week of their interview, 90.6% identified the month, 84.5% the year and 67.9% correctly indicated the day of the month.

The Mexican National Institute of Statistics and Geography (INEGI), in coordination with the University of Texas Medical Branch (UTMB), presents the results of the sixth edition of the Mexican Health and Aging Study (MHAS). The objective of this survey is to update the statistical information about the population aged 50 years and older in Mexico. This is done to assess the process of aging, the impact of diseases, impairment in performing activity, and mortality.

MHAS 2021 covered themes such as health status, migration, family networks, income, presence of physical limitations or diseases, emotional and cognitive status, daily activities, and use of time. Additionally, for this wave, questions about the impact of the COVID-19 pandemic were considered. These questions allowed us to capture not only the experiences of the population, but also the pandemic's influence on the quality of life of older persons.

Additionally, in 2021, a study connected to the MHAS was developed, known as the Cognitive Aging Ancillary Study (Mex-Cog) 2021. Its objective is to collect information to estimate the

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[1] In 2001, the effective sample consisted of 13 463 persons aged 50 years and older. In the 2012 wave, a new sample of the population aged 50–60 years was incorporated, and in 2018, yet another sample of the population aged 50–55 years was added. In the 2021 wave there was no new sample, thus the information represents the population aged 53 and older.

[2] The Cognitive Aging Ancillary Study contains a series of cognitive exercises for the adult population. Some of these are simple questions to determine orientation in time and place among persons in the study. The survey was fielded to the population aged 58 years and older, starting with the sample that participated in MHAS 2018 through a direct interview. In addition to cognitive exercises administered to the study subject, an interview was completed with a family member or a caretaker aged 18 or older who knew and had contact with the person selected for the study.

prevalence of and risk factors for dementia and other types of cognitive decline among the population of adults aged 58 years and older in Mexico,[3] in a manner comparable to other studies in the globe. The field work was performed from July 19 to August 27, 2021.

The MHAS is a longitudinal survey that began in 2001; afterwards, the survey was fielded in 2003, 2012, 2015, 2018 and in 2021. The sampled population consisted of persons aged 50 years and older, who were followed for up to 20 years since the beginning of the project, and in some cases, until their deaths.
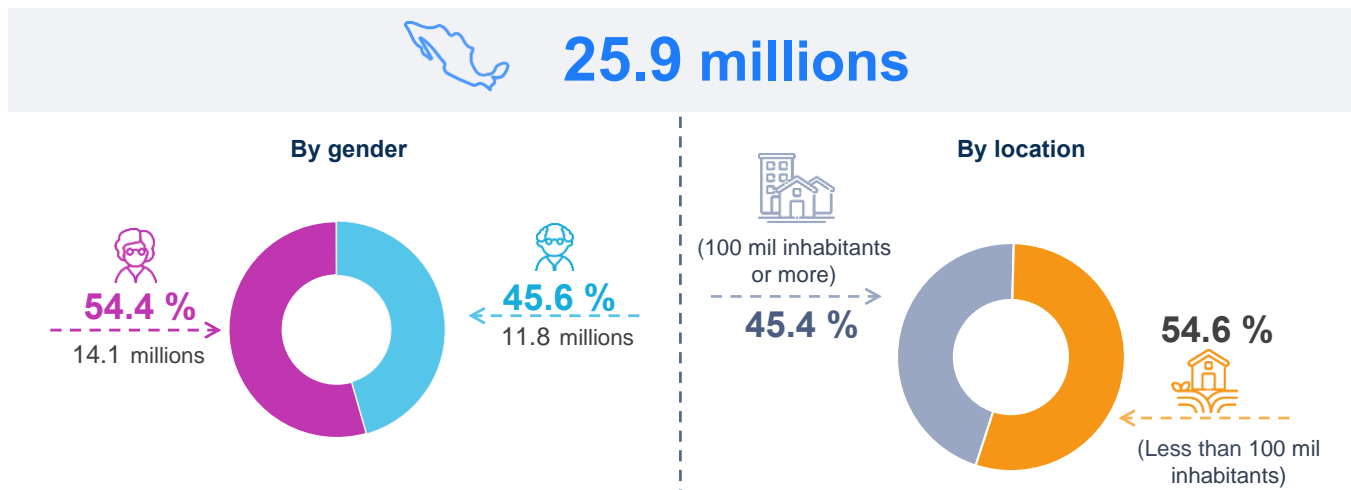
With respect to certain themes presented here, the data are compared to those from 2018, which allows us to observe trends between those years. Likewise, it is possible to identify the impacts of the COVID-19 pandemic on the experiences of the study participants.[4]

MAIN RESULTS OF THE MHAS 2021

Sociodemographic characteristics

In the MHAS 2021 we estimated a population of 25.9 million persons aged 53 years and older, of whom 45.6% were men and 54.4% were women. Of these, 45.4% lived in urban localities— that is, those with 100 thousand inhabitants or more— and 54.6% in localities with fewer than 100 thousand inhabitants.

Figure 1
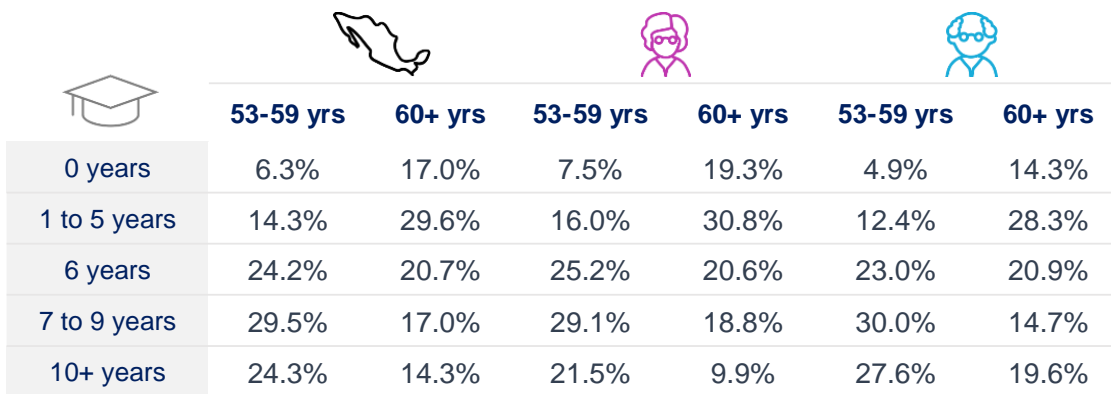**POPULATION AGED 53 YEARS AND OLDER, BY SEX AND LOCAL POPULATION**
(In percentages)

25.9 millions

By gender

54.4 %
14.1 millions

45.6 %
11.8 millions

By location

(100 mil inhabitants or more)
45.4 %

54.6 %
(Less than 100 mil inhabitants)

Source: INEGI. Mexican Health and Aging Study (MHAS), 2021

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[3] The survey is administered to the population aged 58 years and older, because in field tests it was determined that the population younger than this age scores well on cognitive exercises, subtraction, short-term memory and orientation in time and place. Starting at a more advanced age, then the beginnings of major cognitive decline are identified. It is important to note that its predecessor, Mex-Cog 2016, was administered to persons aged 55 and older. (See the technical note on the Cognitive Aging Ancillary Study).

[4] It should be clarified that, for the presentation of results, we excluded persons aged 53 years and older who answered *Don't know* who were listed as *Didn't answer* in the direct interview (*basic questionnaire*). Interviews conducted by proxy were also excluded, with the goal of maintaining the comparability with data presented here from earlier surveys.

With respect to the educational level of the population aged 53 years and older, 13.2% had no schooling; 24.2% had an incomplete primary education; 22.0% completed primary education but nothing further; 21.4% had some secondary education and 17.9% had at least complete post-secondary education—that is, completed 10 or more grades of schooling.[5] The percentage of men with some post-secondary education was 22.4%, and that of women was 14.0%. As for differences by age group, we found that persons aged 53–59 years had a greater level of education (24.3% with some post-secondary education) compared to persons aged 60 or older.

Table 1
POPULATION AGED 53 YEARS AND OLDER, BUT SEX, AGE GROUP AND EDUCATION LEVEL
(In percentages)

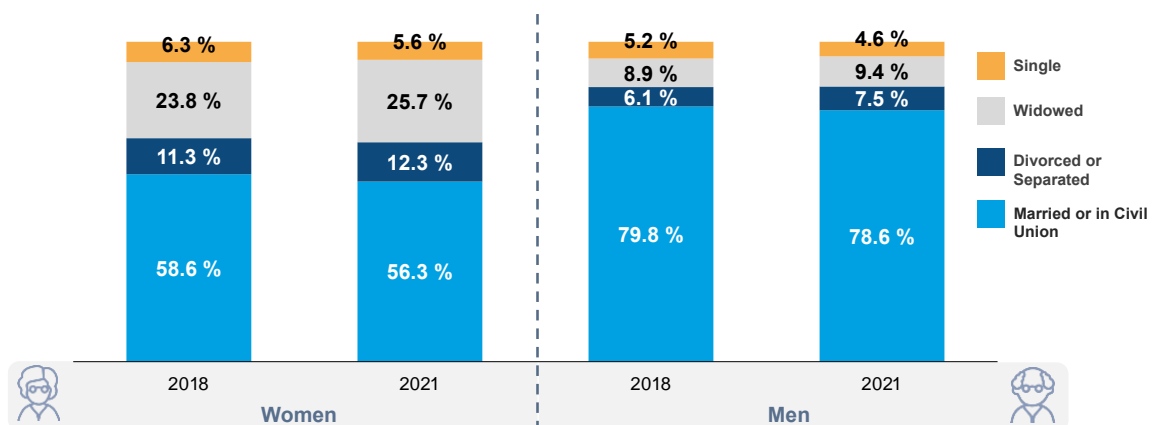|	53-59 yrs	60+ yrs	53-59 yrs	60+ yrs	53-59 yrs	60+ yrs
0 years	6.3%	17.0%	7.5%	19.3%	4.9%	14.3%
1 to 5 years	14.3%	29.6%	16.0%	30.8%	12.4%	28.3%
6 years	24.2%	20.7%	25.2%	20.6%	23.0%	20.9%
7 to 9 years	29.5%	17.0%	29.1%	18.8%	30.0%	14.7%
10+ years	24.3%	14.3%	21.5%	9.9%	27.6%	19.6%

Source: INEGI. Mexican Health and aging Study (MHAS), 2021

Regarding marital status, 25.7% of women and 9.4% of men were widowed. 56.3% of women and 78.6% were married or part of a civil union. The percentage of women in a situation of *separation or divorce* was 12.3%, compared to 7.5% among men. In comparison with data from 2018, the proportion of the population who were *married or in a civil union* decreased, in percentage points, by 2.3 among women and by 1.2 among men.

Figure 2
POPULATION AGED 53 YEARS AND OLDER, BY SEX AND MARITAL STATUS
(In percentages)

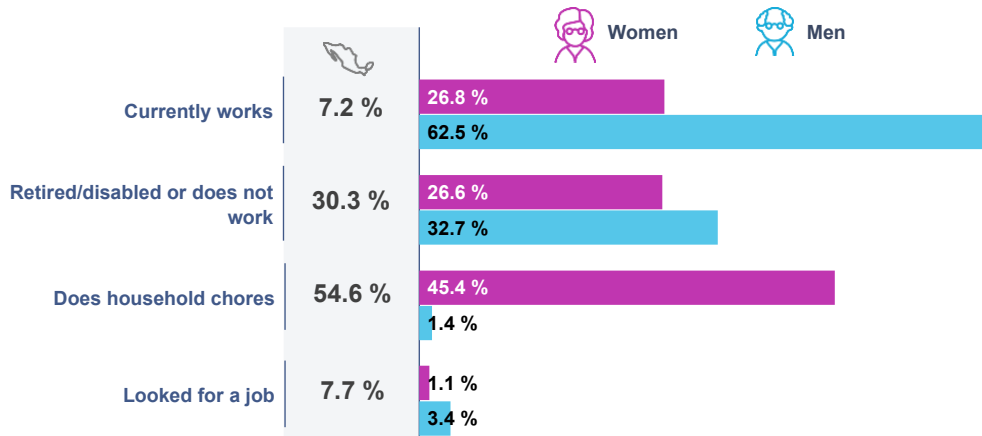|	Women 2018	Women 2021	Men 2018	Men 2021
Single	6.3 %	5.6 %	5.2 %	4.6 %
Widowed	23.8 %	25.7 %	8.9 %	9.4 %
Divorced or Separated	11.3 %	12.3 %	6.1 %	7.5 %
Married or in Civil Union	58.6 %	56.3 %	79.8 %	78.6 %

Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 & 2021

[5] Of the population aged 53 years and older, 1.4 % did not specify their education.

With respect to the status of economic activity of the population aged 53 years and older, 27.5% of women and 65.7% of men were economically active (i.e., they worked or sought work), a difference of 38.2 percentage points.

Figure 3
POPULATION AGED 53 YEARS AND OLDER, BY SEX AND OCCUPATIONAL STATUS

		Women	Men
Currently works	7.2 %	26.8 %	62.5 %
Retired/disabled or does not work	30.3 %	26.6 %	32.7 %
Does household chores	54.6 %	45.4 %	1.4 %
Looked for a job	7.7 %	1.1 %	3.4 %

Source: INEGI. Mexican Health and Aging Study (MHAS), 2021

Health status and use of health services

Of the population aged 53 years and older, 67.7% reported having attended a consultation or medical visit in the past 12 months, 33.9% *visited a dentist* and 11.3% reported having been *hospitalized* or having had some *outpatient surgery*. Women reported receiving some type of health service more than men. Of the total population of study, 23.3% (6.0 million) did not use any of these types of health service.

Figure 4
POPULATION AGED 53 YEARS AND OLDER, BY SEX AND TYPE OF HEALTH SERVICE UTILIZED IN THE PAST 12 MONTHS

		Women	Men
Visits the doctor	67.7 %	73.9 %	60.3 %
Visits the dentist	33.9 %	36.5 %	30.8 %
Hospitalization or outpatient surgery	11.3 %	12.1 %	10.3 %
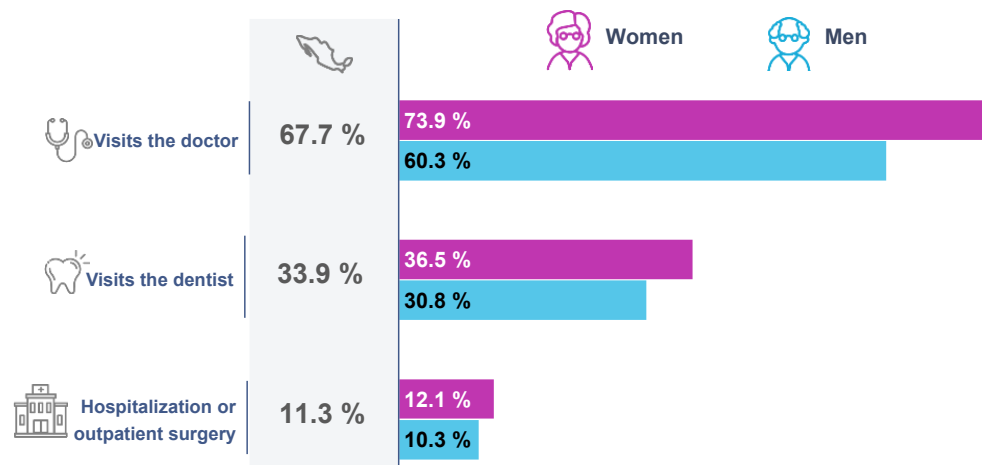
Source: INEGI. Mexican Health and Aging Study (MHAS), 2021

With respect to self-reporting of previous diagnoses of chronic illnesses, the most common illnesses among the population aged 53 years and older were: *hypertension* (43.3%), *diabetes* (25.6%) and *arthritis* (10.7%). The self-reported prevalence of these illnesses differed by sex: women reported the main chronic-degenerative illnesses in greater percentages.

Figure 5
POPULATION AGED 53 YEARS AND OLDER, BY SEX AND TYPE OF ILLNESS (PER SELF-REPORT OF PREVIOUS DIAGNOSIS)

Illness	Total	Women	Men
Hypertension	43.3 %	49.9 %	35.5 %
Diabetes	25.6 %	28.1 %	22.5 %
Arthritis	10.7 %	15.1 %	5.4 %
Heart problem	5.2 %	5.7 %	4.5 %
Lung Disease	4.2 %	4.8 %	3.5 %
Heart attack	3.1 %	2.1 %	4.4 %
Cancer	2.3 %	2.8 %	1.6 %
Stroke	2.3 %	2.0 %	2.6 %
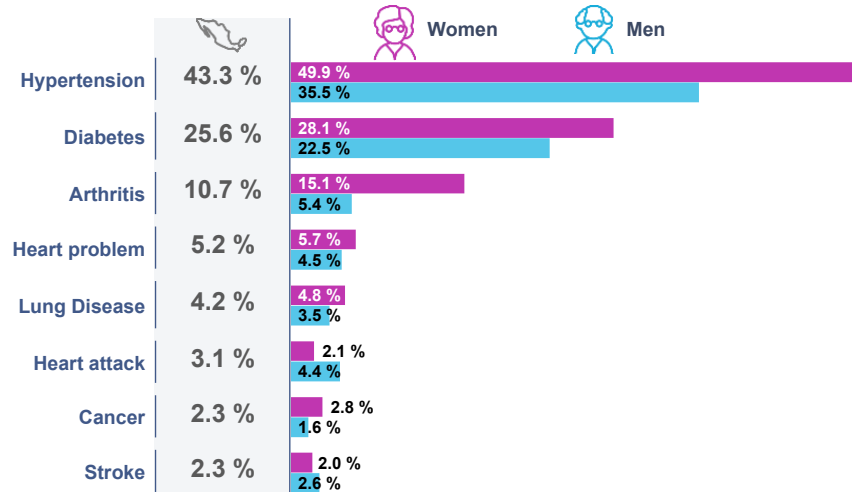
Source: INEGI. Mexican Health and Aging Study (MHAS), 2021

By age group and sex, between 2018 and 2021, the prevalence of seven common illnesses among the study population—*cancer, stroke, heart attack, lung disease, arthritis, diabetes and hypertension*—was similar. On the other hand, the groups in older ages had higher percentages of these illnesses compared to younger individuals.

Table 2
POPULATION AGED 53 YEARS AND OLDER, BY SEX, AGE GROUP AND PRINCIPAL ILLNESSES (PER SELF-REPORT OF PREVIOUS DIAGNOSES)

	2018				2021			
	Women		Men		Women		Men	
	53-59 yrs	60+ yrs	53-59 yrs	60+ yrs	53-59 yrs	60+ yrs	53-59 yrs	60+ yrs
Hypertension	39.8%	52.4%	28.8%	38.5%	40.9%	54.9%	29.7 %	38.6 %
Diabetes	23.9%	27.3%	18.6%	21.8%	26.0%	29.2%	20.5 %	23.7 %
Lung disease	4.1%	7.2%	2.9%	5.0%	4.8%	4.8%	2.3 %	4.1 %
Arthritis	10.3%	18.5%	2.7%	9.4%	10.9%	17.4%	3.2 %	6.5 %
Heart attack	2.6%	3.4%	2.4%	4.6%	1.2%	2.6%	3.5 %	4.9 %
Stroke	1.3%	3.2%	3.5%	3.5%	0.8%	3.1%	1.3 %	3.3 %
Cancer	2.7%	3.0%	0.7%	2.1%	2.3%	3.1%	0.8 %	2.1 %

Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 & 2021

Diabetes is one of the most prevalent illnesses worldwide. Increasing in recent decades,[6] it has impacted the quality of life of persons of all ages. The prevalence of diabetes, through the distinct waves of the MHAS, was increasing. For 2001, we identified that 16.1% of the population aged 53 or older reported that they had previously been diagnosed with diabetes (14.1% for men and 17.8% for women). Twenty years late, in 2021, that percentage was 25.6% (22.5% for men and 28.1% for women).

In terms of differences by age group and sex, a greater increase was observed for women 53–59 years of age. In 2001, the percentage of women diagnosed with diabetes within said age group was 15.1%, and in 2021 the percentage was 26.0%—an increase of 10.9 percentage points. For women 60 years of age and older, this percentage increased by 10.6 percentage points. In the case of men, the greatest increase was observed among the group aged 60 years and older with nine percentage points, and an increase of eight percentage points was observed among the group aged 53–59 years.

Figure 6
POPULATION AGED 53 YEARS AND OLDER, BY SEX, AGE GROUP AND SELF-REPORT OF PRIOR DIAGNOSIS OF DIABETES
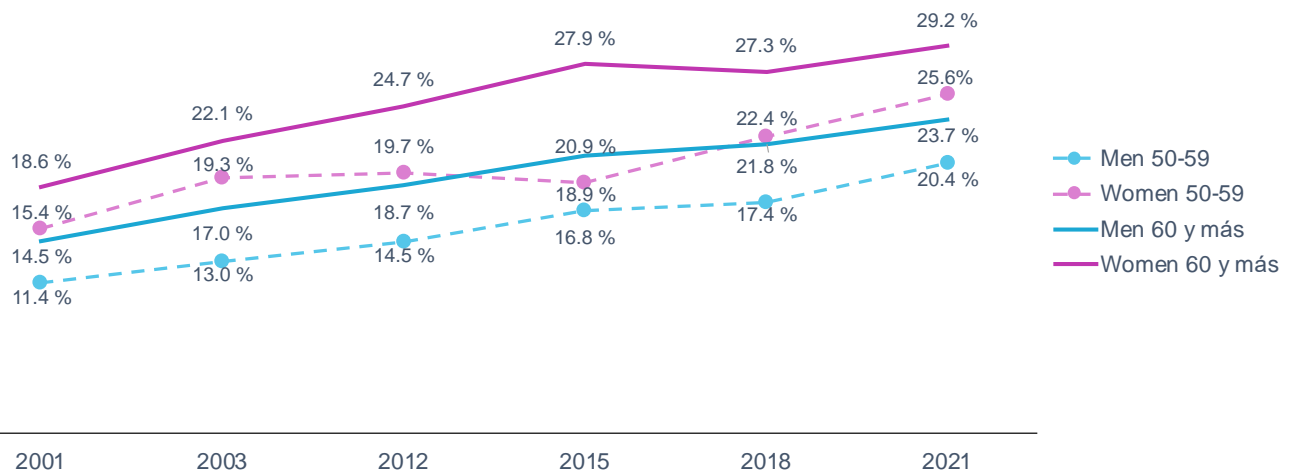
Source: INEGI. Mexican Health and Aging Study (MHAS), 2001, 2003, 2012, 2015, 2018 & 2021

Obesity is considered a risk factor for cardiovascular diseases, musculoskeletal diseases, diabetes, and some types of cancer. This risk increases as obesity grows.[7]

The MHAS tracks the prevalence of obesity.[8] The results show an upward trend in men as well as in women since the first wave in 2001 until 2021. In this last year, obesity was more common among women than among men; the difference was about seven percentage points, with 30.1 and 23.3%, respectively.

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[6] From 1980 to 2014, the number of persons with diabetes worldwide increased from 108 million to 422 million. Source: World Health Organization (WHO). *Diabetes. Datos y Cifras.* (2022) Available at: https://www.who.int/es/news-room/fact-sheets/detail/diabetes
[7] World Health Organization (2021). *Obesidad y sobrepeso.* Disponible en: https://www.who.int/es/news-room/fact-sheets/detail/obesity-and-overweight
[8] Obesity is calculated by obtaining Body Mass Index (BMI), based on the weight and height reported by respondents to the survey.

Figure 7
POPULATION AGED 53 YEARS AND OLDER, BY SEX AND PREVALENCE OF OBESITY
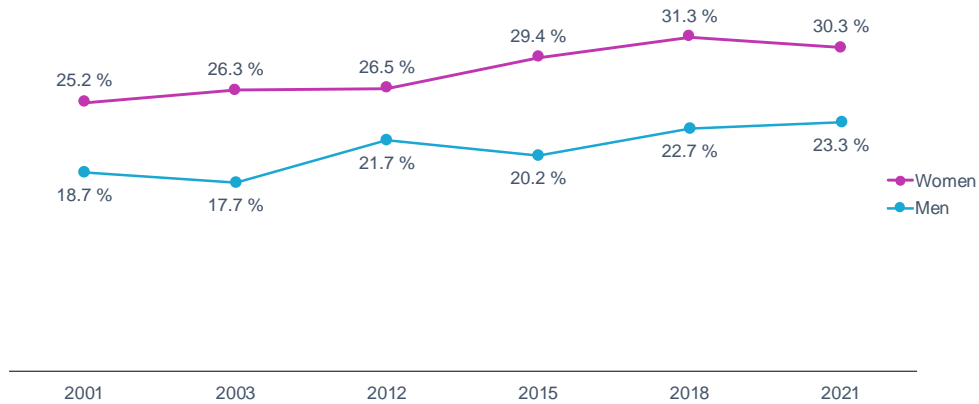
Source: INEGI. Mexican Health and Aging Study (MHAS), 2001, 2003, 2012, 2015, 2018 & 2021

In 2021, 62.3% of the population aged 53 years and older viewed their health as *fair*, *poor* or *very poor*; this value marked a slight decrease from the result obtained in 2018, which was 63.1%. This perception was more common among women than among men, with 67.4 and 56.2%, respectively.

Figure 8
POPULATION AGED 53 YEARS AND OLDER, BY SEX AND SELF-REPORTED GENERAL HEALTH STATUS
(In percentages)
Población de 53 y más años por sexo, según estado de salud general autodeclarado
Distribución porcentual
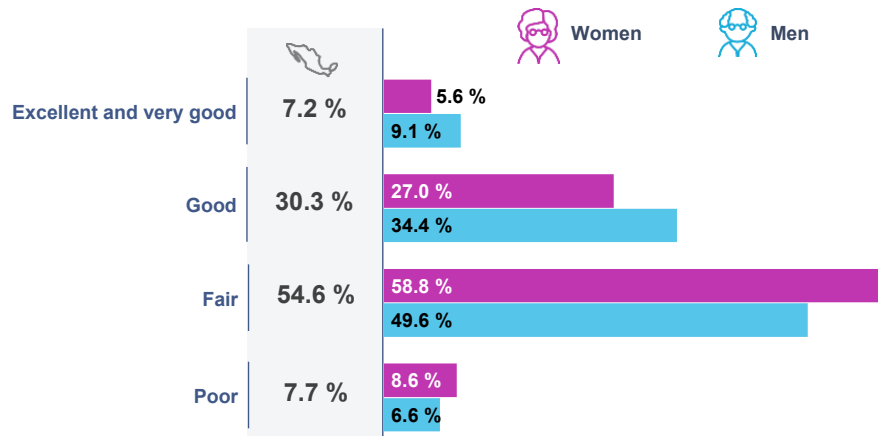
Source: INEGI. Mexican Health and Aging Study (MHAS), 2021

Making decisions about health

Of persons aged 53–59 years, 83.1% perceived that the weight they had in their health care decisions was 'much' and this was 71.0% for the population aged 80 or more. The graph shows that the weight they report having on their health care decisions goes down with older age.

Figure 9

POPULATION AGED 53 AND OLDER, BY AGE GROUP AND PERCEPTION OF THE WEIGHT THEY HAVE IN THEIR HEALTH CARE DECISIONS

(Percent)

| Not at all | A Lot |

Age group	A Lot	Not at all
80 years and older	71.0%	28.5%
70 to 79 years old	79.4%	20.1%
60 to 69 years old	85.0%	14.9%
53 to 59 years old	83.1%	16.5%
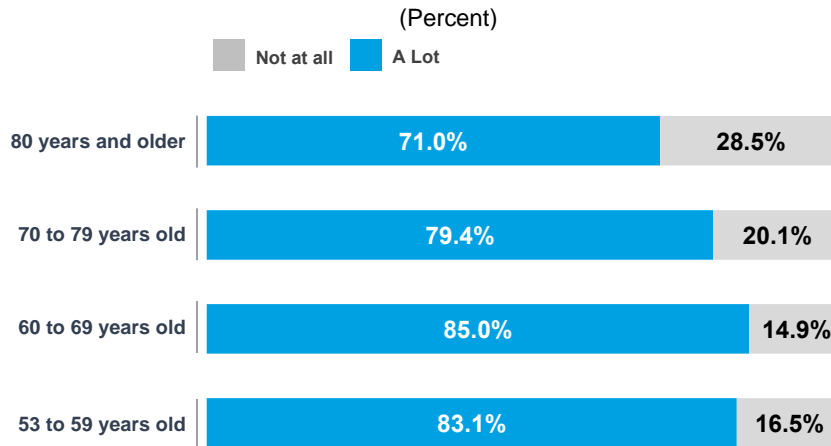
Source: INEGI. Encuesta Nacional sobre Salud y Envejecimiento en México (ENASEM), 2021

Persons aged 53 years and older indicated that, when they need help to make decisions on health care treatment, they themselves and their families make the decisions. This was reported by both men (52.4%) and women (50.0%).

Figure 10

POPULATION AGED 53 AND OLDER BY SEX AND PREFERENCE OF THE PERSON TO MAKE DECISIONS ON HEALTH CARE TREATMENT

(Percent)

| Him/her & His/her family | Him/her, family, & physician | Physician |

	Him/her & His/her family	Him/her, family, & physician	Physician
13 million of women age 53 years and older	49.8 %	34.5 %	15.4 %
10.9 million of men age 53 years and older	52.7 %	30.3 %	16.2 %
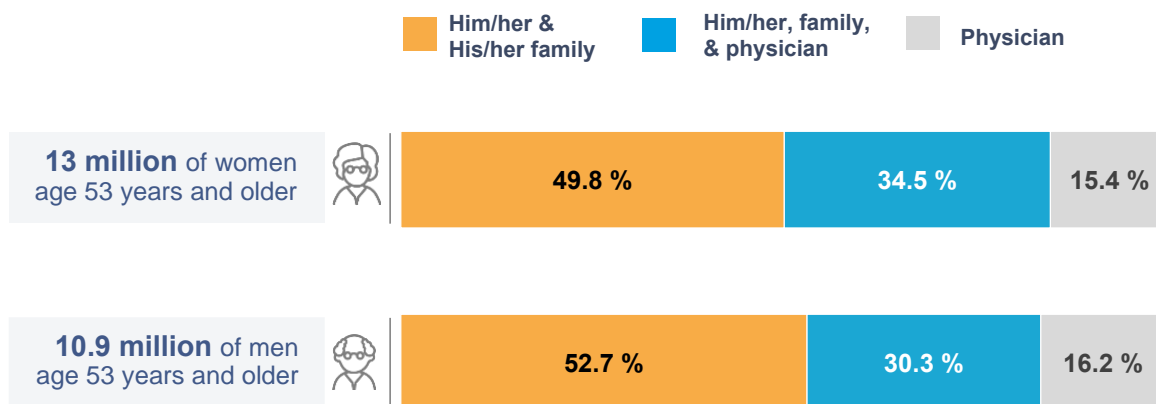
Source: INEGI. Mexican Health and Aging Study (MHAS), 2021

Life styles ahd health

Life style behaviors influence health, for examples exercise or consumption of tobacco or alcohol. The MHAS 2021 results indicate that 42.7% of men aged 53 and older engage in physical exercise *three times per week or more*. This percentage was lower for women of the same age (22.2%). Comparing with other MHAS survey waves, the percentage of women reporting physical exercise *three times per week or more in 2021 was* 10.8 percentage points lower compared to 2012.

Consumption of alcohol and tobacco is more prevalent among men than women. The percent of men aged 53 and older consuming tobacco went down slightly between 2012 and 2021. However, the consumption of alcohol went up 6.5 percentage points in the same period.

Figure 11
POPULATION AGED 53 AND OLDER, BY SEX, ACCORDING TO PRACTICE OF EXERCISE, CONSUMPTION OF ALCOHOL AND TOBACCO
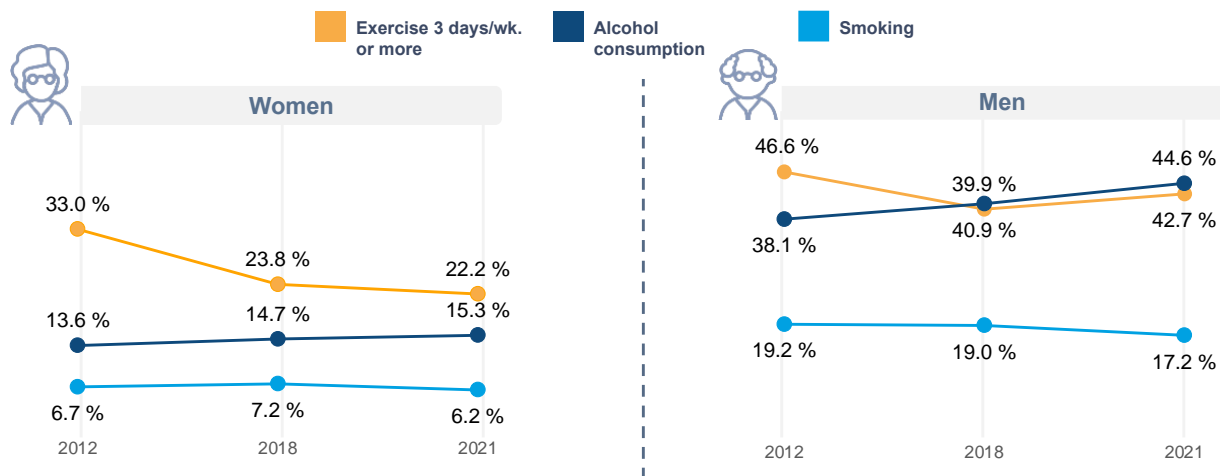
Source: INEGI. Mexican Health and Aging Study (MHAS), 2012, 2018 and 2021

Of the total population aged 53 and older, four out of ten persons reported having difficulty to fall asleep (41.1%). Of these, 11.9% declared that the problem was present the *majority of times* while 29.2% reported that this occurred *sometimes*. By sex, 48.8% of women and 31.8% of men had a difficulty to sleep (*the majority of times* or *sometimes*). In comparison to 2018, there was an increase for both women (47.4%) and men (32.8%).

Figure 12
POPULATION AGED 53 AND OLDER, BY SEX AND DIFFICULTY FALLING ASLEEP
(Percent)

| Most of the time | Sometimes | Rarely or never |

13 million of women age 53 years and older

| 15.3 % | 33.6 % | 51.0 % |

10.9 million of men age 53 years and older

| 7.8 % | 24.0 % | 68.2 % |
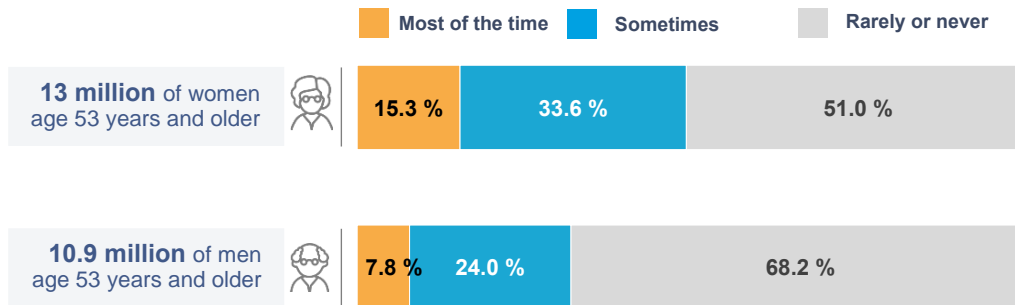
Source: INEGI. Encuesta Nacional sobre Salud y Envejecimiento en México (ENASEM), 2021

The population aged 53 and older reported engaging in these main activities: *watch televisión* (87.3%), *talk on the phone, send messages or use internet* (84.0%) and *household chores or home maintenance* (63.3%). Compared to 2018, these three activities were reported in higher percentages in 2021. On the other hand, the activities that were reported with slighlty lower frequency were *caring for an adult (*went from 18.9% in 2018 to 18.4% in 2021*)* and *taking care of a minor* (from 26.6% in 2018 to 25.0% in 2021). Nevertheless, adults aged 53 and older continue to provide care and contribute to the economy and wellbeing of households.

Figure 13
POPULATION AGED 53 AND OLDER ACCORDING TO TIME USED IN A VARIETY OF ACTIVITIES

Watch TV
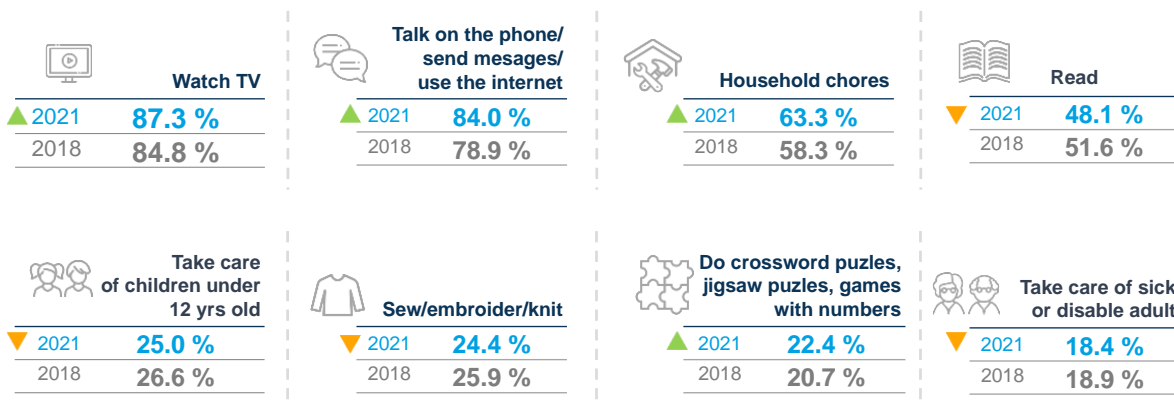▲ 2021 **87.3 %**
2018 **84.8 %**

Talk on the phone/ send mesages/ use the internet
▲ 2021 **84.0 %**
2018 **78.9 %**

Household chores
▲ 2021 **63.3 %**
2018 **58.3 %**

Read
▼ 2021 **48.1 %**
2018 **51.6 %**

Take care of children under 12 yrs old
▼ 2021 **25.0 %**
2018 **26.6 %**

Sew/embroider/knit
▼ 2021 **24.4 %**
2018 **25.9 %**

Do crossword puzles, jigsaw puzles, games with numbers
▲ 2021 **22.4 %**
2018 **20.7 %**

Take care of sick or disable adult
▼ 2021 **18.4 %**
2018 **18.9 %**

Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 and 2021

Emotional and Mental Health

Mental health in older adult ages, as well as emotional well being are as important as in any other stage of the life course, as they affect overall physical health and vice versa.[9] The presence of depressive symptoms may be due to physical and mental changes in an individual or to conflicts accepting old age.

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[9] Organización Mundial de la Salud (2017). *La salud mental y los adultos mayores.* Disponible en: https://www.who.int/es/news-room/fact-sheets/detail/la-salud-mental-y-los-adultos-mayores

MHAS asked about nine depressive symptoms experienced in the last seven days. The questions included if the target person felt depressed, felt that everything was an effort; that their sleep was unsettled, felt unhappy, felt lonely, felt that they didn't enjoy life, felt sad, felt tired, and felt that they had low energy. Reporting five or more of these symptoms indicates a situation of high risk of poor emotional status of an older adult.

In 2021, the percent of population aged 53 and older that reported to have five or more depressive symptoms in the last seven days was 25.3%. The symptoms reported more frequently were: *tired, sad, and unsettled sleep.*

Based on the MHAS surveys from 2012, 2018, and 2021, there is a declining trend in the percentage of population reporting five or more symptoms over time. However, the prevalence in 2021 was still high, especially among women (31.6%) compared to men (17.7%).

Figure 14
POPULATION AGED 53 AND OLDER WITH FIVE OR MORE DEPRESSIVE SYMPTOMS DURING THE LAST WEEK (SELF-REPORT), BY SEX
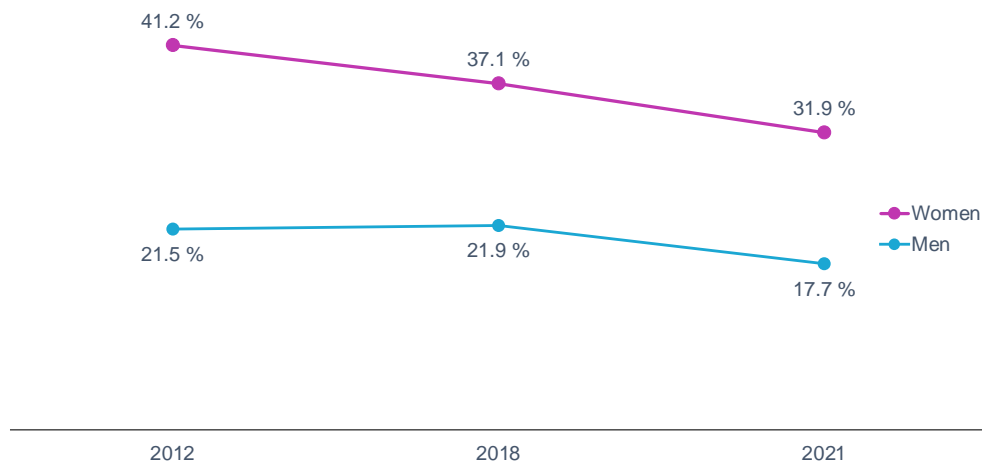
Source: INEGI. Mexican Health and Aging Study (MHAS), 2012, 2018 and 2021

Nine out of ten persons aged 53 and older declared to be *satisfied with life*. This phrase, along with *accomplished important things in life, were the two with highest frequency of satisfaction.* This outcome was similar for men and women in 2021. Compared to 2018, all the phrases referring to life satisfaction were reported with higher frequency in 2021.

Figure 15
POPULATION AGED 53 AND OLDER ACCORDING TO ENDORSEMENT OF LIFE SATISFACTION PHRASES

■ 2018　■ 2021

I am satisfied with my life
82.6 %
88.3 %

So far, I have gotten the things that are important to me in life.
78.9 %
84.4 %

In most things, my life is close to my ideal.
68.0 %
78.2 %

If born again, I would change almost nothing about my life.
65.1 %
72.8 %

The conditions of my life are excellent.
58.8 %
70.0 %
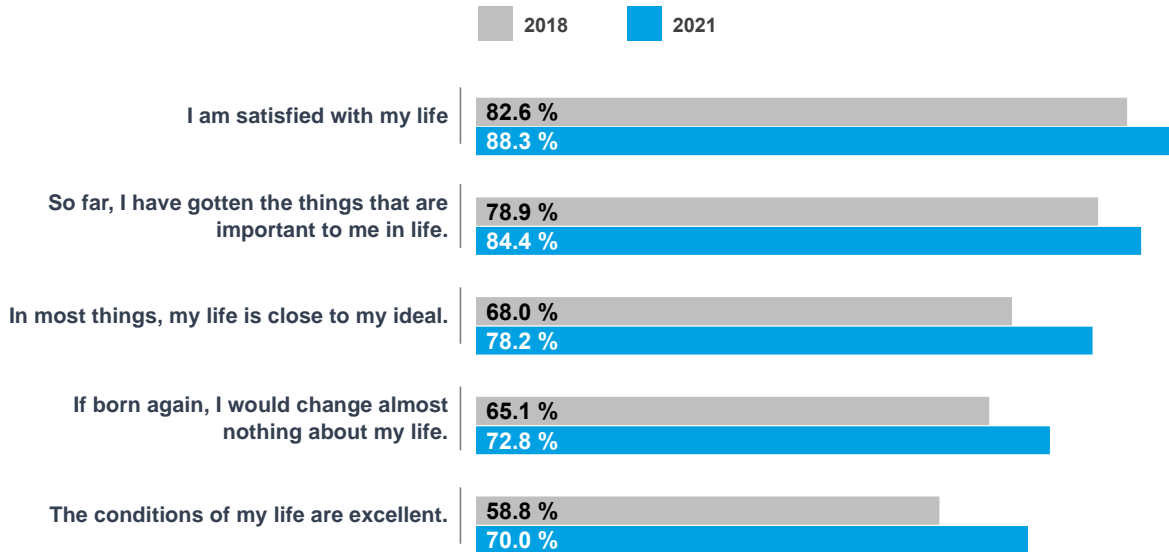
Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 and 2021

With regards to the auto-evaluation of quality of memory – a situation that is associated with physical and mental health and well being --- in 2021, of the Population aged 53 or more, 55.2% reported the quality of their memory between fair (regular) and poor (mala), which was similar to the findings from 2018 (56.7%). About 35.0% declared having *good* memory and 9.5% reported excellent (*excelente) or very good (muy buena)*.

Figure 16
POPULATION AGED 53 AND OLDER, BY SELF-REPORTED MEMORY STATUS
(Percent)

	Excellent and very good	Good	Fair	Poor
2018	10.3 %	33.6 %	49.8 %	5.6 %
2021	9.7 %	35.1 %	50.3 %	4.7 %
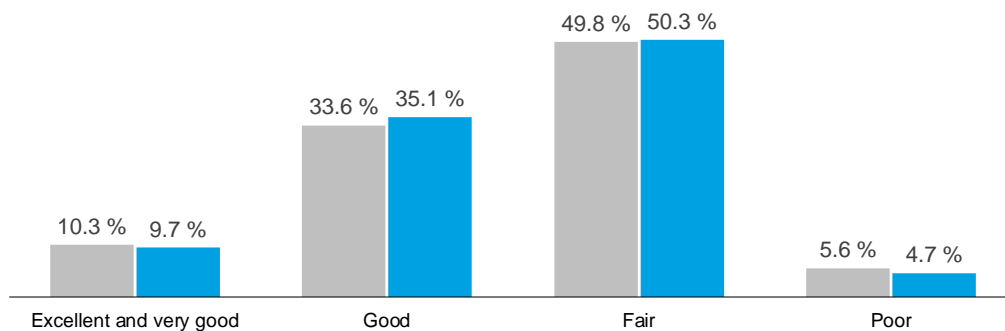
Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 and 2021

In 2021, the quality of memory reported was lower for older ages among both men and women. By sex, the most notable difference was for the age group 53 to 59 years: 52.5% of women reported their memory as *fair or poor* compared to 41.5% among men. For the age group 60 and older, 62.5% of women and 56.4% of men responded that their memory was *fair or poor*.

Figure 17

POPULATION AGED 53 AND OLDER BY SELF-REPORT OF MEMORY ACCORDING TO AGE GROUP AND SEX

(Percent)

Excellent and very good   Good   Fair   Poor

53-59 years	9.6 %	37.8 %	49.3 %	3.2 %	53-59 years	16.7 %	41.8 %	39.6 %	1.9 %
60 years and older	6.7 %	30.5 %	56.5 %	6.0 %	60 years and older	8.7 %	34.6 %	50.5 %	5.9 %
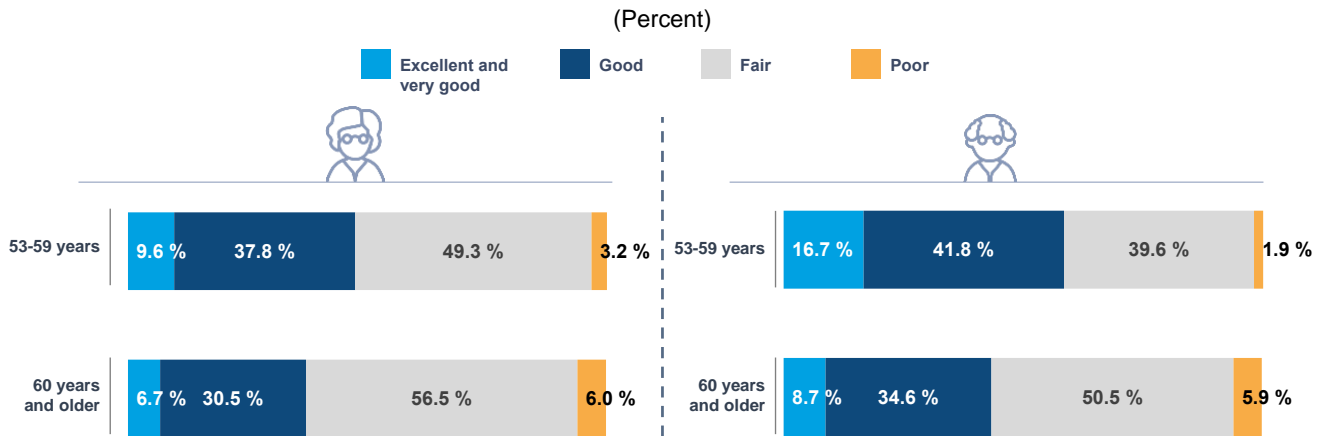
Source: INEGI. Mexican Health and Aging Study (MHAS), 2021

Limitations to perform activities of daily living

With respect to performing activities of daily living, 15.0% of older adults reported to have at least one difficulty or limitation. Activities such as *walking, getting in and out of bed, using the toilet*, were the most frequently reported. Also, when compared to the 2018 survey, these activities were the ones that presented the highest increase in limitations in 2021, in particular, *getting in and out of bed* and *using the toilet*.

Figure 18

POPULATION AGED 53 AND OLDER, BY LIMITATIONS IN PERFORMING ACTIVITIES OF DAILY LIVING

2018   2021

Getting in and out of bed	6.8 %	7.7 %
Walking	7.5 %	7.4 %
Using the toilet	5.8 %	7.0 %
Bathing	4.7 %	5.3 %
Eating	2.6 %	2.9 %
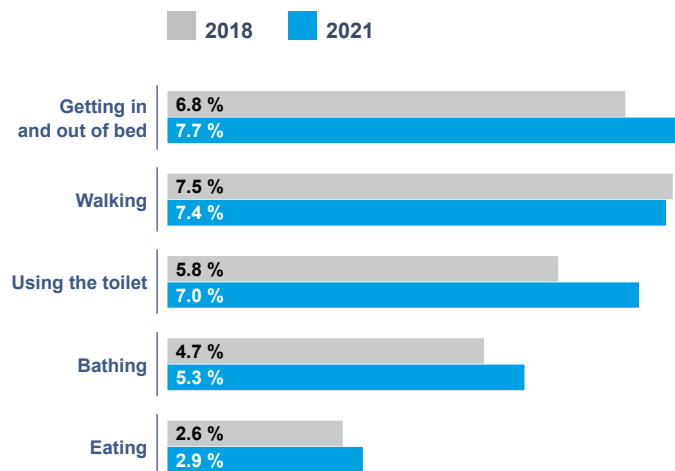
Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 and 2021

The presence of limitations among older adults may be due to physiological changes that are characteristic of the aging process.[10] This phenomenon was evident in the MHAS 2021 results. Comparing 2021 with respect to 2018, the population aged 53 to 69 years old with those aged 70 and older, the increase in the persons with limitations in the first group was 10.8% and it was 25.7% for the second.

There are differences by sex in the limitations to perform activities of daily living. Women mentioned difficulty to *get in and out of bed* (9.3%) most frequently; followed by *walking* (8.8%), then by *using the toilet* (8.7 %). On the other hand, men mentioned more difficulty to *walk* (5.9 %); followed by *getting in and out of bed* (5.6 %), and then by *using the toilet* (5.0 %).

Figure 19
POPULATION AGED 53 AND OLDER BY SEX AND LIMITATIONS IN ACTIVITIES OF DAILY LIVING

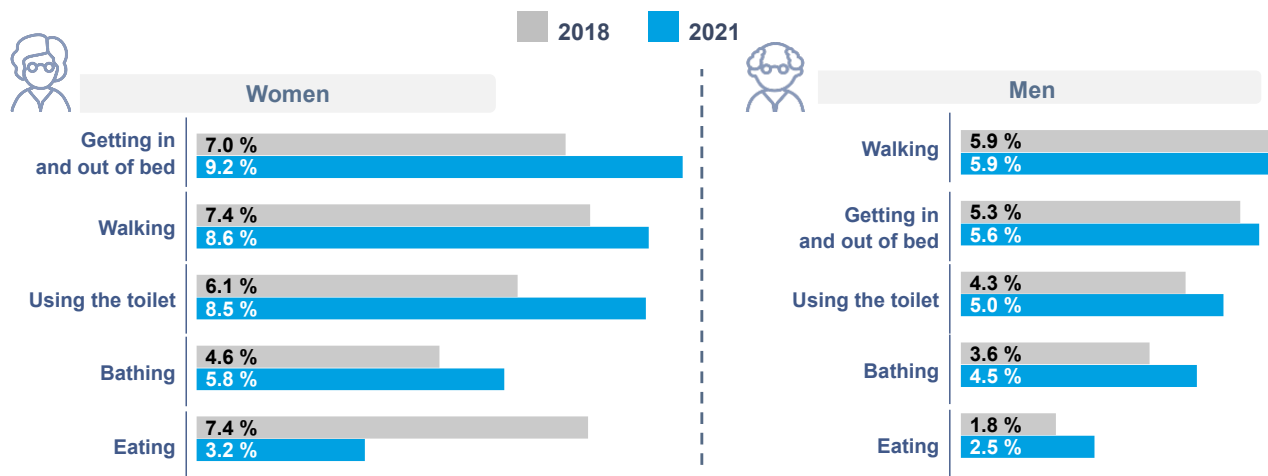| Women	2018	2021	Men	2018	2021
Getting in and out of bed	7.0 %	9.2 %	Walking	5.9 %	5.9 %
Walking	7.4 %	8.6 %	Getting in and out of bed	5.3 %	5.6 %
Using the toilet	6.1 %	8.5 %	Using the toilet	4.3 %	5.0 %
Bathing	4.6 %	5.8 %	Bathing	3.6 %	4.5 %
Eating	7.4 %	3.2 %	Eating	1.8 %	2.5 %

Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 and 2021

MHAS considers instrumental activities of daily living that are more complex than the basic ones, which are necessary for independent living. These include home domestic activities but also mobility outside the house.[11] There was an increase in the population with limitations for *shopping or going to the market*: this percentage went from 6.3% in 2018 to 7.7% in 2021.

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[10] Ortega Sanches Pinilla, R. (2002). *Limitaciones a la actividad física en el anciano*. Disponible en: https://www.elsevier.es/es-revista-revista-espanola-geriatria-gerontologia-124-pdf-S0211139X02747768

[11] Bolumburu Aldazabal, A Reos Llinares, M. J. (2017). *Actividades instrumentales de la vida diaria en la Unidad de Media Estancia.* Disponible en: https://www.aita-menni.org/es/articulo/actividades-instrumentales-vida-diaria-unidad-media-estancia/#:~:text=Las%20actividades%20instrumentales%20de%20la%20vida%20diaria%20se%20definen%20como,como%20movilidad%20fuera%20del%20hogar.

Figure 20
POPULATION AGED 53 AND OLDER, ACCORDING TO LIMITATIONS TO PERFORM INSTRUMENTAL ACTIVITIES OF DAILY LIVING

2018   2021

	2018	2021
Shopping for groceries	6.3 %	7.7 %
Preparing a hot meal	3.9 %	4.2 %
Managing money	2.2 %	1.9 %
Taking medications	2.2 %	1.6 %
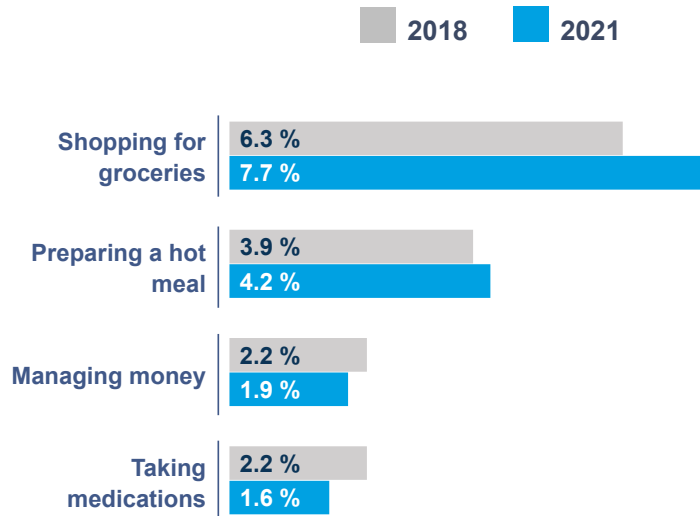
Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 and 2021

Preventive Care and COVID-19

Preventive care refers to the routine medical care that includes screening exams, checkups and treatment controls by medical personnel. The goal is to prevent or detect illnesses or other health care problems. Regarding the tests for detection or diseases, or the report of vaccinations, the Survey found that women reported a higher frequency of use of a variety of preventive care. In 2021, 89.9% of women and 84.6% of men reported having received at least one dose of COVID-19 vaccines. This was followed by tests for detection of *hypertension* and detection of *diabetes*.

Figure 21
POPULATION AGED 53 AND OLDER, BY SEX AND TYPE OF PREVENTIVE HEALTH CARE

Mujeres   Hombres

	Mujeres	Hombres
COVID-19 vaccine	89.9 %	84.6 %
Hypertension or Blood pressure test	69.9 %	55.0 %
Diabetes test	68.3 %	54.2 %
Flu vaccine	63.9 %	56.2 %
Cholesterol blood test	60.7 %	50.1 %
Pneumonia vaccine	11.6 %	10.1 %
Tuberculosis test	9.0 %	9.1 %
Colonoscopy sigmoidoscopy or another test to detect colon cancer	5.8 %	4.3 %
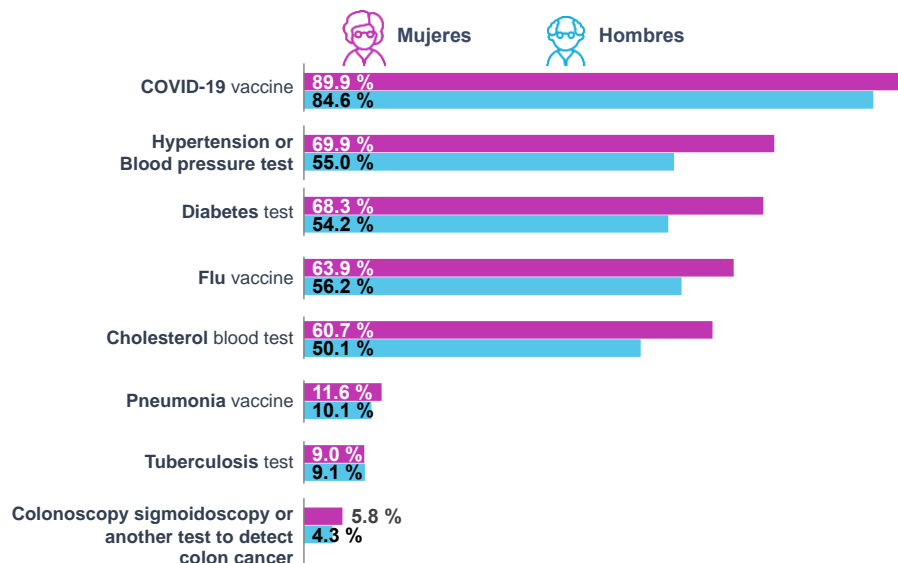
Source: INEGI. Mexican Health and Aging Study (MHAS) 2021

With respect to tests for detecting prostate cancer, two of every 10 men said that they had done them in the last two years (20.4%). Women were asked about self-examination of breasts: five out of every 10 did this (53.0%) and four out of 10 had a mammography (40.4%) or papanicolaou (39.1%).

With respect to COVID-19, the survey asked if, from March 2020 to the time of the survey, medical personnel had diagnosed the target person as 'positive' for the virus. Of the population aged 53 and older, 14.0% reported *yes*. For the population aged 60 and older, the percentage was 12.6 percent.

Because this is a longitudinal study, it is possible to know if certain conditions were present prior to COVID-19. Among the population aged 60 and older who had COVID-19, there was a rise in the prevalence of depressive symptoms over time. In 2018, 26.4% of these older adults reported having 5 or more depressive symptoms, whereas the percentage rose to 35.5% in 2021. Among the population aged 60 and older who did-not have COVID-19, 29.3% reported having five or more depressive symptoms in 2018, compared to 26.9% in 2021. Regarding the feeling of loneliness, the population aged 60 and older reporting this feeling in 2018 (35.4%) and who had COVID-19, increased 4.4 percentage points (to 39.8%).

Figure 22
POPULATION AGED 60 AND OLDER IN 2021, ACCORDING TO THEIR REPORT OF LONELINESS AND DEPRESSION IN 2018 AND 2021, BY THEIR COVID-19 STATUS
(Percent)

Note 1: *Loneliness* includes *sometimes or frequently* in at least one of the three loneliness aspects (companionship, left out, and isolated)
Note 2: *Depression* includes *5 or more symptoms* among nine include in the depression questionnaire.
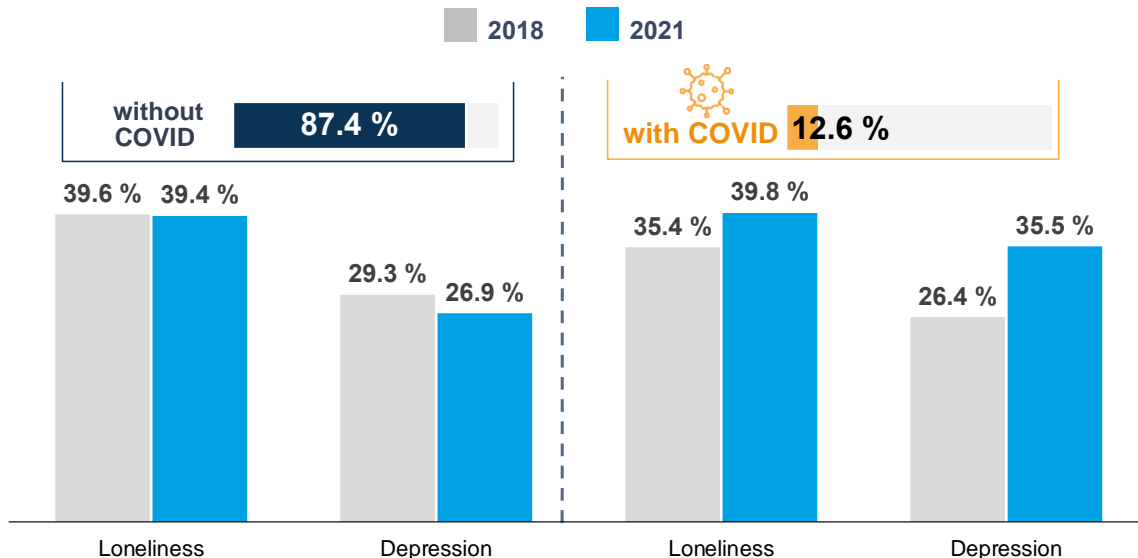Note 3: The graph refers to loneliness and depression, by COVID=19 status.
Source: INEGI. Mexican Health and Aging Study (MHAS), 2018 and 2021, population aged 60 and older.

Of the population aged 53 and older, 2.5% reported that they took care of a sick relative due to COVID-19. On the other hand, 7.4% lost their job, lost income, or experienced another economic setback due to the pandemic.

SURVEY ON COGNITIVE EVALUATION (Mex-Cog) 2021[12]

MAIN RESULTS

The survey was applied to a sub-sample of MHAS 2018. The population aged 58 and older received the exercises for cognitive evaluation. The protocol included also an additional interview with a knowledgeable informant (a relative or care giver) aged 18 years or older who was familiar with the health status, memory, activities, and care received by the older adult.[13]

Cognitive Exercise: Spatial Temporal Orientation

The cognitive evaluation included simple questions to assess the orientation in time and space of older adults: date, day, the time and place where the interview was being conducted. This is because one of the most common signs of cognitive deterioration is memory and orientation los.[14]

Among the Population aged 58 and older, 94.3% reported correctly the *day of the week*, which was the most frequent correct answer. Next were the correct *month* (90.6%) and the *state* of residence (85.7%). The lowest percentages of correct answers were for the numeric *date of the month* with 67.9% and the approximate *time of the interview*, with 67.1 percent.

Table 3
POPULATION AGED 58 AND OLDER BY CORRECT ANSWERS TO QUESTIONS RELATED TO SPATIAL TEMPORAL ORIENTATION
(Percent)

Question	Answer	
	✓ Correct	✗ Incorrect
Day of the week	94.3 %	5.7 %
Month	90.6 %	9.4 %
State of residence	85.7 %	11.6 %
Year	84.5 %	15.5 %
Country of residence	76.6 %	21.0 %
Day of the month	67.9 %	32.1 %
Time of the interview	67.1 %	31.3 %

Note: The time of the interview is considered correct if the target person mentions a
time within 30 minutes of the real time.
Source: Cognitive Evaluation Survey (Mex-Cog) 2021

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[12] The analysis of cognitive impairment implies a detailed review of the responses given in the survey. These are obtained from the combination and interpretation of a series of exercises completed by the target person. The Cognitive Evaluation Survey (Mex-Cog) provides information for researchers and academics to examine cognitive deterioration in the population, identifying prevalence and risk factors. The themes for using the data are ample.
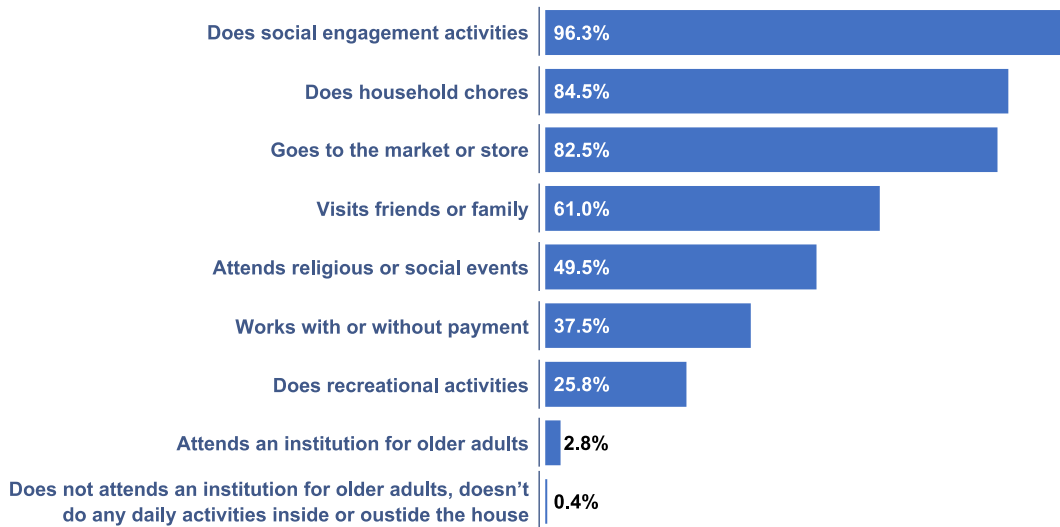[13] For 69.7% of the population aged 58 and older, the informant was a woman; the informant was a man in 30.3% of the cases.
[14] Another sign of cognitive deterioration is to *forget important dates and events*.

Activities performed and changes in variety of activities

The knowledgeable informants reported that the population aged 58 and older have a variety of activities. The majority (96.3%) conduct *social interaction* activities; 84.8% did *household chores* activities, and 82.5% *went to the store or market*. Among the less frequent answers were: *volunteer activities*[15](25.8%) and *attends institutions for older adults* (2.8%).

Figure 23
POPULATION AGED 58 AND OLDER ACCORDING TO ACTIVITIES THEY PERFORM OUTSIDE THE HOME

Activity	Percent
Does social engagement activities	96.3%
Does household chores	84.5%
Goes to the market or store	82.5%
Visits friends or family	61.0%
Attends religious or social events	49.5%
Works with or without payment	37.5%
Does recreational activities	25.8%
Attends an institution for older adults	2.8%
Does not attends an institution for older adults, doesn't do any daily activities inside or oustide the house	0.4%

Source: Cognitive Evaluation Survey (Mex-Cog) 2021

About 51.7% of the population aged 58 and older, over the last 10 years, had stopped several activities they used to perform regularly such as going to the store or market, talk with friends, read the newspaper, or home improvement. The percent of the population showing a decrease in performing regular activities over the last three years was 52.2 percent.

Figure 24
POPULATION AGED 58 AND OLDER ACCORDING TO REDUCED VARIETY OF ACTIVITIES[1/] IN THE LAST TEN AND THREE YEARS
(Percent)

	With decrease	Without decrease
In the last 10 years	51.7 %	48.2 %
In the last 3 years	52.2 %	47.8 %

■ With decrease in the variety activities
■ Without decrease in the variety activities
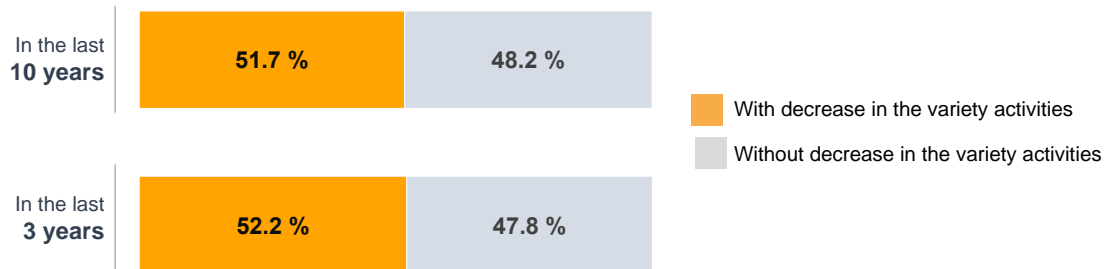
1/   Refers to regular activities like going to the store or market, talk to Friends, read the newspaper or make home improvements.
Source: Cognitive Evaluation Survey (Mex-Cog) 2021

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[15] Activities such as puzzles, crossword puzzles, board games, etcetera.

According to the informants' report, 49.4% of the population aged 58 and older reduced their capacity to perform regular activities in the last 10 years, either because they performed them with *more effort, got tired more quickly, or was slower*. Regarding the changes in the last three years, this percentage of the population increased to 51 percent.

Figure 25
POPULATION AGED 58 YEARS OR OLDER, ACCORDING TO REDUCED ABILITY TO PERFORM ACTIVITIES [1] IN THE LAST 10 AND 3 YEARS
(Percent)

[1]   The regular activities are performed *with more effort*, *gets tired more quickly*, or *is slower*.
Source: Cognitive Evaluation Survey (Mex-Cog) 2021

The change in routines can trigger alterations or confusion among older adults. The informants reported that 13.3% of the population aged 58 and older had difficulty adapting to changes in their routine.
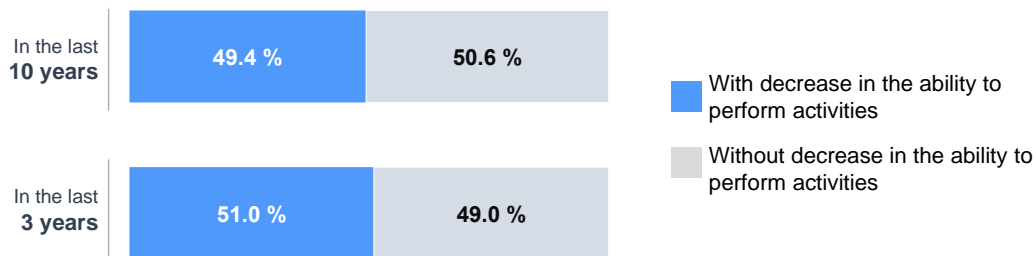
Figure 26
POPULATION AGED 58 AND OLDER ACCORDING TO CURRENT DIFFICULTY ADAPTING TO CHANGES IN ROUTINE
(Percent)
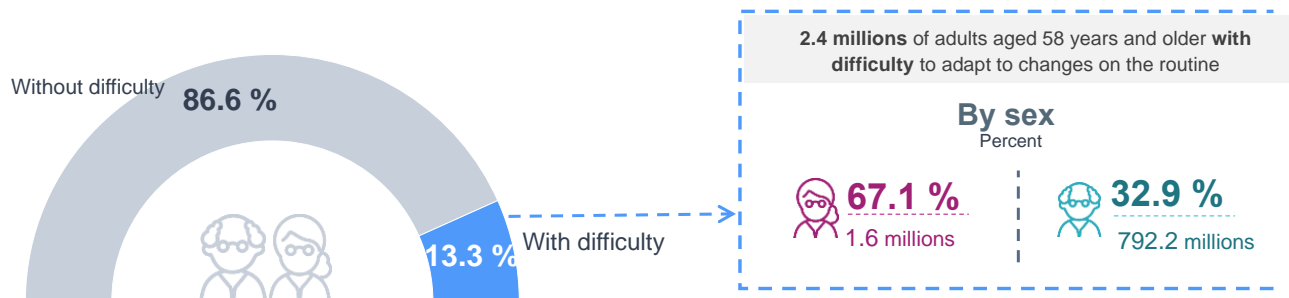
Source: Cognitive Evaluation Survey (Mex-Cog) 2021

Lived experiences during the COVID-19 pandemic

One of the objectives of the survey was to assess the impact of COVID-19 on the population of older adults, as one of the high-risk groups. During the pandemic period, 15.8% of the Population aged 58 and older (2.9 million) *cancelled a medical visit or delayed a surgery*. Among this Population, 80.9% *was unable to obtain a medical appointment*.

Figure 27
POPULATION AGED 58 AND OLDER ACCORDING TO HAVING CANCELLED OR DELAYED A MEDICAL VISIT
(Percent)

2.9 millions of adults 58 years and older with a medical appointment or consult **cancelled or postponed**

Reason for cancellation
Percent

Without cancelation
82.0 %

15.8 % With cancelation

Couldn't get an appointment
80.9 %

Considered that the problem could wait
12.3 %

Other
4.2%

Didn't have enough money
3.1 %
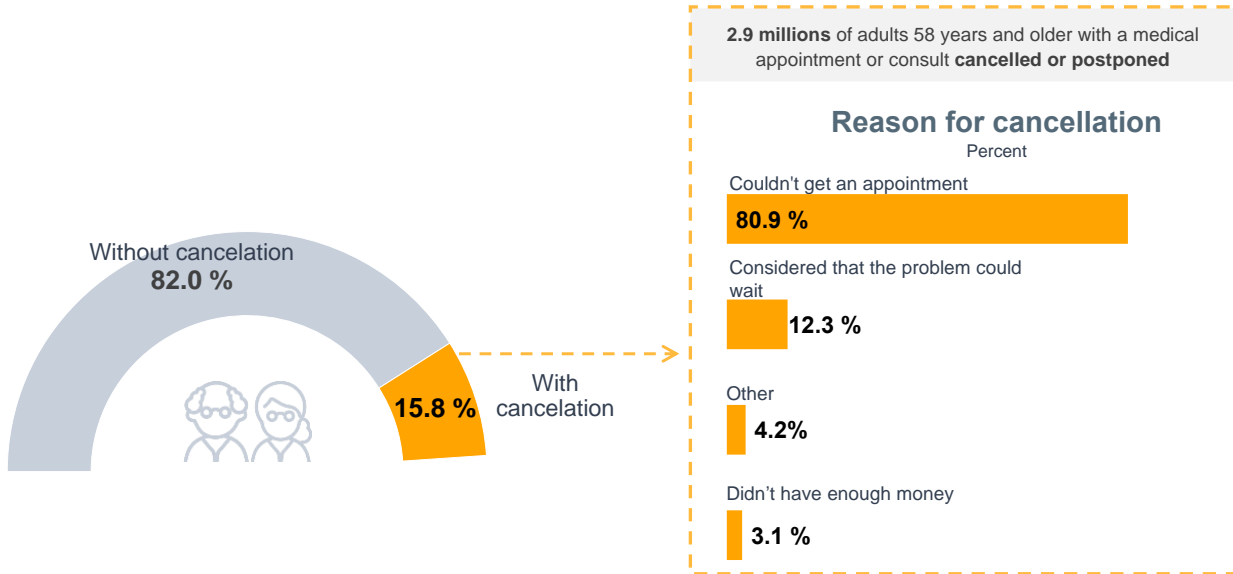
Source: Cognitive Evaluation Survey (Mex-Cog) 2021

Among the population aged 58 and older, 38.8% *received help* from other persons during the COVID-19 pandemic. Of these, 87.1% *received help to purchase food o running errands* and 67.0% *received money or some type of financial help*.

Graph 28
POPULATION AGED 58 AND OLDER ACCORDING TO HELP RECEIVED FROM OTHER PERSONS DURING THE PANDEMIC
(Percent)

7 millions of adults aged 58 years and older **that received support** from other during the pandemic

Type of support received
Percent

Without received support
59.1 %

38.8 % With received support

Help with grocery shopping or running errands
87.1%

Help with money or financial support
67.0%
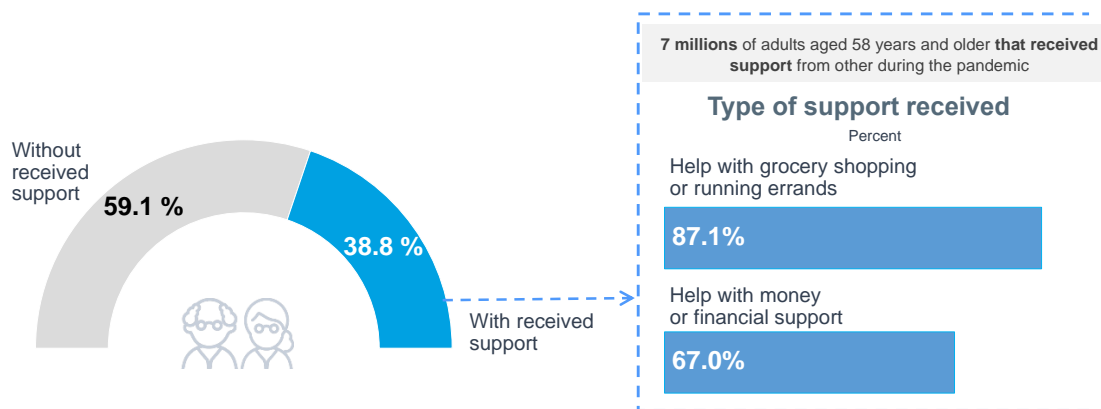
Source: Cognitive Evaluation Survey (Mex-Cog) 2021

Of the study population, 27.6% *gave some type of help*. Of this group, 72.5% *helped with money or some type of financial help* and 64.4% *helped purchasing food or running errands*.

Graph 29
POPULATION AGED 58 AND OLDER ACCORDING TO HELP GIVEN TO OTHERS DUE TO THE PANDEMIC

(Percent)

7 millions of adults aged 58 years and older **that received support** from other during the pandemic

Type of support received
Percent

Helped with grocery shopping or running errands

64.4%

Without support given

70.2 %

27.6 %
With support given

Helped with money or financial support

72.5%
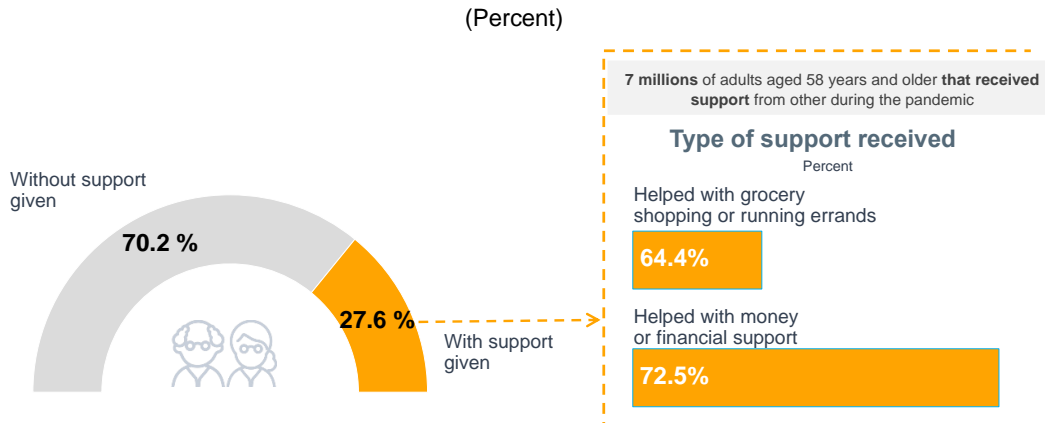
Source: Cognitive Evaluation Survey (Mex-Cog) 2021

The COVID-19 pandemic produced economic difficulties such as *to buy medications, get food, make payments,* among others. Among the Population aged 58 and older, 66.1% reported that they *did-not experience any economic difficulty due to the pandemic, and* 31.6% declared that *t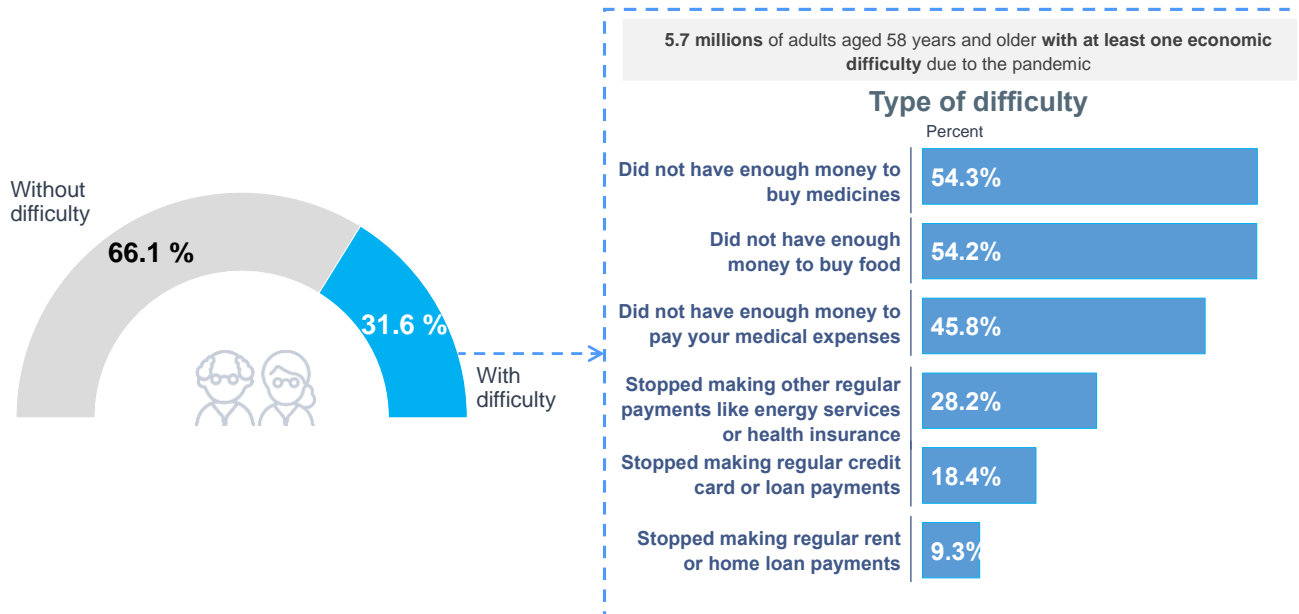hey did have at least one difficulty. Lack of money to buy medications, insufficient money to buy food, and lack of money for medical expenses* were the difficulties most reported, with 54.3, 54.2 y 45.8%, respectively.

Figure 30
POPULATION AGED 58 AND OLDER ACCORDING TO HAVING EXPERIENCED AT LEAST ONE ECONOMIC DIFFICULTY DUE TO THE PANDEMIC
(Percent)

5.7 millions of adults aged 58 years and older **with at least one economic difficulty** due to the pandemic

Type of difficulty
Percent

Did not have enough money to buy medicines — **54.3%**
Did not have enough money to buy food — **54.2%**
Did not have enough money to pay your medical expenses — **45.8%**
Stopped making other regular payments like energy services or health insurance — **28.2%**
Stopped making regular credit card or loan payments — **18.4%**
Stopped making regular rent or home loan payments — **9.3%**

Without difficulty

66.1 %

31.6 %
With difficulty

Source: Cognitive Evaluation Survey (Mex-Cog) 2021

The results from MHAS 2021 and Mex-Cog 2021 offer ample views on the aging process in Mexico. The goal is to provide useful information to academics, institutions, organizations, and society in general, and to contribute to the design of public policies related to aging, health, and functionality of the population of older adults in Mexico.

For media and press consults, write to: comunicacionsocial@inegi.org.mx
Or call (55) 52-78-10-00, exts. 321064, 321134 y 321241

Dirección de Atención a Medios/ Dirección General Adjunta de Comunicación

INEGI Informa

TECHNICAL NOTE OF THE MEXICAN HEALTH AND AGING STUDY,

WAVE 2021

The MHAS is part of a group of international studies that address the topic of aging in more than 30 countries. This implies that the information can be compared across countries in low- middle- and high-income countries, and to conduct research in multiple topics related to aging.

STUDIES THAT ARE COMPARABLE TO THE MEXICAN HEALTH AND AGING STUDY (MHAS) 2021

Note: Studies that are comparable to the MHAS

One feature of these studies is that they observe a variety of changes derived from growing old such as: increase in physical function dependence, reduction of cognitive functions (such as memory, attention, language, among others), financial support derived from various needs, and the emotional support to experience the aging process in a healthy manner. Social interactions is one of the fundamental factors to achieve this, and it may be necessary to make changes within the family and social dynamic, as well as in the family and individual economy, in addition to physical adaptations to dwellings.[16]

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[16] García Quirones Rolando (2019). *Cuba: envejecimiento, dinámica familiar y cuidados.* Disponible en:
https://revistas.uh.cu/novpob/article/view/574/500

General Objective

The objective of the MHAS 2021 is to update the statistical information that was collected in the previous surveys, in 2001, 2003, 2012, 2015 and 2018, about the population aged 50 and older in Mexico. The study allows the examination of the process of aging, the impact of diseases, and limitations to perform activities (regardless of which ones) as well as mortality. The representation of the sample is national as well as urban and rural areas.

Given that the study is longitudinal, the target sample in 2021 comes from MHAS 2018, that is, there was no new sample added in 2021. Thus, the information corresponds to the population aged 53 and older in 2021.

Specific Objectives

Given that MHAS is a longitudinal Survey, it maintains the specific objectives of the previous ones, namely:

- Update the sociodemographic characteristics of the persons under study, who had been previously interviewed, their spouses and other members of their households.
- Obtain demographic data from the selected persons, including fertility, and history of migration and stays in the United States.
- Update or collect information on the sociodemographic characteristics of the target person's non-coresident children and deceased children.
- Collect data on the health status of the target person, the health care services they use, as well as their health care expenditures.
- Apply a series of cognitive exercises so that researchers can determine the status of the memory and mental health of the target persons.
- Obtain information on the parents of the target persons, including if still alive, their frequency of contact, and the help the parents receive.
- Collect data to quantify the amount and type of help that the target persons provide to, and receive from, their children.
- Gather data to determine the physical limitations and the help received by the target persons to perform activities of daily living.
- Obtain information on the work history, activity status, and characteristics of the current employment of the target persons.
- Gather data on the characteristics, ownership status, and estimated value of the dwelling, as well as the services available in it.
- Collect information on the income received from pensions and other income sources including labor, income from and net value of real estate and capital assets.
- Gather information on the experiences lived by the target persons during the COVID-19 pandemic, including foregone medical treatment, job loss, or difficulty getting health care.

INEGI

Methodological characteristics of MHAS 2021

Type of study:
Longitudinal, with six waves of data collection to date: 2001, 2003, 2012, 2015, 2018 and 2021

Unit of observation:
Persons selected in the MHAS surveys in 2001, 2012 and 2018, their spouse or partner and new partners that were recruited for the study during these surveys.

Geographic coverage:
National, and community size urban - rural

Target population:
Women and men aged 50 and older

Data collection method
Direct interview in person through a survey questionnaire applied with an electronic device, and a paper booklet with cognitive exercises.
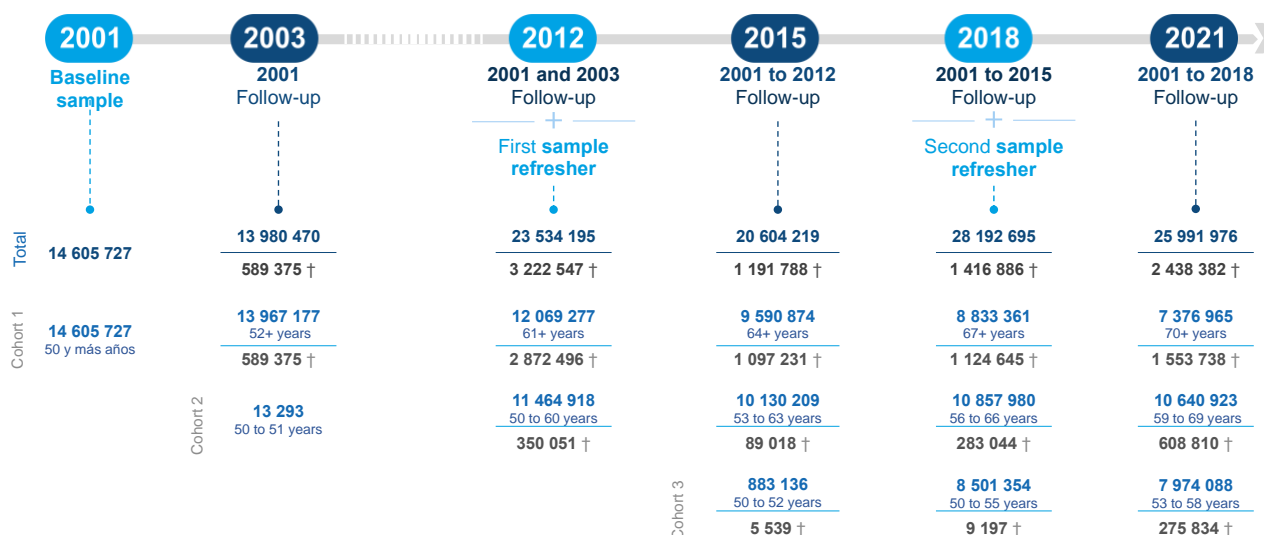
Sample size
15 257 persons

Fieldwork period
From November 29, 2021 to January 28, 2022

Timeline of the MHAS

In 2001, the effective sample of MHAS was 13 463 persons aged 50 and older. New sample of the population aged 50 to 60 years old was added in 2012, and new sample of ages 50 to 55 years old was added in 2018.

	2001	2003	2012	2015	2018	2021
	Baseline sample	2001 Follow-up	2001 and 2003 Follow-up + First **sample refresher**	2001 to 2012 Follow-up	2001 to 2015 Follow-up + Second **sample refresher**	2001 to 2018 Follow-up
Total	14 605 727	13 980 470 / 589 375 †	23 534 195 / 3 222 547 †	20 604 219 / 1 191 788 †	28 192 695 / 1 416 886 †	25 991 976 / 2 438 382 †
Cohort 1	14 605 727 50 y más años	13 967 177 52+ years / 589 375 †	12 069 277 61+ years / 2 872 496 †	9 590 874 64+ years / 1 097 231 †	8 833 361 67+ years / 1 124 645 †	7 376 965 70+ years / 1 553 738 †
Cohort 2		13 293 50 to 51 years	11 464 918 50 to 60 years / 350 051 †	10 130 209 53 to 63 years / 89 018 †	10 857 980 56 to 66 years / 283 044 †	10 640 923 59 to 69 years / 608 810 †
Cohort 3				883 136 50 to 52 years / 5 539 †	8 501 354 50 to 55 years / 9 197 †	7 974 088 53 to 58 years / 275 834 †

Study subjects or target persons

Persons aged 50 and older were selected in 2001, 2012, or 2018, as well as their spouse or partner (regardless of age), as well as persons that are added as new spouses or partners in any of the surveys (2001, 2003, 2012, 2015, 2018 and 2021).

Thus, there are two types of study subjects:

- Follow-up: Study persons that were interviewed in any of the previous surveys (from 2001 to 2018).
- New spouse or partner: Any person who is a spouse or partner of a follow-up person, and whose union was first detected during the 2021 survey.

Data collection instruments

Determine the type of questionnaire to be applied to each study subject.	Collect information on study subjects. This includes cognitive exercises in paper.	Collect information on the deceased study subjects, through an adequate informant.	Obtain information on the study subject who is unable to complete the interview directly due to a disability, unable to speak Spanish, or temporarily absent, through an adequate informant.
Questionnaire with introductory questions	**Basic Questionnaire**	**Questionnaire on the deceased person**	**Questionnaire through proxy or adequate informant**

Description of Survey instruments

Introductory Questions

The goal of this instrument is to collect or update general information on the study subject, such as survival status, current address, marital status, and address of the spouse or partner. This is targeted to an adequate informant who resides in the dwelling or to the person identified as the study subject.

Basic Questionnaire

This instrument collects information through a direct interview with the selected person (the study subject). It contains two rosters on the household residents (one for follow-up interviews and one for the new person interviews), a format for first interview (control sheet), a control of interview, 11 sections, a segment for future contact information, and another format for the second interview in cases where there is a couple in the household.

Booklet with cognitive exercises

This booklet is also known as «Section E» and contains a series of cognitive exercises complementing the cognitive section of the Basic Questionnaire. This instrument includes exercises that require writing, drawing, or similar activities completed on paper. The goal is to evaluate cognitive ability of the study subjects. This instrument is less detailed than the one used for the Cognitive Evaluation Survey that was completed in 2021.

Questionnaire for the Proxy or Adequate Informant

This instrument collects information on the study subject through another person who can provide the information when the study subject is unable to respond or is temporarily absent. The topics are the same as those in the basic questionnaire but excludes questions in which the

answers could be biased if the study subject does not reply directly, for example those that require personal appreciation or perception.

Principal topics

SOCIODEMOGRAPHIC CHARACTERISTICS
- Information on the study subject
- Information on children

DWELLING
- Characteristics of the dwelling

MIGRATION
- Migration history

ECONOMIC INFORMATION
- Work history
- Income, pensions, assets value
- Help given and received

PHYSICAL AND MENTAL HEALTH
- Health measures
- Current diseases
- Functionality status
- Depressive symptoms
- Satisfaction with life
- Cognitive function
- COVID-19

LIFE STYLE AND TIME USE
- Tobacco consumption
- Alcohol consumption
- Physical activity
- Time use activities

Relevance of the study

The theoretical foundations for the study of health and aging among persons aged 50 and older in Mexico are guided by international organizations such as the World Health Organization (WHO), the United Nations Economic Commission (UNECE), and the Economic Commission for Latin America and the Caribbean (CEPAL). The MHAS study takes these are references to measure the health and well-being of this group of the population.

Similarly, the MHAS follows a protocol that is comparable to sister studies around the world, adapted to the Mexican context. Since 2001, the study has been comparable across the MHAS surveys over time, but also has evolved incorporating substantive areas of study in the field of population aging.
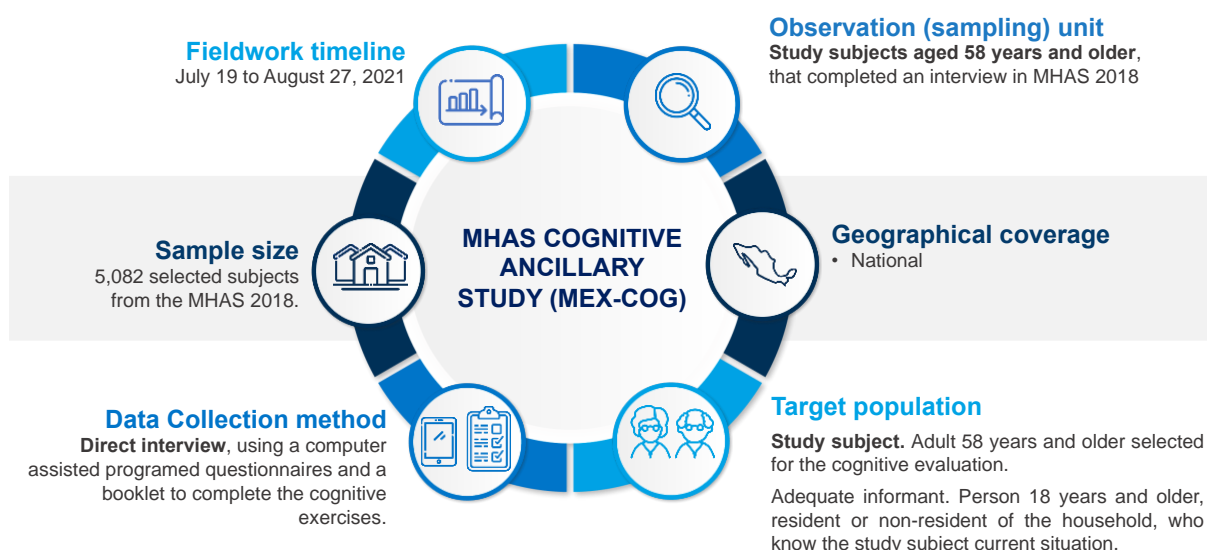
As has been mentioned, MHAS is an international project, a longitudinal survey and interdisciplinary:

- **International**, as it uses survey instruments and protocols that are similar to the ones used in other countries, such that the data are consistent and comparable. The survey instruments are adapted to the Mexican context.

- **Longitudinal**, as the study interviews the same participants over time. This allows for comparison of the information on the same person longitudinally and observe changes responding to certain situations. In addition, this feature facilitates the measurement of causal effects.

- **Interdisciplinary**, because the survey instruments cover multiple themes, obtaining a global vision of the situation of the study subjects as well as the interaction among different themes, which are often studies separately.

TECHNICAL NOTE OF THE COGNITIVE EVALUATION SURVEY (Mex-Cog) 2021

Using the sample of MHAS 2018, in addition to the fieldwork for MHAS 2021, the Cognitive Evaluation Survey (Mex-Cog) was completed from July 19 to August 27 of 2021. This Survey collected information on the cognitive function of the Population aged 58 and older in Mexico. The information will allow investigators to identify the determinants and risk factors of cognitive deterioration. With this information, it is possible to measure the prevalence of dementia and cognitive deterioration in this populations. The previous (first) survey in this program is the «Study on Cognitive Aging (Mex-Cog) that UTMB and the National Institute of Public Health conducted in 2016. This previous Mex-Cog included sample in eight states and persons aged 55 and older.

Methodological Characteristics

Fieldwork timeline
July 19 to August 27, 2021

Observation (sampling) unit
Study subjects aged **58 years and older**, that completed an interview in MHAS 2018

Sample size
5,082 selected subjects from the MHAS 2018.

MHAS COGNITIVE ANCILLARY STUDY (MEX-COG)

Geographical coverage
• National

Data Collection method
Direct interview, using a computer assisted programed questionnaires and a booklet to complete the cognitive exercises.

Target population
Study subject. Adult 58 years and older selected for the cognitive evaluation.

Adequate informant. Person 18 years and older, resident or non-resident of the household, who know the study subject current situation.
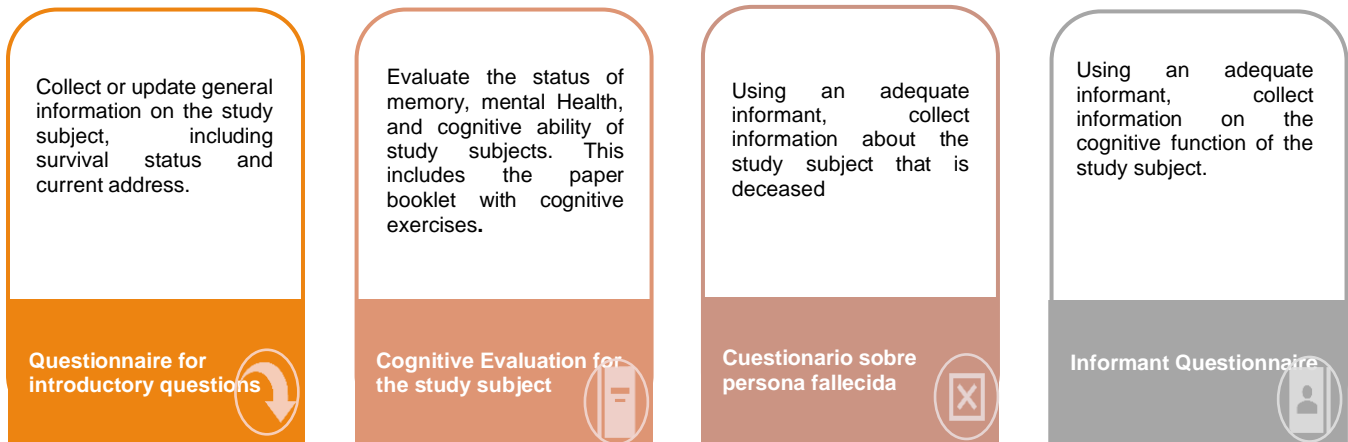
General Objective

The goal of the Mex-Cog 2021 is to estimate the prevalence and the risk factors for dementia and other cognitive deterioration among older adults aged 58 and older in Mexico. The study seeks to make comparisons with other similar studies in the world.

Specific objectives

• Contribute to the harmonization in the global study of dementia.

- Provide information to estimate the prevalence of dementia and cognitive deterioration in Mexico. This will be done with information, strategies, and methods that are comparable with other countries.

- Apply a series of cognitive exercises that allow the determination of cognitive status in the study population.

- Obtain information from an adequate informant on the cognitive status of the selected person, if still alive or deceased.

- Obtain information to complete future studies on Alzheimer's and other dementias.

- Collect data on the diverse situations experienced by the study population during the COVID-19 pandemic.

Survey Instruments

Collect or update general information on the study subject, including survival status and current address.	Evaluate the status of memory, mental Health, and cognitive ability of study subjects. This includes the paper booklet with cognitive exercises.	Using an adequate informant, collect information about the study subject that is deceased	Using an adequate informant, collect information on the cognitive function of the study subject.
Questionnaire for introductory questions	**Cognitive Evaluation for the study subject**	**Cuestionario sobre persona fallecida**	**Informant Questionnaire**

Description of the questionnaires

The Cognitive Evaluation Survey is a study with special characteristics. It is different from other surveys applied in households because of the topics and the unique methodology (from other comparable studies but adapted to the Mexican Population). In addition, because of its longitudinal nature, the study follows the subjects over time. The instruments are described next.

Questionnaire for introductory questions

The goal of this instrument is to gather or update general information of the study subject, such as survival status, current address, and if there was a temporary or permanent change of residence.

Cognitive evaluation of the study subject

The goal is to evaluate the cognitive status of the adult selected for the study, such as memory,

mental health, cognitive abilities, in addition to physical functional abilities. The instrument contains 22 sections. These include exercises to measure functional limitations, emotional status, and cognitive ability. There is also a section on the perception of the interviewer regarding how difficult it was for the older adult to complete the exercises. The last section collects information to identify the ideal person to complete the informant questionnaire.

Booklet with cognitive exercises

The booklet contains tasks or exercises that are part of the cognitive evaluation of the study subject. These activities are completed on paper because they involve marking, drawing, or copying objects.

Questionnaire for the informant of the study subject

The goa is to capture the perception of another person, who is familiar with the study subject, regarding the health and function status, as well as behavior of the study subject. This questionnaire includes nine sections and 68 questions. It was designed to know, in the opinion of the informant, aspects such as the extent of cognitive and physical deterioration of the study subject, to identify if mental and behavioral alterations are evident, if personal care is required, if the study subject participates in activities with other adults, in routine household activities, and if the subject is independent or dependent to perform activities outside of the household. A section collects information on situations that affected the study subject during the COVID-19 pandemic, in case this information was not gathered in the cognitive evaluation questionnaire due to problems to obtain a direct interview with the study subject.

Questionnaire on a deceased participant

This instrument was designed to collect information on the study subject who was part of the study in the past but is now reported as having died since the last visit by the MHAS study. The questionnaire gathers information on the deceased through an interview with a next-of-kin, a person familiar with the last months of life of the study subject.

The goal is to determine the study subject's physical, emotional, and cognitive Health during the last year of life. Among other topics, the information includes the cause of death.

Types of informant

There were four types of informant in this study:

- Adequate informant. Person aged 18 or older who may or may not be a resident of the dwelling and is familiar with the current situation of the study subject (address and survival status). This person receives the questionnaire with introductory questions.

- Study subject. Person aged 58 and older, selected to receive the cognitive evaluation for study subjects.

- Informant of the study subject. Person aged 18 or older who has frequent contact or has a close relationship with the study subject, and knows the health status, memory, activities performed and care that is needed. The person may or may not be a resident of the study subject's household.

- Informant on a deceased study subject. Person aged 18 or older (a family member or responsible for the subject) who had frequent contact with the subject prior to death and provides information on the personal situation, health and function status, and cause of the death of the deceased.