

Overview on Higher Education in Cuba

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Cuba and USA: Some comparisons



Cuba and USA: Population

	Cuba	USA	Cuba / US ratio
Population (a)	11,210,064	321,463,494	3 %
Area in km² (b)	109,884	9,826,675	1 %
Density of population inh./km²	102.0	32.7	312 %

(a) Cuban population in 2013 (ONE) and US population in 2015 (Wikipedia)

(b) Cuba by ONE and US by Wikipedia

Cuba and USA: Economy

	Cuba	USA	Cuba / US ratio
GNP in Millions US\$	82,775 (65 th)	17,348,072 (2 nd)	0.5 %
GNP per inhabitant in US\$	7,274 (86 th)	54,306 (12 th)	13.4 %
Agriculture in GNP	4.0 %	1.1 %	
Industry in GNP	20.8 %	19.1 %	
Services in GNP	75.2 %	79.7 %	

Wikipedia according UNO including the European Union as a country, 2016

Cuba and USA: Religion

Religion (Wikipedia, 2016)	Cuba	USA	Cuba / US ratio
Christian	59 %	71 %	0.83
Others	17 %	6 %	2.83
Non-affiliated	23 %	23 %	1.00

Cuba and USA: Ethnics

Ethnics	Cuba	USA	Cuba / US ratio
“White”	64 %	78 %	0.82
“Black”	9 %	13 %	0.69
Others	27 %	9 %	3.00

USA data from Wikipedia (2016). It uses to classify ethnics as white, African – American and others. Cuba’s census of 2012 reports by skin color as white, black and mulatto.

Cuba: Genes

Cuban population genetics was well studied for medical purposes

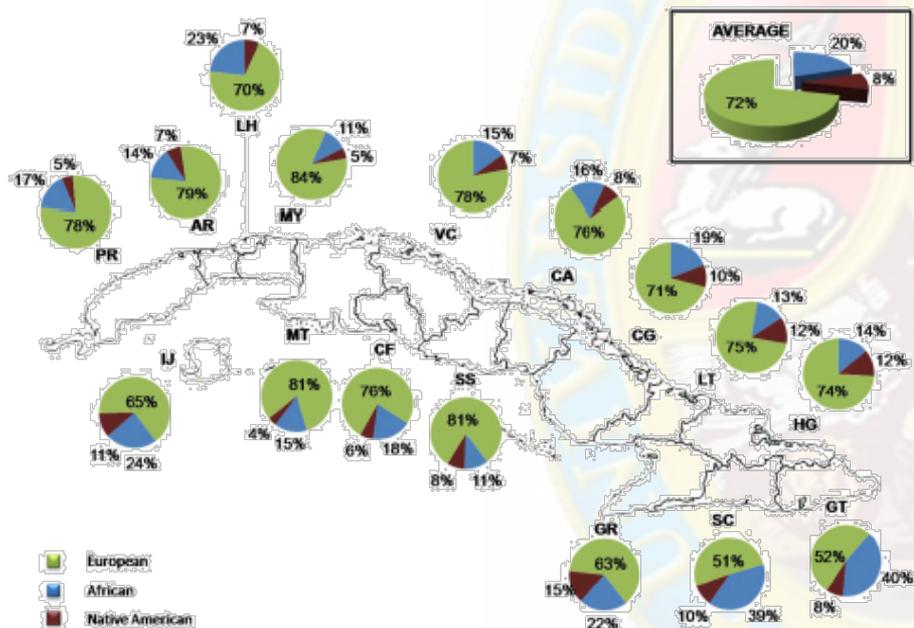


Figure 1. Distribution of ancestral contributions in the total sample and stratified by province as inferred from autosomal AIMs.
doi:10.1371/journal.pgen.1004488.g001

Marcheco-Teruel, B.; Parra, E. J.; Fuentes-Smith, E.; Salas, A.; Buttenschøn, H. N.; Demontis, D.; Torres-Español, M.; Marín-Padrón, L. C.; Gómez-Cabezas, E. J.; Álvarez-Iglesias, V.; Mosquera-Miguel, A.; Martínez-Fuentes, A.; Carracedo, Á.; Børglum, A. D.; Mors, O., Cuba: Exploring the History of Admixture and the Genetic Basis of Pigmentation Using Autosomal and Uniparental Markers. *PLoS Genetics* 2014, 10 (7), e1004488.

Cuba: Genes

Racial classification according skin color vs. genes

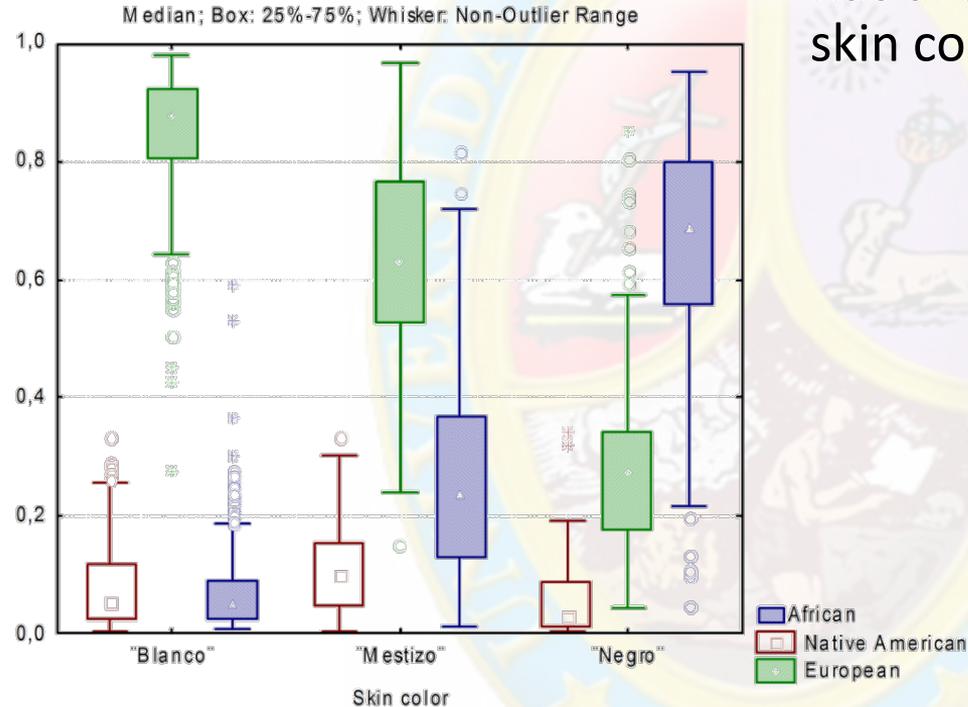


Figure 3. Distribution of individual ancestry proportions stratified by census categories.
doi:10.1371/journal.pgen.1004488.g003

Marcheco-Teruel, B.; Parra, E. J.; Fuentes-Smith, E.; Salas, A.; Buttenschøn, H. N.; Demontis, D.; Torres-Español, M.; Marín-Padrón, L. C.; Gómez-Cabezas, E. J.; Álvarez-Iglesias, V.; Mosquera-Miguel, A.; Martínez-Fuentes, A.; Carracedo, Á.; Børglum, A. D.; Mors, O., Cuba: Exploring the History of Admixture and the Genetic Basis of Pigmentation Using Autosomal and Uniparental Markers. *PLoS Genetics* 2014, 10 (7), e1004488.

Cuba in the world: Production of knowledge

Science and technology documents produced in 1996 - 2015

Rank	Country	Docs.	Citable docs.	Citations	Self-Citations	Citations per Doc.	H index
1	United States	9360233	8456050	202750565	94596521	21.66	1783
2	China	4076414	4017123	24175067	13297607	5.93	563
3	United Kingdom	2624530	2272675	50790508	11763338	19.35	1099
4	Germany	2365108	2207765	40951616	10294248	17.31	961
5	Japan	2212636	2133326	30436114	8352578	13.76	797
15	Brazil	669280	639527	5998898	2007696	8.96	412
29	Mexico	232828	221611	2305554	469296	9.9	316
37	Argentina	159172	150927	1965624	405797	12.35	300
45	Chile	101841	97250	1203308	226651	11.82	257
50	Colombia	60402	57407	468135	69810	7.75	186
59	Venezuela	33780	32445	321006	40277	9.5	166
60	Cuba	31690	30382	202503	38512	6.39	127

Scimago Journal and Country Rank, 2016

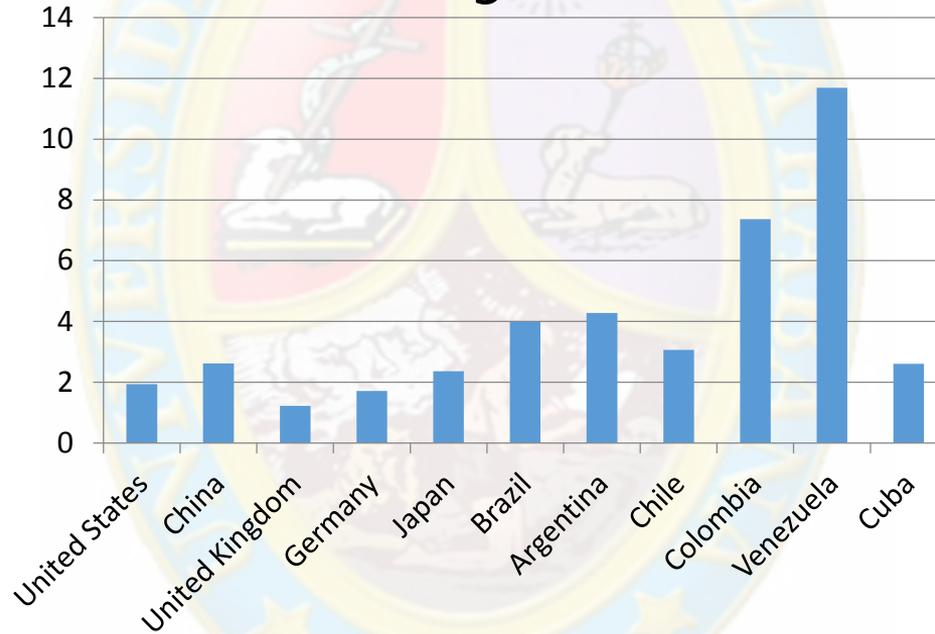
(<http://www.scimagoir.com/countryrank.php>)

Cuba: Recent history of knowledge production in Cuba

Year	World Rank	Year	World Rank
2015	72	2008	60
2014	60	2007	58
2013	64	2006	57
2012	64	2005	58
2011	63	2004	59
2010	65	2000	52
2009	59	1996	55

Scimago Journal and Country Rank, 2016
(<http://www.scimagojr.com/countryrank.php?year=2015>)

Cuba and USA: A view of social efficiency of knowledge



Y = Millions of US\$ of 2013's GNP per Scimago's document in 1996 - 2014

Cuba and USA: Some remarks

- **Population, wealthy and land area** of Cuba and USA are overwhelmingly **different** in favor of the later, prevailing asymmetry in these factors.
- **Being services based economies, Cuban figures are smaller than those in US.**
- **Culture and ethnics** are both products of merging several roots worldwide, mostly European and African.
- Cuba's **social efficiency of knowledge production** is similar to that of the best performing countries.



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- **Quiet social environment.**



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- **Economics: High potential for recovering and optimizing sugar cane production, well provided natural ores of nickel, zeolites and other minerals, expectations for oil and gas production (nowadays covering half of necessities), express government will for foreign investment and diversifying the economy.**



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- **A SERVICES BASED ECONOMY**



The current scenario: Con's



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- Economic hardship: US embargo and obsolete local economic management.
- Aged population. Important emigration of qualified manpower. Small immigration numbers.
- Underexploited agriculture.
- Obsolete infrastructure and quality, in general, for most industrial and service activities.
- Poor and aged transportation and communication facilities: services are not covering social and economic needs.
- Low penetration of newest communication technologies in society.
- Very underdeveloped internal market.

Cuban Researchers Abroad

	Tertiary Educated Migrants	Scientists & Engineers	Occupation in S&T
U.S.	307 541 (2)	64 000 (2) 20.8 %	~8900 (2) 2.9 %
Europe	17 535 (1)	3 500 (e) 20.0 %	490 (e) 2.8 %

(1) Docquier et al (2009) International migration by educational attainment [OECD database]

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(e) Estimated value

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Some 14 % of the Cuban population is abroad (around 2,000,000), 16% of them with tertiary education as got in Cuba. It is about 23 % of contemporary Cubans with higher education

Cuban Higher Education*



* Most data taken from "Prontuario MES 2015-16", Ministerio de Educación Superior, La Habana, 2016



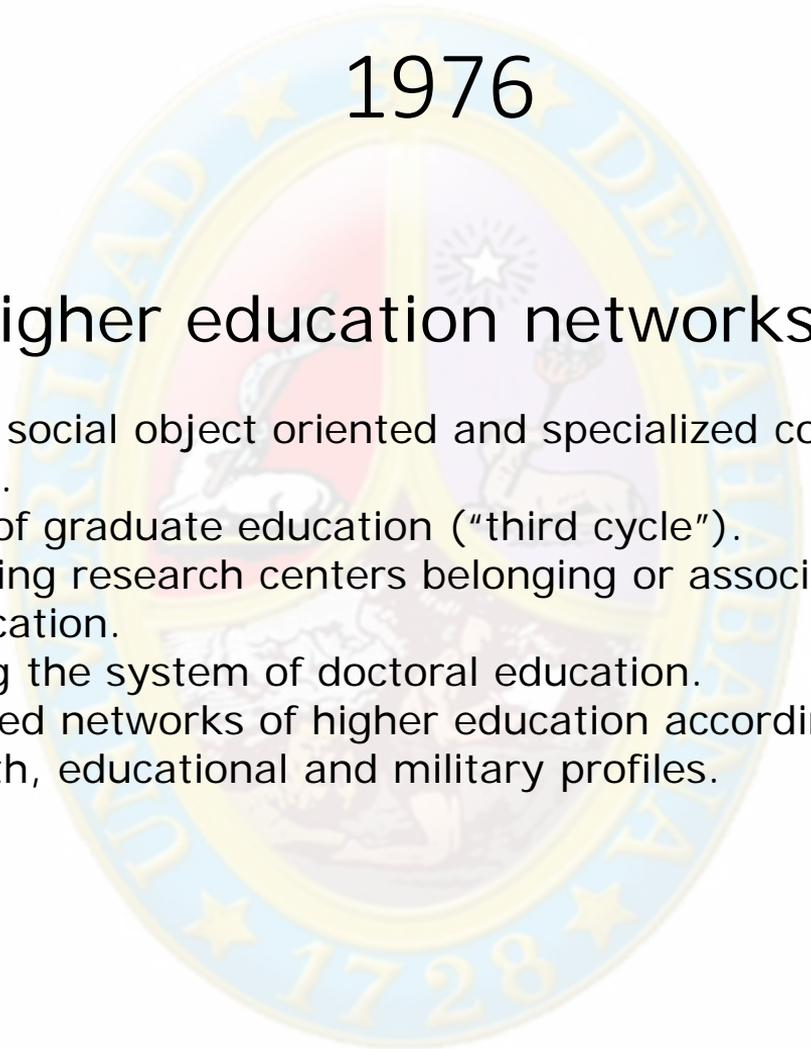
1959

- ✓ **Public universities:** 3
- ✓ **Private colleges:** 3
- ✓ **Students:** 2,063
- ✓ **Teaching staff:** 203
- ✓ **Population with college education:** ~25,000

1962

“Reforma Universitaria”

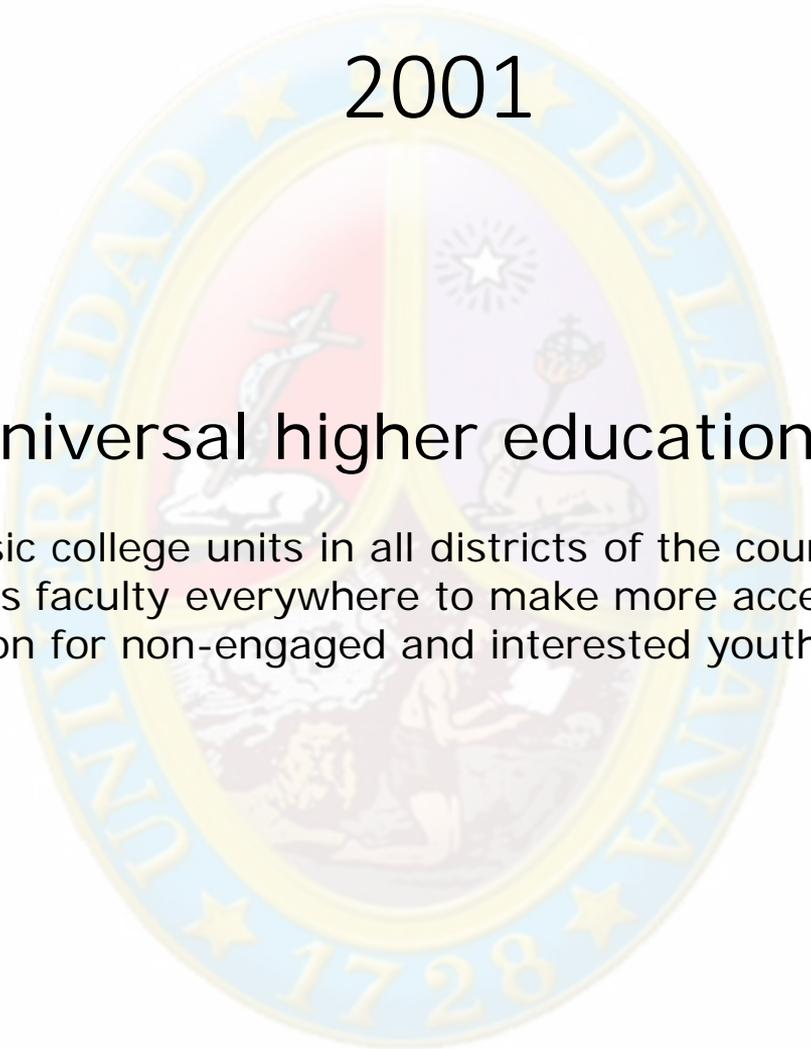
- a) To educate professionals in number and qualities to fulfil the nation’s demand.
- b) To organize and spread science and humanity studies.
- c) To do science, create an environment of research in faculty, and collaborate with scientific and technological institutions in external organizations.
- d) To complete a cultural, moral, political and physical education and training of students in order to attain citizens showing the highest qualities and also availability to serve their homeland and the humanity, with the necessary efficiency, disinterest and self-renunciation.
- e) To contribute for improving the culture of all Cubans by a social extension of higher education and culture.
- f) To promote scientific and cultural exchange of Cuba among all other countries in the world.



1976

Higher education networks

- a) Creation of social object oriented and specialized colleges and universities.
- b) Promotion of graduate education ("third cycle").
- c) Strengthening research centers belonging or associated to higher education.
- d) Establishing the system of doctoral education.
- e) Differentiated networks of higher education according general, public health, educational and military profiles.



2001

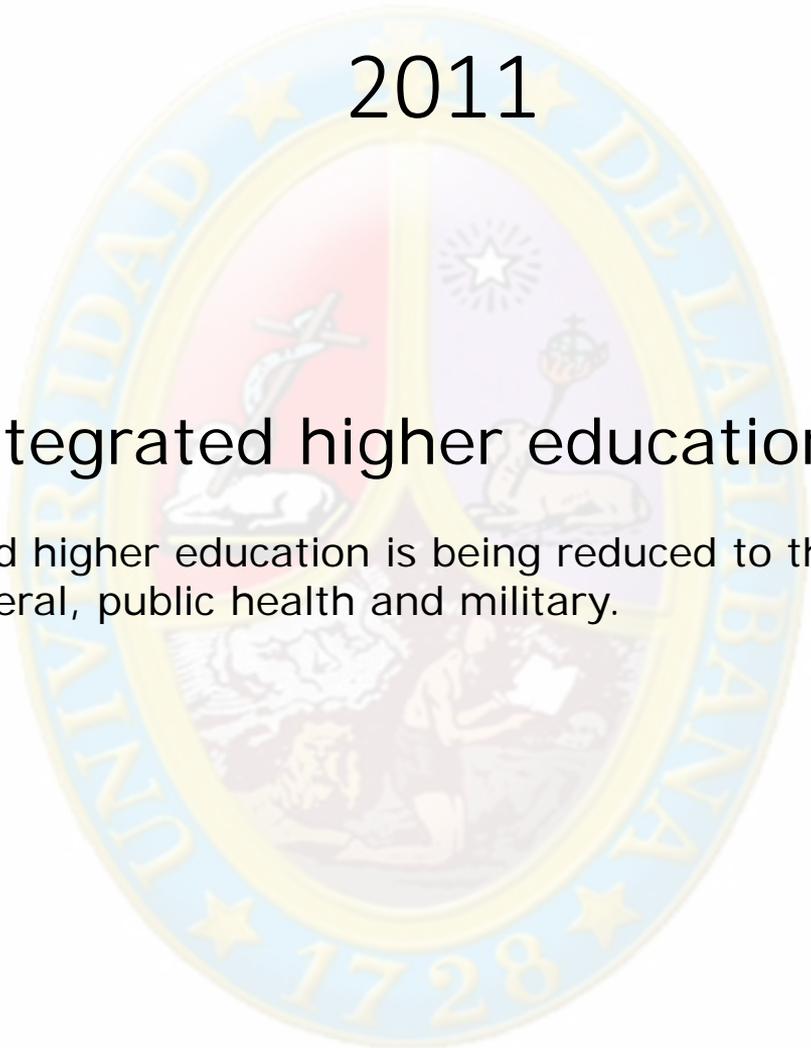
Universal higher education

Creation of basic college units in all districts of the country joining professionals as faculty everywhere to make more accessible higher education for non-engaged and interested youth and adults

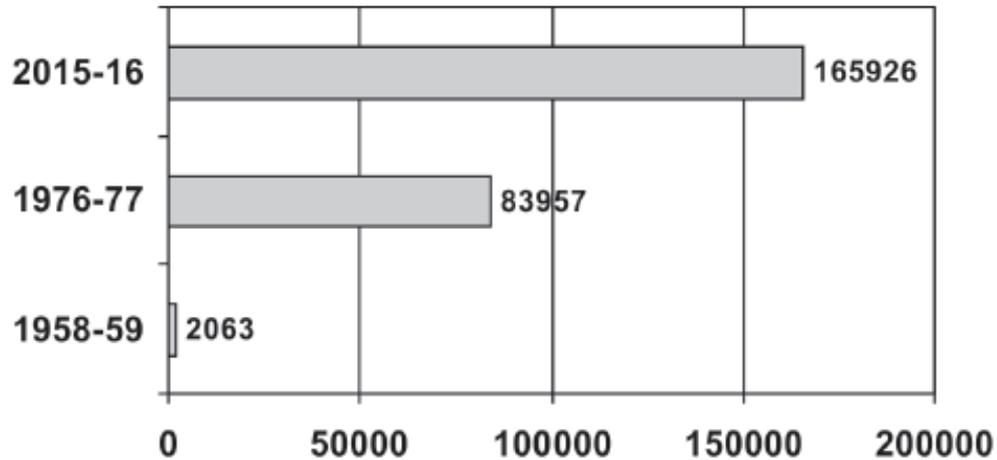
2011

Integrated higher education

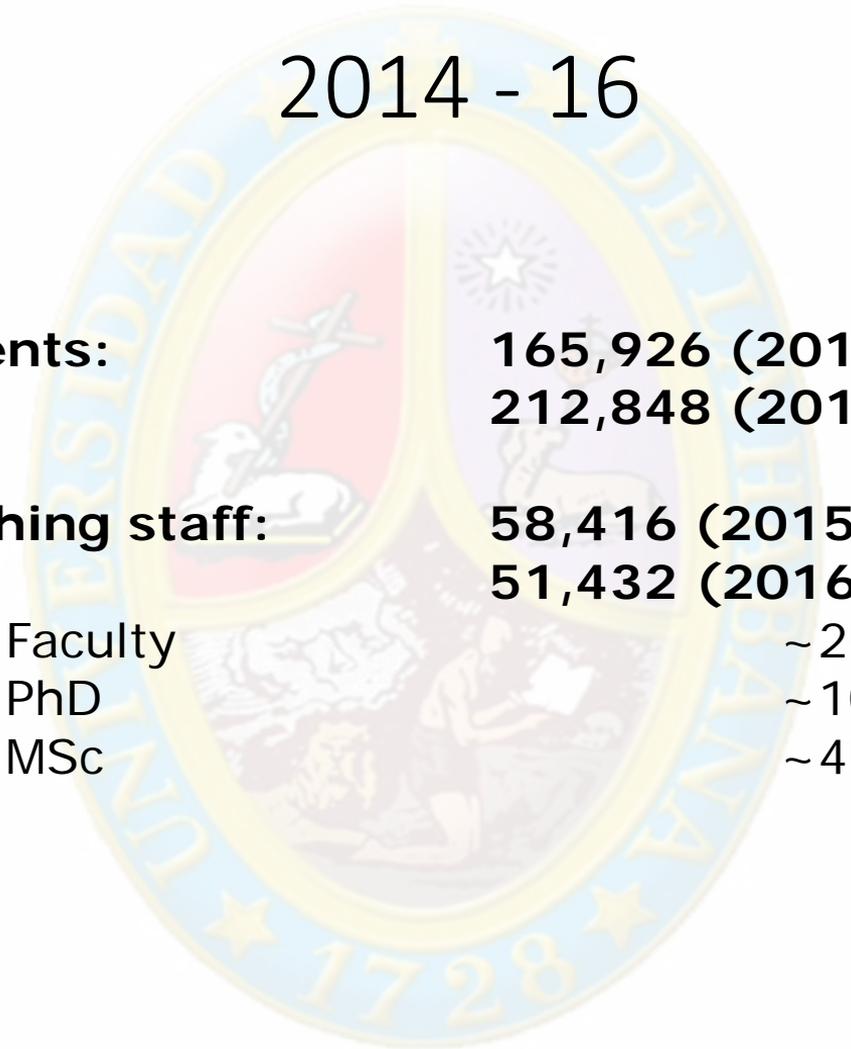
Too fragmented higher education is being reduced to three main networks: general, public health and military.



Undergraduate students



2014 - 16



✓ Students:	165,926 (2015-16)
	212,848 (2016-17)
✓ Teaching staff:	58,416 (2015-16)
	51,432 (2016-17)
Faculty	~ 25%
PhD	~ 10%
MSc	~ 45%

1959 - 2015

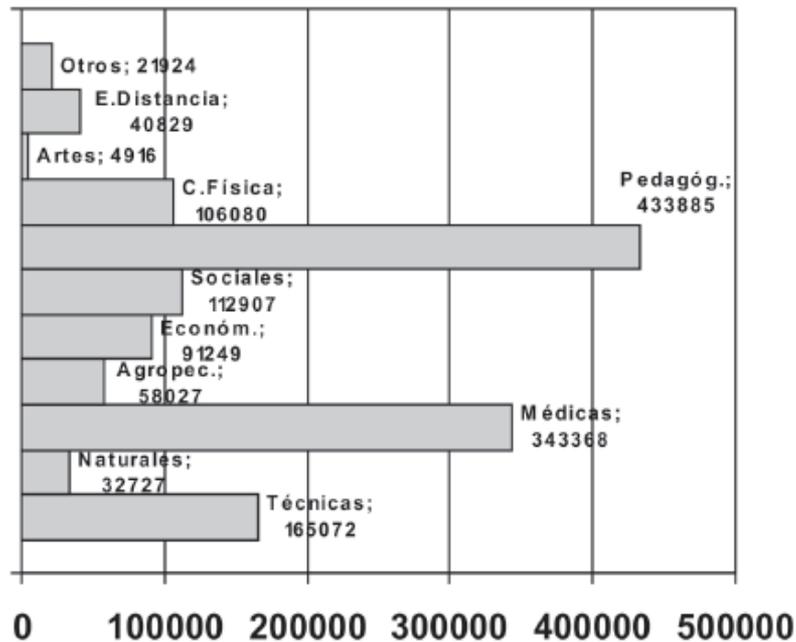
Graduate output of Cuban higher education

Total graduate output (1959-2015):

1,410,984

Of them, foreigners:

54,680



1961 - 2015

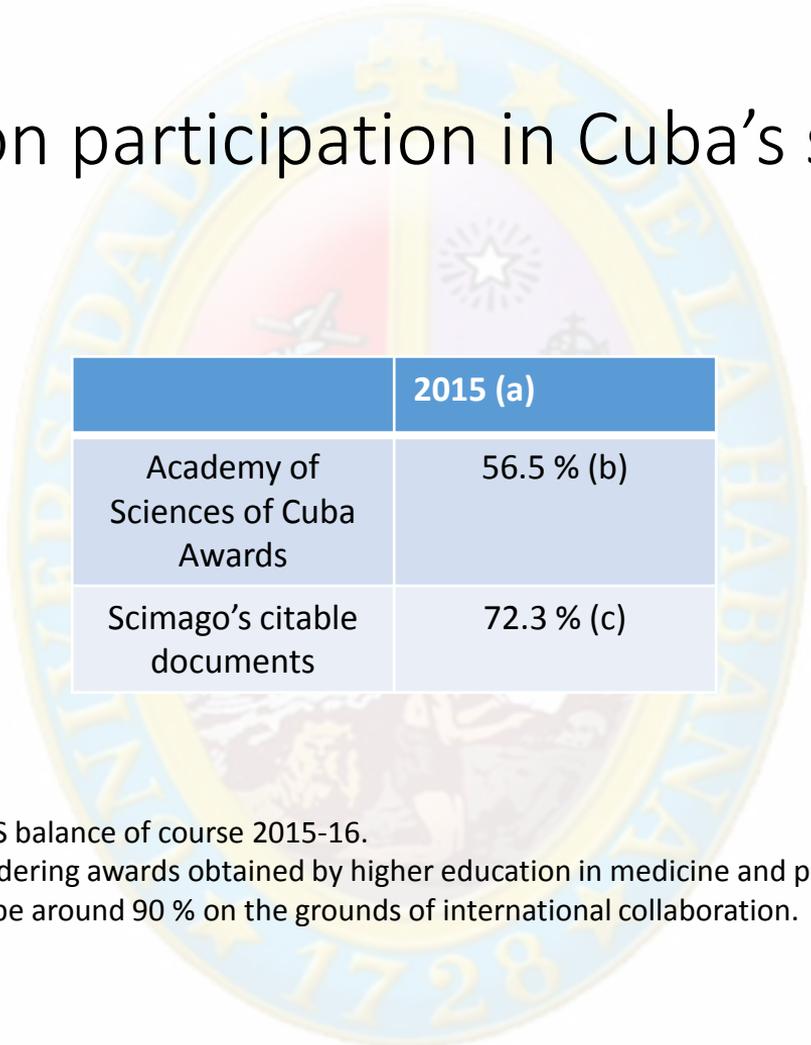
Foreign graduates in Cuban higher education by region

Region	graduates
Sub Saharan Africa	25485
Latin America	7371
Caribbean	15405
Northern Africa and Middle East	2180
Asia	3871
Europe	139
North America	229
TOTAL	54680

The seal of the University of Havana is a large, semi-transparent watermark in the background. It is an oval emblem with a blue outer ring containing the text 'UNIVERSIDAD DE LA HABANA' and the year '1728'. The inner part of the seal is divided into four quadrants: top-left (red) with a white figure, top-right (purple) with a white starburst, bottom-left (white) with a black figure, and bottom-right (purple) with a white crown.

**Cuban higher education and
the national system of
innovation**

Higher education participation in Cuba's science output



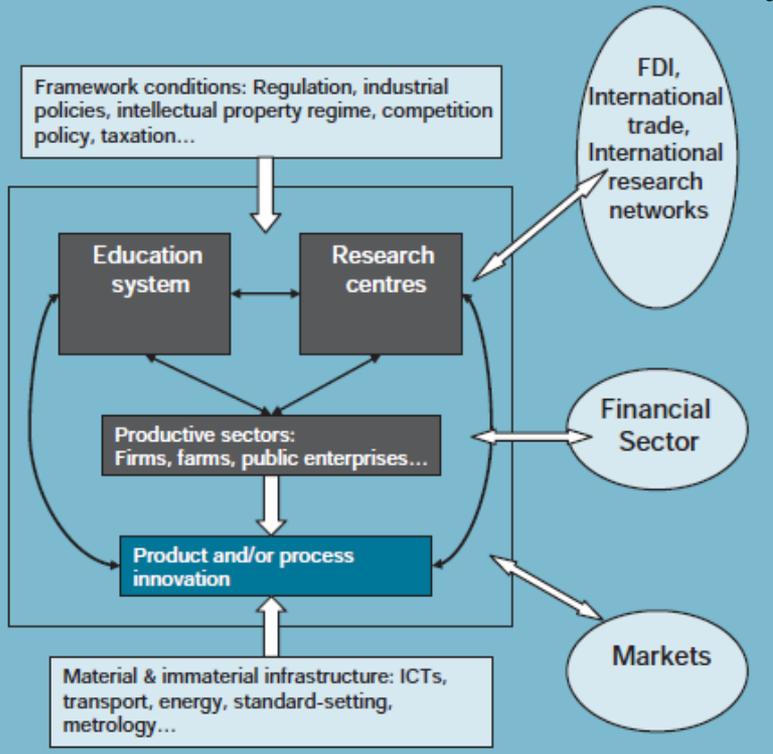
	2015 (a)
Academy of Sciences of Cuba Awards	56.5 % (b)
Scimago's citable documents	72.3 % (c)

(a) From the MES balance of course 2015-16.

(b) It is not considering awards obtained by higher education in medicine and public health.

(c) Estimated to be around 90 % on the grounds of international collaboration.

A schematic diagram of a national system of innovation



Pro's:

- All systems and external conditions are present and alive
- Higher education continues producing fine and well prepared human power
- Social will and commitment with science, education and knowledge appears strong

Con's:

- All links are weak, requiring encouraging.
- An effective regulatory environment is still pending
- Outdated economic management

The seal of the University of Havana is a large, semi-transparent watermark in the background. It is an oval emblem with a blue border containing the text 'UNIVERSIDAD DE LA HABANA' and the year '1728'. The central shield is divided into four quadrants: top-left (red) with a white dove, top-right (purple) with a white star, bottom-left (white) with a black eagle, and bottom-right (white) with a black figure holding a book. A crown is positioned above the shield.

What we have and what we need

We have...

- A system of higher education reaching all regions and persons in the country with fully free tuition and life support for all regular undergraduate students.
- A good standard quality of teaching contents with rigorous student's grading.
- Most careers requiring original diploma thesis to get done.
- Science and general knowledge creation as part of the system's guiding policy, also required to evaluate faculty performance.
- The biggest scientific potential in Cuba.

We need...

- To renew faculty for balancing aging and migrations.
- A powerful program for PhD promotions.
- Very big investments to improve and update teaching and science infrastructure all across the country.
- An improved economic and regulatory framework to promote innovative interactions with the social and entrepreneurial environment.
- A modern and efficient participation in the national and world global communication network.
- To regularize cooperation with the international environment that has been largely biased by a very long term blockade of USA.

The guiding policy is an innovative university

“Se trabaja en un conjunto de nuevas transformaciones con el propósito de sintonizar cada vez mejor nuestra educación superior a las necesidades y exigencias de la sociedad cubana. Para ello **se requiere una universidad innovadora**, que enfatiza la necesidad de construir instituciones capaces de transformarse permanentemente, aptas para atender los grandes desafíos de nuestro tiempo y nuestras sociedades; y también las expectativas de sus profesores, estudiantes, trabajadores y directivos.”

Conclusiones del Informe de Balance del MES de 2015. La Habana, 2016.

“New transformations are being carried out to better synchronize our higher education to the requirements of the Cuban society. For that, **an innovative university is required** emphasizing the need to construct institutions able to be permanently transforming, able to take care of the important challenges of our times and our society, and also the expectations of faculty, students, all other workers and dignitaries.”

Conclusions of the Inform of Results of the Cuban Ministry of Higher Education of 2015. Havana, 2016.

Thank you!

