The construction of the minimum wage and nutrition in Mexico in the early 20th century ❧

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> "La fijación de un salario mínimo vital puede no ser, como ya se habrá ido viendo, cosa de capricho, de cálculo, "a ojo de buen cubero". Hay bases bastantes en qué apoyarse para establecerlo de un modo científico"[1].
>
> Francisco Zamora, 1933

Abstract. Objective/Context: This article follows some of the debates around the creation of the minimum wage mandate in Mexico during the 1930s. I focus on how different actors used science to justify their demands, especially the need to use physiological and nutritional information to know the population's requirements. As a result, the heterogeneous way to fix the wages at the local (municipal) level changed with the proclamation of a federal mandate in the 1930s, using the most recent cost of living surveys, which included the nutritional requirements for the workers. **Methodology**: Following the methods used by the history of science, this article gives a panoramic view of the problems that existed before the federal minimum wage mandate and concerning the use of science as a legitimizing tool of the post-revolutionary state**. Originality**: This article makes a brief historical reconstruction of the minimum wage in the 1930s, and its federalization, which is absent from historiography, and proposes to articulate the history of science and its influence on economic and social accounts. **Conclusions**: This article shows how political and social projects—like the definition of a minimum wage—depended on science to obtain authority and, in turn, how these social projects provided inputs for the construction of specialized scientific lines of research.

Keywords: cost of living, Mexico, Minimum wage, nutrition, science, statistics.

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1 "The setting of a minimum living wage may not be, as we have been seeing, a matter of whim, of calculation, 'by eyeball measurement'. There are sufficient grounds on which to base it to establish it in a scientific way." Francisco Zamora, *El salario mínimo* (México, D. F.: Talleres Gráficos de la Nación, 1933), 17. All translations by the author.

La construcción del salario mínimo y la nutrición en México a principios del siglo XX

Resumen.Objetivo/Contexto: este artículo analiza algunos de los debates alrededor de la creación del decreto del salario mínimo en México durante la década de 1930. Se observa cómo distintos actores usaron la ciencia para justificar sus demandas, especialmente la necesidad de utilizar información fisiológica y nutricional para conocer los requerimientos de la población. Como resultado, la heterodoxa forma de fijar los salarios a nivel municipal cambió en la década de 1930, con la proclamación de un decreto federal que usó las encuestas más recientes, que incluían los requerimientos nutricionales de los obreros. **Metodología:** siguiendo los métodos de la historia de la ciencia, el artículo ofrece una mirada panorámica de los problemas previos al decreto federal de salario mínimo y concernientes al uso de la ciencia como una herramienta que dio legitimidad al Estado posrevolucionario mexicano. **Originalidad**: Se ofrece una breve reconstrucción histórica sobre el salario mínimo durante la década de 1930 y su federalización, ausentes en la historiografía. Asimismo, el análisis propone articular la historia de la ciencia y su influencia con los recuentos económicos y sociales. **Conclusiones:** El artículo muestra cómo los proyectos políticos y sociales — como la definición de un salario mínimo — dependieron de la ciencia para obtener autoridad y, a su vez, cómo los proyectos sociales proporcionaron insumos para la construcción de líneas de investigación científicas especializadas.

Palabras clave: ciencia, estadísticas, nutrición, México, salario mínimo.

A construção do salário-mínimo e a nutrição

Resumo. Objetivo/Contexto: neste artigo, são analisados alguns dos debates sobre a criação do decreto do salário-mínimo no México durante a década de 1930. É observado como diferentes atores usaram a ciência para justificar suas demandas, especialmente a necessidade de utilizar informação fisiológica e nutricional para conhecer os requisitos da população. Como resultado, a heterodoxa forma de estabelecer os salários no âmbito municipal mudou na década de 1930, com a proclamação de um decreto federal que usou as pesquisas mais recentes, que incluíam os requisitos nutricionais dos operários. **Metodologia**: seguindo os métodos da história da ciência, este artigo oferece uma visão panorâmica dos problemas prévios ao decreto federal de salário-mínimo e concernentes ao uso da ciência como ferramenta que deu legitimidade ao Estado pós-revolucionário mexicano. **Originalidade:** é oferecida uma breve reconstrução histórica sobre o salário-mínimo durante a década de 1930 e sua federalização, ausentes na historiografia. Além disso, a análise propõe articular a história da ciência e sua influência com as recontagens econômica e social. **Conclusões:** neste artigo, é mostrado como os projetos políticos e sociais — como a definição de um salário-mínimo — dependeram da ciência para obter autoridade e, por sua vez, como os projetos sociais proporcionaram insumos para construir linhas de pesquisa científicas especializadas.

Palavras-chave: ciência, custo de vida, estatísticas, nutrição, México, salário-mínimo.

Introduction

The first institution that specialized in nutrition science in Mexico was the National Institute of Nutriology (INNu). Created in 1943, this organization was tasked with determining "the real, quantitative state" of the Mexican population's nutrition.[2] To this end, it conducted surveys and statistical studies. By the 1950s, it had carried out more than a thousand analyses of local foods. It had also been the Rockefeller Foundation's collaborator and partner in the early years of the Green Revolution, producing data relevant to public health, food production and distribution. Several works have pointed out how the institutionalization of nutrition science in Mexico in the 1940s

2 "Editorial. Importancia de los estudios nutriológicos," *Nutriología. Publicación del Instituto Nacional de Nutriología* 1, n.º 2 (1952): 54.

resulted from local projects that aimed to know the physiology and diet of the Mexican population and the composition of the local foods. Also, those local interests were interlaced with global anxieties that emerged since the 1930s, such as the concern that the poor nutritional status of the population could lead to another international conflagration. To avoid this possibility, there was a global effort to standardize techniques and practices on how to classify, understand, quantify, and solve nutritional problems and the dietary needs of the population.[3]

All these trends contributed to the consolidation of nutrition science in Mexico. However, one aspect has not been explored in depth: the impact of the social and political activism of the 1930s that used the available —though scarce and mostly received from international sources—knowledge about the nutritional status of the population and that emerged nearly one decade before the institutionalization of nutrition science in Mexico. For example, the data on the food requirements of the Mexican population was deemed necessary to know how to improve the health and productivity of the workers. Such information was considered crucial to settle the disputes around a minimum wage mandate.[4] This article reconstructs some of the political and economic debates surrounding setting the minimum wage at the national level in the 1930s. It analyzes how nutritional knowledge was used to settle the existing controversies, which, in turn, exhibited the need for more specialized data about local conditions, thus promoting the creation of the institutions of the late 1930s and 1940s. By focusing on the history of the minimum wage, this article explores new avenues of inquiry for the history of science in Mexico and its articulation with the period's political, economic, and social history.

The aim is, first, to explore how wages varied locally and how economists, government officials and union representatives debated the creation of a national minimum wage in the 1930s. Using history of science methods, I examine how political and social actors used scientific expertise to promote a minimum wage mandate. Secondly, I follow how statistical and nutritional knowledge was deployed to establish the population's needs and produce the technical data required to create consensus around wages. To do so, I understand the *minimum wage* as an statistical object that

3 Armando Solórzano, "La influencia de la Fundación Rockefeller en la conformación de la profesión médica mexicana, 1921-1949", *Revista Mexicana de Sociología* 58, n.º 1 (1996): 173–203, https://doi.org/10.2307/3541030; Juan Pío Martínez, "La ciencia de la nutrición y el control social en México en la primera mitad del siglo xx", *Relaciones*, n.º 133 (2013): 225–55; Joel Vargas Domínguez, "Entre la nación y el mundo: la nutrición en México en la Conferencia de las Naciones Unidas sobre alimentación de 1943," in *Cuestión social, políticas sociales y construcción del Estado Social en América Latina en los siglos xix y xx*, edited by Mario Barbosa Cruz and Fernando Remedi (México, DF; Córdoba, Argentina: Universidad Autónoma Metropolitana-Cuajimalpa; Centro de Estudios Históricos Carlos Segreti, 2014), 175–92; Joel Vargas Domínguez, "Conexiones internacionales en fisiología, eugenesia y nutrición: las investigaciones sobre el metabolismo otomí en el México posrevolucionario," *Ludus Vitalis xxiii*, n.º 43 (2015): 83–104; Joel Vargas Domínguez, "El auge y declive del Instituto Nacional de Nutriología de México y su proyecto de nutrición social de 1943 a 1956," *Historia Mexicana* lxix, n.º 2 (2019): 511–49.

4 This article does not try to reconstruct the population's diets, but the use of nutritional requirements as justification for raising wages and its use as a neutral way to fix a minimum wage. The translation of requirements into diets is beyond the scope of this article.

was politically and socially disputed.[5] In this way, the minimum wage is analyzed as co-produced by scientific expertise and society.[6] This perspective contributes to science and economic history in articulating seemingly disconnected social demands to create a minimum wage with the use of science as a producer of neutral and objective information to sustain those demands, showing how science is a political and social tool.

In the 1920s and 1930s, wages or *jornales* in Mexico varied vastly between regions, urban and rural settings, industries and skilled to non-skilled labor, and depended on the available workforce. For example, rural wages paid in some municipalities in Tlaxcala central Mexico, were remunerated partly in money and part in corn; in Oaxaca (south of the country), wages were different between pineapple and banana pickers, while in some northern states of Mexico, like Baja California, the wages were higher than in the rest of the nation.[7] Implementing a "minimum" level of remuneration was established in 1917's Constitution but proved highly problematic for public administrators and was fiercely rejected by employers. The political and social climate of postrevolutionary Mexico was complicated due to struggles between the revolutionary *caudillos* and the increasing unionization of workers, both urban and rural, who went on strike demanding better conditions. These unions were

5 The history of statistics has focused on the origin of probabilistic thinking, and on the nature of the objects that are created with it. It has also analyzed how these studies shaped the discipline as new tools were developed. On Latin America's history of these practices, several studies have been written that give an account of the existing traditions in its countries, showing the circulation of knowledge since the 19th century. However, most of these studies have focused on population's measurement through censuses, or their role in consolidating public discourses about race; and some recover the statistics produced as mere data, disregarding the context of their production. This article assumes that statistically produced objects and those depending on them are actively produced and vary over time. Therefore, we analyze them as objects historically and socially linked to their production contexts. The cost of living and the minimum wage show these characteristics, and this analysis reviews part of their construction. Some historical analysis are Theodore M. Porter, "Quantification and the Accounting Ideal in Science," in *The Science Studies Reader*, vol. 22, edited by Mario Biagioli (New York: Routledge, 1999), 394–406 and *Trust in numbers : the pursuit of objectivity in science and public life* (Princeton, N.J.: Princeton University Press, 1995), 394–406; Ian Hacking, *The taming of chance* (Cambridge (England); New York: Cambridge University Press, 1990); Alain Desrosières, *The politics of large numbers: a history of statistical reasoning* (Cambridge, Mass: Harvard University Press, 1998); Jesús Bustamante García, Laura Giraudo, and Leticia Mayer Celis, *La novedad estadística: Cuantificar, cualificar y transformar las poblaciones en Europa y América Latina, siglos XIX y XX* (Madrid: Ediciones Polifemo, 2014); Laura Cházaro García, "Portraits for an Exhibition: The Making of a Statistical Culture for Public Life in Mexico During the Time of the *Dirección General de Estadística*, 1882–1922," in *Socio-Political Histories of Latin American Statistics*, edited by Cecilia T. Lanata-Briones, Andrés Estefane, and Claudia Jorgelina Daniel, (Cham, Switzerland: Palgrave Macmillan, 2022), 89-122; Laura Cházaro García, "Imágenes de la población mexicana: Descripciones, frecuencias y cálculos estadísticos," *Relaciones* 22, n.º 88 (2001): 15–48; Ana María Medeles Hernández, "El pensamiento estadístico, un instrumento de medición en México en el siglo XIX," in *Em associação das Américas, as estatísticas públicas como objeto de estudo*, edited by Cesar Vaz de Carvalho Junior *et al*., (Salvador Bahía: SEI, 2011), 243–56; Ana María Medeles Hernández, "Medición y población a finales del siglo XIX. Estadísticas electorales" (Master's thesis, Graduate Program on Philosophy of Science, UNAM, 2011); Claudia Agostoni, Andrés Ríos Molina and Gabriela Villareal Levy, *Las estadísticas de salud en México: ideas, actores e instituciones, 1810-2010* (México: Universidad Nacional Autónoma de México and Secretaría de Salud, 2010).

6 Similar processes were produced on other relevant elements needed to fix a minimum, such as minimum clothing and housing. These histories are still open lines of research. For the co-production of knowledge, see Sheila Jasanoff, *States of knowledge: the co-production of science and social order* (London: Routledge, 2004).

7 Departamento del Trabajo Oficina de Previsión Social, *El Problema del Salario Mínimo en 1936* (México, D.F.: Departamento del Trabajo Oficina de Previsión Social, 1936), 15–16. Comisión Nacional del Salario Mínimo, *Mejores salarios significan prosperidad en todos los órdenes: Memoria de la Comisión Nacional del Salario Mínimo.* (México, D.F.: Comisión Nacional del Salario Mínimo, 1934).

sometimes in dialogue and sometimes in confrontation with federal and local governments. Such tensions prompted the need to improve social programs and propelled a federal mandate to fix and regulate a minimum wage.

By 1933, setting a minimum wage for the Mexican workers was at the top of the public debate, with voices asking for the intervention of the federal government and the union leaders demanding better wages. Newspaper articles sympathetic to the government argued that the minimum wage could no longer be determined "a ojo de buen cubero" —which we can translate as "eyeball measurement." Instead, they stated that it should be scientifically determined, and that this should be done as soon as possible. This contest occurred under the mandate of Abelardo L. Rodríguez, who substituted as president after the resignation of Pascual Ortíz Rubio in 1932.[8] Press coverage contributed to the public discussion on the need to have a clearly defined minimum wage at a national level and not to continue with large regional and local wage variations. President Rodríguez, an advocate of productivity and industrialization, had invested in technical studies to guide his infrastructural projects whilst governor of Baja California and as a Secretary of Commerce. For him, reaching a consensus and setting the basis for a minimum wage was another technical problem to be solved.[9]

There was at least one point of agreement among supporters and opponents of the minimum wage: science had to be used to determine it. In the common language of the period, "Science," comprised statistics, economics, physiology, medicine and other expert knowledges that provided information concerning the population's cost of living, which included the knowledge about diets and their costs, that better wages could improve. Scientific experts provided a reflection of the realities that needed to be measured, classified, and intervened. With this, science was used as a tool to solve the political, social, and economic debates on determining the minimum wage:

> "There are sufficient grounds on which to establish it in a scientific manner, beyond the domestic quarrels between the bosses, who would like [...] the owners of the labor force to be patriotically content to be half-naked and half-starved; and the workers who would like to conquer, by way of a minimum wage, a day's wage capable of guaranteeing them a petit-bourgeois 'comfort,' to which they are undoubtedly entitled, but which the totality of wage-earners will not be able to attain as long as the present system of production subsists."[10]

Under this view, science was considered as a tool that was above ideologies, class struggles, civil unrest and free of party affiliations. A "neutral" solution that economists, politicians, unionists, employers, and employees could all use to support their views on the minimum wage.

Recent historiography deals with the question of what were the roles of nutritional knowledge, experts, and practices, in the development of the 20th century social and political history.

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8 A common phrase in Spanish used to express the measure of things using subjective estimations.

9 See, for example, the geological studies he funded while governor of the Northern territory of Baja California in: Comisión Nacional del Salario Mínimo, *Mejores salarios significan prosperidad en todos los órdenes,* III.

10 "Hay bases bastantes en que apoyarse para establecerlo [el salario mínimo] de un modo científico, por encima de las pugnas domésticas entre los patrones, que desearían [...] que los poseedores de la fuerza de trabajo se conformaran patrioticamente con ir semidesnudos y medio muertos de hambre; y los obreros que quisieran conquistar, a título de salario mínimo, un jornal capaz de garantizarles un "confort" pequeño burgués, al que sin duda tienen derecho, pero que la totalidad de los asalariados no podrá alcanzar mientras subsista el presente sistema de producción." Zamora, *El salario mínimo*, 17.

Historians have shown how the quantification of diets and food, by the measurement of calories, proteins carbohydrates and lipids, was crucial to problematize old concepts like hunger and even to create international realities around the standardization of practices, legislation and administration of the food production and distribution.[11] Food indeed became an international problem that science could solve. Not only was the food intervened, but also the individual and social bodies became problematic. Science was responsible for showing the minimum requirements to fulfill the population's needs, providing "normal" standards to compare its current situation. Its methods were considered essential tools to improve living conditions, provide adequate nutrition and keep bodies productive.[12] The problem had to be solved at different levels, and local initiatives had to be deployed at the national level to raise the numeric indicators of welfare policies.

In Latin America, recent historiography has produced substantial analysis of food as a historical assemblage of politics, economics, social, scientific and material practices, not only discourses.[13] For example, the work of Stefan Pohl-Valero for the case of Colombia articulates how scientists in the early 20th century used food, energy requirements and productivity to explain and control the food and bodies of the Colombian population.[14] In Brazil, nutritional knowledge was also a key player in the creation of minimum wage legislation, which only could be consolidated until the arrival of the dictatorship in 1938 since it had previously been blocked by the employers.[15] In the Chilean context, surveys were conducted to know the nutritional status of the population and so to measure its living cost and to produce public policies around food.[16]

In Mexico, there were similar explorations and interventions in the population's diet, with some particularities, since this was formulated in a convulsive political and social context after the Revolution. Statisticians and economists produced surveys, a compilation of food data,

11 Nick Cullather, "The Foreign Policy of the Calorie", *The American Historical Review* 112, n.º 2 (2007): 337–64; James Vernon, *Hunger, a modern history* (Cambridge, Mass; London, England: The Belknap Press of Harvard University Press, 2007).

12 Charlotte Biltekoff, *Eating right in America: the cultural politics of food and health* (Durham: Duke University Press, 2013); Josep Luis Barona, *The Problem of Nutrition: Experimental Science, Public Health and Economy in Europe 1914-1945* (Brussels: Peter Lang, 2010).

13 See the introduction of Pohl-Valero and Vargas Domínguez, *El hambre de los otros. Ciencia y políticas alimentarias en Latinoamérica, siglos xx y xxi*, edited by Stefan Pohl-Valero and Joel Vargas Domínguez (Bogotá, Colombia: Universidad del Rosario, 2021).

14 Stefan Pohl-Valero, "'La raza entra por la boca': Energy, Diet and Eugenics in Colombia, 1890-1940", *Hispanic American Historical Review* 94, n.º 3 (2014): 455–86; and "Alimentación, raza, productividad y desarrollo. Entre problemas sociales nacionales y políticas nutricionales internacionales, Colombia, 1890-1950", in *Aproximaciones a lo local y lo global: América Latina en la historia de la ciencia contemporánea*, edited by Edna María Suárez Díaz and Gisela Mateos (Ciudad de México: Centro de Estudios Filosóficos, Políticos y Sociales Vicente Lombardo Toledano, 2016), 115–54.

15 Sören Brinkmann, "Un matrimonio malogrado: políticas de alimentación y agricultura en la 'era Vargas', 1930-1945", in Pohl-Valero and Vargas Domínguez (eds.), *El hambre de los otros,* 169-94.

16 Juan Carlos Yáñez Andrade, "Cuando los médicos hablaron de economía: familia, salario y alimentación en Chile (1930-1950)", *América Latina en la historia económica* 26 (2019), 1-22; "El Primer Congreso de Alimentación Popular (Valparaíso, 1931). Debates y Propuestas", in *Gobernar es alimentar. Discursos, legislación y políticas de alimentación popular. Chile, 1900-1950*, edited by Juan Carlos Yáñez Andrade (Valparaíso: América en Movimiento Editorial; Centro de Investigación en Innovación, Desarrollo Económico y Políticas Sociales, 2018), 39–52; "La encuesta como método de estudio del estado nutricional de la población. El caso de los trabajadores municipales de Santiago de Chile (1936)", *Perspectivas en Nutrición Humana* 20, n.º 2 (2018): 205–14, doi https://doi.org/10.17533/udea.penh.v20n2a07.

gathering information about local diets. Meanwhile, increasing medical interest in the physiology of the local population made nutrition a hot topic in the 1920s and 1930s. Since the *Porfiriato*, medical and scientific elites had used science to legitimize their projects; and after the civil war, new social actors, such as workers' representatives or trade unionists, also made use of science to defend their demands.[17] This compilation of data was produced at a time when ideas of racial and class segregation were justified under the conceptual umbrella of eugenics, whose principles were little disputed among the medical and scientific communities of the period since they saw as urgent the need to improve "backward" populations, like the indigenous groups, peasants and the poor, to calm down social unrest. However, it was not clearly defined what they were trying to measure, if diets, bodies, prices, or a mix of all of this, and most importantly, there was no consensus on how to measure it.

The insights provided by historians of nutrition science interrogate the processes of quantification and measurement of food and bodies. They show us that scientific concepts such as caloric and nutrient requirements should not be understood as ahistorical, raising new questions about how science was used in social and political policies at a particular point in history.[18] During these concepts' development, a series of questions, contingent at the moment, required an answer. For example, what was the "minimum" food intake that guaranteed humans "not starve to death" while allowing the workers to be productive and achieve more labor compensation simultaneously? And, can we make universal claims about those needs? Understanding the caloric intake and expenditure as a *cultural artifact* that conceptualizes the human body as an internal combustion engine,[19] allows us to explain how these concepts, metaphors and artifacts were deployed in the public arena and how the produced data became predominant and was used by social and political actors to argue for a minimum wage mandate.

Economic historians and economists have examined aspects of the problem of wages, focusing mainly on the workers' demands and on the recreation of past indexes and consumption patterns. In Mexico, they reconstructed the cost of living and wages in the 1920s and 1930s, using the surveys

17 For example, the works of Bruno Lutz, "Civilizar al campesino pobre: biopolíticas alimentarias en México", *Ruris – Revista do Centro de Estudos Rurais* 6, n.º 2 (2012): 91–122; Juan Pío Martínez, "La ciencia de la nutrición y el control social en México en la primera mitad del siglo xx" and "Los salvajes y los civilizados. Perspectivas occidentales sobre las prácticas alimenticias en los siglos xix y xx", *Temas Antropológicos. Revista Científica de Investigaciones Regionales* 37, n.º 1 (2014): 71–94; Joel Vargas Domínguez, "The 'problematic' Otomi: Metabolism, nutrition, and the classification of indigenous populations in Mexico in the 1930's", *Perspectives on Science* 25, n.º 5 (2017): 564–84, doi, https://doi.org/10.1162/POSC_a_00254 and "Conexiones internacionales en fisiología, eugenesia y nutrición: las investigaciones sobre el metabolismo otomí en el México posrevolucionario"; Joel Vargas Domínguez, "El metabolismo racial: estudios eugenésicos en Jamaica y Yucatán entre 1920 y 1940", *Revista Ciencias de la Salud* 13 (special issue *Historias alternativas de la fisiología en América Latina*) (2015): 85–103, doi, https://doi.org/10.12804/revsalud13.especial.2015.06

18 Notably, Cullather shows the uses of Calories as tools in geopolitics in "The Foreign Policy of the Calorie." For a general overview, see Charlotte Biltekoff, "Critical Nutrition Studies," in *The Oxford Handbook of Food History*, edited by Jeffrey Pilcher (Oxford, New York: Oxford University Press, 2012), 172–90.

19 A general history of the idea behind the human motor in modernity can be found in Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley and Los Angeles:University of California Press, 1992). The use of calories as cultural artifacts is taken here from Pohl-Valero, "'La raza entra por la boca': Energy, Diet and Eugenics in Colombia, 1890-1940." I have explored similar insights for the Mexican case in Joel Vargas Domínguez, "'El alcohol alimento': historias de las metáforas del motor humano y las calorías entre el siglo xix y el xx", *INTERdisciplina* 7, n.º 19 (2019): 139–61.

and studies produced in that period. However, they have used these historical reconstructions for comparative purposes or to integrate them into cliometric analysis without questioning the historicity involved in producing those scientific practices or their results and other data that support their narratives.[20] Julio Boltvinik, one of the economists who has explored the meaning of *needs* in his analysis of poverty, proposes that there is an important difference between the measurement of *biological needs*, like nutrient requirements, considered as scientific facts, and the measurement of *food needs*, which imply other needs according to their mode of production. He begins his assessment of the different ways of measuring poverty by stating that, "beyond the difficulties in determining nutrient requirements, the contribution of nutrition experts is only a first step."[21]

I propose that determining biological needs is not and has never been just a technical problem that can be solved and put aside. The history of nutrition and physiology shows how these disciplines, and their products were crossed by economic and political interests embedded in public policies. In addition, I intend to show the interrelation in public interventions not only of statistics and politics but also of science that is used as a producer of knowledge for state administration. Once administrative needs are delimited, these in turn can guide the creation and consolidation of other technoscientific projects, or at least, that was the rhetoric deployed at the time of these discussions. Therefore, it is necessary to densify the narratives on science and technology and their participation in the construction of social projects, which in turn consolidate possible research routes.[22]

In writing this text, a problem arose. I could not find a coherent history of the minimum wage in Mexico that would allow me to make a proposal such as the one I state here.[23] That is why, to write this narrative, I had to reconstruct this process partially. As part of this first approach to the subject, I begin this reconstruction with a first section where I reconstruct the attempts to establish a federal minimum wage in the 1930s, under the government of Abelardo L. Rodríguez, to rectify the discretionary local practices that kept the wages low. In the second section, I show how science was used for the discussion on wages and how this was prior to the construction of the institutions of the mid-1930s. Different actors appear in this section, partially giving voice to the uses of science in the construction of national policies. Finally, I conclude with a possible outcome of the need for

20 Ana Patricia Sosa Ferreira, "Concepciones de la pobreza: una reflexión teórico-histórica," in *Pobreza: Concepciones, medición y programas*, edited by Verónica Villarespe Reyes (México: Instituto de Investigaciones Económicas, Universidad Nacional Autónoma de México, 2010), 117–30; Aurora Gómez-Galvarriato and Aldo Musacchio, "Un nuevo índice de precios para México, 1886-1929," *El Trimestre Económico* 67, n.º 265 (2000): 47-91; Amílcar E. Challú and Aurora Gómez-Galvarriato, "Mexico's Real Wages in the Age of the Great Divergence, 1730-1930," *Revista de Historia Económica / Journal of Iberian and Latin American Economic History* 33, n.º 1 (2015): 83–122, doi https://doi.org/10.1017/S021261091500004X

21 Julio Boltvinik, "La pobreza en América Latina. Análisis crítico de tres estudios", *Frontera Norte* 6, n.º 1 (1994): 34.

22 Science historians persistently ask for clarification of what historians understand of some concepts while they use them as part of their narratives about the past. Using concepts like "health status" or "living standard" could be problematic since there are several traditions of measurement involved which are difficult to compare to actual measurement techniques. Bruno Latour, "On the Partial Existence of Existing and Non-existing Objects," in *Biographies of Scientific Objects*, edited by Lorraine Danston (Chicago: University of Chicago Press, 2000), 247–69.

23 Except for an article by Moisés Navarro that makes an account of the first minimum wage during the *Porfiriato*. Moisés González Navarro, "El primer salario mínimo", *Historia Mexicana* 28, n.º 3 (1979): 370–400.

more local information in the view of the historical actors involved: the justification for creating local institutions specialized in nutrition.

1. One wage to rule them all: from discretionary wages to a federal minimum wage

During the dictatorship of Porfirio Díaz (1876-1911), wages were low, and some critics of the period pointed out that this situation was one of the ignitors of the Revolution. The daily wage of the workers fluctuated between 0.29 to 0.38 *pesos* between 1877 and 1911, barely enough to provide the most indispensable needs.[24] Critics of the regime, like Andrés Molina Enríquez, argued that one of the causes of Mexico's problems was the low wages of the laborers and peasants in the country since they could not afford the food necessary to avoid starving to death.[25] These demands, often expressed by intellectuals and politicians, scientists, and labor leaders, fueled the criticism of the Díaz regime, which led to the social uprising in the following decades. However, by the end of the Mexican Revolution, there was only a meager salary increase, which was a problem for the revolutionary governments trying to stabilize social unrest. Low salaries meant difficulties in accessing food, often of poor quality, which led to reduced productivity, and more social unrest. However, defining what a good quality diet meant was not done until the consolidation of nutrition as the scientific analysis of food and diet during the 19th century, as I will explain in the next section. Still, by the first decades of the 20th century, nutrition science became one of the tools needed to fix a "minimum" wage.

In the Constitution of 1917, very progressive legislation and a fruit of the Revolution, article 123 expressed the need to set a basic level: "The minimum wage to be enjoyed by the worker shall be that which he considers sufficient, taking into account the conditions of each region, to satisfy the normal needs of the worker's life, his education and his honest pleasures, considering him as head of the family."[26] To accomplish the constitutional mandate, new laws had to be created: Each region had the requirement of setting the wage to satisfy these "normal" needs of its inhabitants, which included adequate food and shelter, not only for the worker but for his whole family. They understood by "workers," not only factory employees or rural laborers (*peones*) but all the people

24 Jean Meyer, "Haciendas y ranchos, peones y campesinos en el porfiriato. Algunas falacias estadísticas", *Historia Mexicana* 35, n.º 3 (1986): 477–509. In his critical report on the Díaz regime, John Kenneth Turner did not consider the Mexican population as underpaid workers; instead, he considered them slaves, their "miserable" wages allowing them only to buy corn and beans, at higher prices than in the United States. In his crude description of the living conditions of the urban poor and the rural peons, Kenneth Turner simply argued that Mexico was a nation of "people starved —a nation prostrate." John Kenneth Turner, *Barbarous Mexico* (Chicago: C. H. Kerr & company, 1911).

25 Andrés Molina Enríquez, *Los grandes problemas nacionales* (Ciudad de México: Secretaría de Cultura, Instituto Nacional de Estudios Históricos de las Revoluciones de México, 2016) [1909], 331-332; Otto Peust, *México y el problema obrero rural* (México, D.F.: Secretaría de Fomento, 1911); Verónica Villarespe, "Los economistas políticos clásicos: pobreza y población. Algunos de sus teóricos relevantes", *Problemas del Desarrollo* 31, n.º 123 (2000): 9–31.

26 Congreso Constituyente, "Constitución Política de los Estados Unidos Mexicanos que reforma la de 5 de febrero de 1857", *Diario Oficial de la Federación*, February 5th, 1917, 158.

that had a labor agreement.[27] Therefore, although problematic, the term worker was accepted and used as an encompassing category of different kinds of working conditions. It was a complex situation in which employers and workers' representatives had little experience classifying them locally: the workers had differentiated wages depending on their skills, which meant wages varied greatly.

This discretionary power not only stemmed from the definition of workers but also from those who determined wages. Wages had to be determined by commissions at the municipal level that had to obtain all classes of information and data about the regional conditions related to the costs of the basic goods, among other tasks.[28] The technical complexity of this task, in with each municipality measured and arrived at different local wage decisions, and with few municipal governments with the right tools for the job, made the wages heterogeneous. This, combined with the pressure to avoid setting a minimum from local *caciques* —factory owners and landlords—, kept the wages very low despite workers' needs and demands.[29]

In 1931, the Labor legislation had an *addendum*: if there were no local agreements, minimum wages had to follow the ordains of the Central Board of Conciliation and Arbitration of each State. This put pressure on the local committees. In the first attempt to fix the minimum wage in 1932, only 197 of the 2,664 municipalities accomplished the task of arranging the local committees and setting minimum wages, about only 7.39% of the expected. In some cases, when local boards had proposed a minimum, the fixed wages were even lower than the already perceived ones. This produced discontent among the workers and skepticism about the minimum wage benefits.[30] One way to diminish the discretionary wages was to know the cost of living. This problem had already been addressed as early as the 1920s'.

The Department of National Statistics (*Departamento de Estadística Nacional* – DEN) had carried out a national survey in 1924 that produced the first cost of living and index numbers of food prices in Mexico. Though later criticized, this survey was the first of many attempts to create a comparable and solid measure of the workers' cost of living. In 1931, Jesús Silva Herzog carried out a more robust survey. This one was followed by similar surveys, although the parameters which gave statistical solidity to the cost of living were still contested and kept changing. However, the consensus was that workers' and peasants' cost of living could be known, although the criteria for what to include in the measurement may vary. Cost of living was still being standardized but had authority thanks to using statistics as a legitimizing tool. As a result, the data from the cost of living surveys were added to the arguments for improving salaries to raise workers' living conditions.

The problems associated with fixing wages were about to receive a partial solution by the federal government, thanks to Abelardo L. Rodríguez (1889-1967). Rodríguez, governor of the North District of Baja California from 1923 to 1930, had been a promoter of the creation of local

27 For example, as described by the local labor legislation of Veracruz, which was created as soon as 1918, see Gobierno del Estado de Veracruz-Llave, "Ley del trabajo del Estado Libre y Soberano de Veracruz-Llave" (Orizaba: Oficina Tipográfica del Gobierno del Estado, January 14th, 1918).

28 How these local commissions functioned is still in need of a historical assessment, which will surely bring valuable information on how the minimum wage was constructed locally.

29 Union workers were skeptical of the virtues of the minimum wages, as explained by Arnaldo Córdova, *La clase obrera en la historia de México. Vol. 9. En una época de crisis (1929-1934)* (México, D.F.: Siglo XXI Editores; Instituto de Investigaciones Sociales, 1980), 175–77.

30 Comisión Nacional del Salario Mínimo, *Mejores salarios significan prosperidad en todos los órdenes,* 126–27.

committees to fix a daily minimum wage of four *pesos* in Baja California, one of the highest in Mexico.[31] According to his biographers, during his governorship, he considered raising the workers' standard of life his most significant and firmer goal, and raising the minimum wage was his primary way to achieve it.[32] His interest in raising wages arose from a productivity point of view: increasing the salaries meant better living conditions for the workers and a more productive labor force. In return, the industries would improve not only their productivity but also the national welfare. When he became Secretary of Industry, Commerce and Labor in 1932, [33] he published a pamphlet criticizing current salaries in Mexico, including a proposal to raise the salaries in the whole country to reach a daily wage of four pesos.

For Rodríguez, low wages were "shortened to the minimum extreme, to the boundaries of perpetual hunger rise."[34] "Hunger wages," he argued, were the rule for most of the workers in Mexico, not the exception. The wages, which barely reached one *peso* per day, were not enough to fulfill the "normal needs" of the worker. "Misery wages" were an obstacle for the workers to receive a "healthy and nutritious diet in which meat and milk are not rare luxury items." For him, there were three categories for wages: "*hunger or misery,*" "*need,*" and a final one for "*comfort.*" The *hunger salary* was the most common, on average, $1.06. From this salary, $0.52 was spent on food. The *need wage* was considered that which fulfilled the "standard of need" and had to reach $4.00 daily, in which a family spent $1.75 in food and the rest on other commodities. The *need wage* was the one Rodríguez was proposing to implement in the whole country. His pamphlet became a blueprint for his later interest in the subject.[35]

Rodríguez also had other interests: he saw a consumer in each person. For Rodríguez, wages needed to be higher since low wages were not only the cause of the "mean and precarious" existence of the workers but also the cause of a poor domestic market due to low expending. An increase in the salaries would "strengthen the flagging consumer subject who, having recovered, will more than repay [capital] for the wealth received [...] who will buy, everything that is necessary or pleasant".[36] Rodríguez was a wealthy man that owned a series of casinos in Baja California, a luxury casino in Mexico City and another one in Cuernavaca.[37] Leisure, and with it, gambling, required a wealthier population. Also, poverty was an obstacle to the development of the local industries —and his commercial interests— due to a lack of purchasing power, following the ideas expressed by Henry Ford, whom he admired. Contrary to racialized views of the Mexican population in vogue during the period, which viewed peasants and indigenous populations as ballasts for

31 Secretaría de Industria Comercio y Trabajo, "Ley Federal del Trabajo", *Diario Oficial de la Federación*, August 28th 1931; Francisco Javier Gaxiola Jr., *El presidente Rodríguez (1932-1934): Por encima de las conveniencias de la política, las imposiciones del deber.* (México, D.F.: Editorial Cultura, 1938): 531-60.

32 Abelardo L. Rodríguez, *Autobiografía de Abelardo L. Rodríguez*. (México, D.F. and Naucalpan de Juárez: A.L. Rodríguez and Novaro Editores, 1962), 152.

33 Gaxiola Jr., *El presidente Rodríguez (1932-1934): Por encima de las conveniencias de la política, las imposiciones del deber*: 531-60; Departamento del Trabajo, "Decreto que reforma la fracción IX del Artículo 123 constitucional (salario mínimo)", *Diario Oficial de la Federación*, November 4th 1933.

34 Abelardo L. Rodríguez, *Salario mínimo de cuatro pesos* (México, D.F.: Secretaría de Industria, Comercio y Trabajo, 1932), 7.

35 Rodríguez, *Salario mínimo de cuatro pesos*, 23–25.

36 Rodríguez, *Salario mínimo de cuatro pesos*, 11.

37 Jesús Silva Herzog, *Una vida en la vida de México* (México, D.F.: SigloXXI Editores, 1993), 140.

the modernization of Mexico, Rodríguez argued that economic disparity had roots in the colonial system and that it was the source of the workers' problems, hence his proposal aimed to improve the wages to shorten the breach between wealthy capitalists and most workers to counteract this historical ballast.[38]

Rodríguez proposed a daily minimum wage of four pesos, which he anticipated would be later improved to reach one peso per hour of labor. This wage was a "vital and unpostponable need" that would stop the "intellectual and physical decay of our race due to the lack of sufficient and nutritious healthy foods".[39] However, this proposal turned difficult to achieve, even when he was designated president, substituting Pascual Ortíz Rubio in September of 1932.

From 1932 to 1934, a new impulse to define wages surged during his presidency. To Rodríguez, article 28 of the Constitution of 1917 was not clear enough on the subject. For example, article 28 decreed antimonopoly rules for "items of necessary consumption," but it was not clear which were these items, and the existing cost of living surveys had problems defining what to include in the minimum basket of necessities.[40] In October of 1932, Rodríguez arranged an honorary commission to study the minimum wage (*Comisión Nacional del Salario Mínimo, CNSM*), which integrated several secretaries of State and experts, as well as representatives of the working class and the employers. This commission was only partially successful due to several problems: employers blocked the research to evaluate the cost of living, local authorities dismissed the proposals, and the workers lied in the surveys.[41] This grim panorama did not stop the CNSM and President Rodríguez.

The wage legislation, despite all the problems, was decreed. In 1933, Rodríguez, thanks to the overwhelming majority in the national congress by the National Revolutionary Party, modified the Constitution and established that if there were no local agreements on the fixation of the minimum wage, the municipalities had to follow the State legislation and decisions. In 1934 he decreed a minimum wage with an executive order, which was far from his earlier expectations of four pesos a day. The employers' lobbying pushed the minimum lower than Rodríguez expected. The resulting wages, with differences between urban and rural settings and with several local concessions, had a national average of $1.08 a day, an increase of 59% compared to the $0.68 on the average salaries of 1933.[42] Rodríguez considered that this raise would be "rewarded with a higher performance of the workers." However, more adjustments on the fixation of the minimum were made again in 1935, which produced differentiated salaries, depending on the work performed and local customs, which was far from the ideal of a centralized minimum wage, continuing the long history of differentiated salaries in local contexts. This last represented a backlash, and by 1936, the CNSM suggested the creation of a single national board to fix minimum wages on a *technical basis*, with regional and economic considerations. This *technical basis* was subject to the information provided by the continuing studies on the living costs of the

38 Rodríguez, *Salario mínimo de cuatro pesos*, 20.

39 Rodríguez, *Salario mínimo de cuatro pesos*, 24–25.

40 Joel Vargas Domínguez, "Las estadísticas de consumo y el cesto de provisiones en México en las décadas de 1920 y 1930", *Estudios Sociales del Estado* 8, n.º 16 (2022): 45–80, doi https://doi.org/10.35305/ese.v8i16.302

41 Comisión Nacional del Salario Mínimo, *Mejores salarios significan prosperidad en todos los órdenes;* Rodríguez, *Salario mínimo de cuatro pesos*.

42 Comisión Nacional del Salario Mínimo, *Mejores salarios significan prosperidad en todos los órdenes*, 128; Departamento del Trabajo Oficina de Previsión Social, *El Problema del Salario Mínimo en 1936*.

population. In general, CNSM agreed that a wage increase would improve not only the workers' living standard but also their productivity.[43]

2. Using science to promote the minimum wage

Since the 19th century, minimum wage advocates have deployed various forms of scientific knowledge. Physiological requirements had been settled in Europe and the United States, producing requirements and a standardized set of techniques that considered the Caucasian population of the U.S. as the "normal" and "standard" parameter.[44] These data, mobilized as the physiological standards, were used by economists to obtain the minimum necessary for maintaining the body. This physiological parameter —with rent and clothing— was known as "primary poverty".[45] The monetary amount that fulfilled these "basic" needs was known as the cost of living and had been used by statistical offices at the turn of the 20th century, though it was not uniformly established how to measure it, nor which item had to be incorporated in its definition.[46] With this, a minimum wage became a scientifically measurable object, with "objective," understood as quantifiable, ways to be measured.

Not surprisingly, the scientific approach to determining wages and living costs changed depending on the country since the statistics required to produce it were not standardized until the 1920s.[47] The living costs and the minimum wage were consolidated in parallel during the 1920s and 1930s. Mexican statistics were part of a long tradition, and the changes in the institutional setting provided a narrative of modernization, with the use of a complex network of international exchanges between statistical offices worldwide, which were relevant to the standardization of processes, techniques and the need to provide accurate comparative numbers to be used in the international agencies. The experts in charge of determining the cost of life also participated in the minimum wage commissions, so they were aware of the international discussions surrounding the minimum wage.[48]

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43 Departamento del Trabajo Oficina de Previsión Social, *El Problema del Salario Mínimo en 1936*; Gaxiola Jr., *El presidente Rodríguez (1932-1934): Por encima de las conveniencias de la política, las imposiciones del deber*, 528–29.

44 American nutritionist and an early promotor of nutrition science in the United States, Atwater was a crucial promotor of the *human motor* idea, consolidating the use of calories as a measure of productivity. Later, Francis Gano Benedict produced the metabolic standards crucial to determine needs based on physical activity. For a historical development of these standards and its uses in Mexico see: Vargas Domínguez, "'El alcohol alimento': historias de las metáforas del motor humano y las calorías entre el siglo XIX y el XX"; Vargas Domínguez, "El metabolismo racial: estudios eugenésicos en Jamaica y Yucatán entre 1920 y 1940".

45 Peter Townsend, *Poverty in the United Kingdom: a survey of household resources and standards of living* (University of California Press, 1979), 33.

46 Joel Vargas Domínguez, "Medir la necesidad: el costo de la vida en México en las primeras décadas del siglo XX", in *Al orden de los números: historia y estudios sociales de la cuantificación*, edited by Ana María Medeles Hernández (Ciudad de México: IISUE, to be published in 2023).

47 Marcel Boumans, "Fisher's Instrumental Approach to Index Numbers", *History of Political Economy* 33, n.º 5 (2001): 313–44; Victor Cruz-e-Silva y Felipe Almeida, "The Making of Index Numbers in the Early 1920s: A Closer Look at the Fisher-Mitchell Debate", *History of Political Economy* 54, n.º 4 (2022): 655-86, doi https://doi.org/10.1215/00182702-9895860.

48 Vargas Domínguez, "Las estadísticas de consumo y el cesto de provisiones en México en las décadas de 1920 y 1930". A comparison of the international ways to fix the minimum wage were discussed in the 1930's by Zamora, *El salario mínimo*.

Indeed, by the 1930s the definition of minimum consumption was an international problem. It was addressed by international organization meetings such as the International Labour Organization (ILO, held in Santiago, Chile) and the Pan American Health Organization (in Washington) in 1936 and by the League of Nations in Buenos Aires in 1939. These discussions, driven mainly by Latin American countries, promoted the measuring, definition and analysis of wages and their connection with other social problems, such as education and public health.[49] In this sense, Mexican wage legislation was novel since the Constitution of 1917 included measuring needs more substantially and proposing a minimum wage that had to satisfy those needs. Also, local legislation was progressive and incorporated, as early as 1934, the most recent consumption data available to justify wage setting, although it was disputed.[50]

The minimum wage was contested by diverse industry and agricultural chambers, which argued that fixing a minimum would imply a decrease in their profits and productivity . Some advocates. Marxist-oriented economist Francisco Zamora Padilla published a series of pieces in El Universal in 1932, praising the rise of the minimum wage and rebuking the critics of the politics of President Rodríguez.[51] Zamora quoted the cost of living study conducted by Silva Herzog. It stated that workers earned 18 cents a day, which, Zamora claimed, even if the average wages were superior, was insufficient "to cover the strictly physiological needs of farm workers adequately."[52] Zamora also mentioned the work of Ramón Beteta about mendicity in Mexico City. Beteta showed that the wages had risen since colonial times by 356% while the prices of foodstuffs like beans or maize had raised 428.57% and 1,602.45%, respectively. The increase in the wage was far from reaching the climbing prices of food. Zamora also quoted Marx and his idea that the lower limit of the working force value was the food necessary to replace the spent forces.[53] The transformation of fuel into force, of food into labor, was the metaphor behind the industrial modernization in postrevolutionary Mexico. Workers were the living machines behind this transformation, and their bodies functioned in a way analogous to internal combustion motors.[54] Without enough fuel or food to be transformed into a workforce, there would not be modernization. Fixing a minimum wage was the solution to improve the Mexicans' living conditions and hence their productivity.

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49 For the role of these institutions in defense of social rights, see: Sandrine Kott, Joëlle Droux, and International Labour Organization, *Globalizing Social Rights: The International Labour Organization and Beyond* (Houndmills, Basingstoke, Hampshire and New York: Palgrave Macmillan, 2013); Corinne A. Pernet, "Developing Nutritional Standards and Food Policy: Latin American Reformers between the ILO, the League of Nations Health Organization, and the Pan-American Sanitary Bureau", in *Globalizing Social Rights*, 249–61.

50 Yáñez Andrade, "Cuando los médicos hablaron de economía: familia, salario y alimentación en Chile (1930-1950)"; José Buschini, "La Tercera Conferencia Internacional de la Alimentación y el problema nutricional en América Latina, 1939", in Pohl-Valero and Vargas Domínguez (eds.), *El hambre de los otros,* 103–34.

51 His publications are among the few I have found that clearly articulate the technical and scientific arguments for justifying the wage because scientists were not as outspoken about the matter. Other economists took science and its data for granted, while Zamora elaborated a broader argument for its use, summarizing various contemporary studies in his writings. Mexico's Presidency compiled and published his works as part of the official propaganda of the workings of Abelardo L. Rodríguez. Zamora, *El salario mínimo*.

52 Zamora, *El salario mínimo,* 4.

53 These reports were collected in Zamora, *El salario mínimo,* 5, 15.

54 Vargas Domínguez, "'El alcohol alimento': historias de las metáforas del motor humano y las calorías entre el siglo XIX y el XX".

Zamora made an important distinction in understanding the idea of the minimum wage. There were two meanings: the "vital wage," which was the minimum necessary for a standard family to live, and the "family wage," which was the minimum necessary for the worker's family accordingly to its "true" composition. Quoting the work of British communist Emile Burns, Zamora recognized three "essential principles" within the concept of the minimum wage: vital wage, equitable wage, and wage the industry can afford. The *vital wage* was the one that would fulfill the worker's reasonable hygienic and comfort conditions, while the *equitable wage* was the one that considered the skills of the worker. The final one was a consideration of the financial situation of the industry. According to Zamora, the minimum wage decree referred to the "vital" wage. This wage had to be "scientifically fixed" by the "psychophysiology of industrial labor."[55] These ideas of a scientific fixing of wages became common in economic, social, and political arguments about the minimum wage.[56]

Zamora reasoned that social and political determinants could be biased, so a technical response based on science and statistics should solve the problem. Setting the minimum wage should not be done by "eyeball measurement," "*a ojo de buen cubero*" —a criticism of how municipalities performed the task— but by scientific reasoning. "Psychophysiologists" and physiologists already had determined the energy requirements of the workers. A resting adult (male) required an average of 2.100 calories in 24 hours; A worker required between 2.000 and 2.500 calories, with variations depending on seasonal conditions, reaching 4.000 calories for the summer and 6.000 for the winter. This was, according to Zamora, the "normal work ration" of a worker. Zamora then continued to explain that it was easy to calculate "the cost of the daily food requirements physiologically indispensable to maintain an adult's body in a normal state of activity" by knowing the composition and the amount of calories present in the in the population's daily intake and knowing the prices of foodstuffs in the market. For him, this was a measure "precisely not arbitrary of the natural needs of the worker."[57] However, the possible biases of the standards used to measure normality, which had been created using a specific population with a culturally determined diet —the American population of the East Coast— were not contemplated. For him and most of the population, physiological requirements were scientific, universal facts that reflected objective reality.[58]

For Zamora, "essential food requirements" did not refer to common foodstuffs or culinary preparations but to calories, proteins, carbohydrates and lipids. He was using the language and facts produced by chemists, nutrition experts and physiologists. Also, the statistics of the cost of living had been using that same language since the 1920s in Mexico.[59] However, this change was not as swift as he hoped. Food requirements had been translated into an esoteric language that the public could not easily understand. People no longer depended on their shared knowledge of

55 Zamora, *El salario mínimo*, 15–16.

56 Nevertheless, there were concerns about establishing a minimum wage without waiting for science to give an answer. For similar processes in France, see Dana Simmons, *Vital minimum: need, science, and politics in modern France* (Chicago and London: University of Chicago Press, 2015).

57 Zamora, *El salario mínimo*, 16–17.

58 For Zamora, even concepts like "family" had been arbitrarily determined. For him, what constituted a family had to be changed accordingly to statistical analysis and regional differences. His position, he acknowledged, was "extremely rigorous," but he considered it the best way to achieve better social conditions. The problem was set and it had to be scientifically solved. Zamora, *El salario mínimo,* 18.

59 Vargas Domínguez, "Las estadísticas de consumo y el cesto de provisiones en México en las décadas de 1920 y 1930".

how and what to eat but required specialized knowledge to know if they were eating "correctly." This shift in the bearers of knowledge about food had been a gradual phenomenon, and expert knowledge became an unavoidable part of our understanding of food and bodies by the early 20th century.[60]

There was a broad consensus on understanding the workers' bodies as motors, but there were some nuances.[61] For example, in 1933, Zamora followed the ideas of Leon Walther, a psychologist interested in "technopsychology." For Walther, humans were not merely "motors" but were "psychophysics apparatuses," a concept that Zamora used in his interpretation of article 23 of the Constitution, which explicitly referred to the quality of work, entertainment, education and "honest pleasures" that had to be considered "natural needs." This extension of needs to other, not merely physiological, spheres represented a significative shift from previous "scientific" attitudes to human needs. The special commissions appointed to provide information to settle the minimum wage in the 1930s followed a similar approach. The surveys they conducted tried to estimate the cost of living of the most diverse workers, with differentiated questionnaires varying depending on whether they were industrial or rural workers. To determine the cost of living, the local statistical offices' experience and the studies carried out in 1924 and 1931 were already available. The training of pollsters to fill out the questionnaires correctly, among other aspects, had already been tested and improved.[62] The memoirs of these minimum wage commissions are still in needed of further research, as they provide a fascinating window on knowledge production in statistics and state-building after the revolution.

Behind Zamora's approach to using science as a tool to fix the minimum wage and a common ground in the creators of the cost of life surveys were their readings on the question of workers' *fatigue*.[63] There had to be an equilibrium between the energy spent at work and the energy acquired through food. He criticized the employers' exploiting system, arguing that there was no doubt that, given a choice between the opposites of the workers' "sense of community" —quoting the Austrian psychologist Alfred Adler— and capitalists' "were-wolf's hunger for surplus-labor" —quoting Marx—, the employers would choose the latter, making them practically modern-day slaveholders. To avoid this situation, wages had to be determined scientifically. The "vital energy" of the worker had to be replenished, and the minimum wage was a tool to fix the "physiological deficit" that prevented the "future of the race" that the capitalist would induce in his workers if the surplus were not minimized. The main obstacle to fixing an adequate minimum wage was not technical, and Zamora insisted that it was due to the employer's reluctance to do so.[64]

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60 For the historical change in diets, see Steven Shapin, "'You are what you eat': Historical changes in ideas about food and identity", *Historical Research* 87, n.º 237 (2014): 377–92, doi https://doi.org/10.1111/1468-2281.12059 Other authors have used the notion of "nutritionism" to refer to this shift, however, I prefer the use of nutrition to encompass both the scientific practices and the sociological shift. For the idea of nutritionism see Gyorgy Scrinis, "On the Ideology of Nutritionism", *Gastronomica* 8, n.º 1 (2008): 39–48, doi https://doi.org/10.1525/gfc.2008.8.1.39

61 Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity*.

62 Vargas Domínguez, "Medir la necesidad: el costo de la vida en México en las primeras décadas del siglo xx".

63 Vargas Domínguez, "Las estadísticas de consumo y el cesto de provisiones en México en las décadas de 1920 y 1930".

64 Zamora, *El salario mínimo*, 18.

The idea of fatigue as an obstacle to progress, an accumulation of poor nutrition with workers' exploitation, was commonly used to explain industrial production and conceive the social body. Means had to be deployed to avoid fatigue. Physiologists and economists had the same concern: low wages were determinant in the amount of food available, producing "weaker" and "degenerate" workers with "shortened life expectancy".[65] These ideas were also present in the presidential committee to fix the minimum wage, in which, contrary to the widespread belief that a degenerated race caused the lack of productivity, the commissioners considered that the poor wages and poor living conditions, including the scarcity of food, were the actual cause. "Better wages," written on the memoir's cover page by the minimum wage commission, "means prosperity in all areas." For them, the prosperity of the nation depended on this improvement.[66]

Scientific data was not only used by the government but also by social leaders. Vicente Lombardo Toledano, one of the most prominent Mexican intellectuals and labor leaders of the period, in his collection of discourses that led to the formation of the Mexican Workers' Confederation (*Confederación de Trabajadores de México*, CTM), included a poignant critic of the labor conditions present in Mexico, and used scientific language in his defense of workers conditions, notwithstanding his anti-positivist stance in other aspects of social development. "Hunger salaries" was the usual term he and other labor leaders used when referring to the wages the workers in Mexico had, notwithstanding the recognition of the minimum wage as an achievement of the working class. Referring to the conditions of the workers in and around Mexico City, he remarked that "the masses" lived from pulque, a fermented maguey-based beverage that sanitary workers stigmatized since the Porfiriato but remained very popular among the poor and working classes. The explanation by Lombardo Toledano of this situation was that the working class could not substitute this drink, "if it were not for pulque, [the masses] would have already died of pellagra or any other disease that annihilates men when they do not have enough calories to survive". From North to South, he stated, workers in Mexico suffered all the diseases the sanitary workers had described associated with poor nutrition, caused for being "poor, undernourished, because a few tortillas and chiles are not enough to live".[67] The socialist policies created during the government of Lazaro Cárdenas (1934-1940), along with the creation of the CTM, produced an inflationary bubble that aggravated the workers' situation. The minimum wage remained a policy that had to be continually negotiated in the following years, but the idea of a "minimum" that guaranteed vital needs with a scientific and legal basis was preserved.

By 1934, the consensus was that, to achieve a sound technical and scientific minimum wage, new surveys were required to produce more knowledge about the diet and to measure the cost of living.[68] The lack of information was addressed again in Lázaro Cárdenas' Six-Year Plan (*Plan*

65 Zamora, *El salario mínimo*, 19.

66 Comisión Nacional del Salario Mínimo, *Mejores salarios significan prosperidad en todos los órdenes*, 207–8.

67 Vicente Lombardo Toledano, "La bandera mexicana y el proletariado. (Discurso, 6 de febrero de 1936)", in *C.T.M. 1936-1941*, vol. 1 (1936-1937) (México, D.F.: Centro de Estudios Filosóficos, Políticos y Sociales Vicente Lombardo Toledano, 2011), 14–20.

68 Vargas Domínguez, "Las estadísticas de consumo y el cesto de provisiones en México en las décadas de 1920 y 1930".

Sexenal), his proposal for problems to be solved during his presidency.[69] Information was crucial to identify the most important needs, setting the panorama for the creation of local programs for a more comprehensive understanding of the diet of the Mexicans and then proceeding with public policies accordingly. For example, one new approach emerged in 1935. Federico Bach, a former member of the Minimum Wage Commission, published an analysis of a survey evaluating the population's cost of living. Bach chose 300 working families from Mexico City, each with five members, the "normal" family according to some studies, to "obtain a secure basis for determining the indexes of the living costs" to be used by the DEN. Bach acknowledged that the current analysis was theoretical, based on the "alimentary value" of some food items compared with the physiological demands of the workers. Bach criticized that the use of these medical indexes was not adequate to the Mexican reality, and the survey would provide "real" knowledge about the local consumption habits, and not some scientific extrapolations that did not correspond to the real Mexican condition, a situation that was about to be solved.[70] For Bach, the proposal of President Rodríguez of a minimum wage of four pesos guaranteed a "minimum of comfort and hygiene," an improvement of the living standards of the workers and their families. Later, the surveys and studies of the 1930s would be considered the first "correctly" made statistical approaches to measure the cost of living, which in turn would be used and improved to produce the wage modifications of the decades to follow, always using the nutritional requirements developed by science.

Conclusion

Nutrition science has been analyzed in Mexico as a product of different causes: global concerns about poor diets and looming wars that resulted in international reunions that concluded that nations had to study and improve the diet of their populations; economic interests to produce more food to gain hegemonic control of the international markets; the mobilization of knowledge, experts and instruments that standardized practices and techniques; public health projects; genuine interests to improve the local conditions and the experts desire to obtain recognition from its peers.

However, those were not the only causes. As I have shown, several elements were articulated for the consolidation of a minimum wage: social needs, political projects, standardization of statistical practices and physiological knowledge to determine a basic level "scientifically". The need to create a solid scientific background to settle the minimum wage was one of the pieces behind the reconfiguration of the public health law in 1934, under the presidency of Rodríguez. This new regulation proposed the creation of a National Food Commission (*Comisión Nacional de Alimentación*, CNA), which would be in charge of connecting the dispersed research about foodstuffs with the objective of creating new guides, scientific ones, for the government.[71] This commission turned out to be the direct antecedent of the specialized nutrition institutions created in the 1940s, which would provide

69 Secretaría de Industria Comercio y Trabajo, "Ley orgánica del artículo 28 constitucional, relativo a monopolios", *Diario Oficial de la Federación*, August 24th, 1931; Secretaría de la Economía Nacional, "Ley orgánica del Artículo 28 constitucional en materia de monopolios", *Diario Oficial de la Federación*, August 31, 1934.

70 Federico Bach, "Un Estudio del Costo de la Vida", *El Trimestre Económico* 2, n.º 5 (1935): 21.

71 Another set of ideas was also discussed. Along with the problem of fixing a scientifically determined minimum diet, there were other "physiological requirements of dressing and housing of the workers." The minimum wage had to fulfill the requirements of the workers' diet, dressing and housing.

more data about the diet of the Mexican population and connect the local community of experts with the new United Nations specialized agencies created after the Second World War.[72] Also, the Secretary of Economy, the Secretary of Labor, the DEN, and other ministries, designed and applied more statistically sophisticated national surveys to measure the population's cost of living using the new nutritional information produced. This information became more standardized and complex in the post-war period, producing more exchanges and mobilization of knowledge and a new generation of experts who tried to conduct public policies under an increasingly technical approach.[73]

The new nutritional knowledge about the Mexican population and its diet was again used to support workers' demands. In 1943, the second most important union in the country, the Confederación de Trabajadores de México (CTM)—through its Technical and Economic Affairs Secretary, Fidel Velázquez—presented the Mexican President Manuel Ávila Camacho (1940-1946) a study which they considered was a better way to determine minimum wages. For the unionists in Mexico, the "technical" setting of the minimum wage had been "impeded." In other countries, this technical setting was defined as a "vital salary," which referred to the "scientific fixation" of the worker's needs, food included. The use of scientific fixing could help achieve one of the promises of Ávila Camacho. The unionists argued that the minimum wage was "a matter of national relevance" because it was "intended to protect the physical energy of the productive forces, avoid the weakening of the race and increase the level of its yields, allowing the worker, as head of the family, to receive what is indispensable to satisfy the normal needs of his life and the welfare of his household."[74] The demands of the unionists were no longer based on American or European physiological requirements but on the local research surveys that the president of the CNA, José Quintín Olascoaga, had previously published.

Physicians José Quintín Olascoaga and Alfredo Ramos Espinoza published a couple of articles in 1939 where they explained nutritional terminology, included the prediction charts for height and weight depending on age and sex, and delimited the energetic requirements of the workers depending on their activity.[75] To do so, Olascoaga and Ramos had adopted the League of Nations recommendations on energy requirements of 1936, guidelines initially produced intending to construct common ground to compare and evaluate the nutritional status of local populations.[76] Following the expertise of CNA physiologists, CTM affiliates determined that a worker performing medium to heavy work requires 3.500 calories for a man, 2.700 for a woman, and 2.500 calories to sustain him or herself during growth. These energetic requirements were translated to food costs. For a family of five members this represented a daily expense of 3 *pesos*, 90 *pesos* a month, only on food requirements. If other needs, such as clothing and rent, were added, the total expenses were

72 Vargas Domínguez, "El auge y declive del Instituto Nacional de Nutriología de México y su proyecto de nutrición social de 1943 a 1956".

73 Zamora, *El salario mínimo*.

74 Francisco J. Macín, *Los salarios en México* (México, D.F., 1947), 25.

75 José Quintín Olascoaga and Alfredo Ramos Espinosa, "Bases para el cálculo de la alimentación correcta", *Boletín de Salubridad e Higiene* 2, n.º 6 (1939): 473–79; and "Bases para el cálculo de la alimentación correcta (continúa)", *Boletín de Salubridad e Higiene* 2, n.º 7 (1939): 553–84.

76 League of Nations and International Institute of Agriculture, *The problem of nutrition*, 4 vols.,1936 (Geneva, 1936).

5.90 *pesos* a day, while the salary was only 2.50.[77] Notwithstanding the impulse created by Abelardo L. Rodríguez, the increase in salaries had not been sufficient. However, an interesting process can be pointed out. The need to establish a minimum wage, which had to be fixed scientifically and not "*a ojo de buen cubero*" was one of the reasons behind the impulse to produce more information about the local population. The case presented in this paper is not a Mexican exception. Similar processes were part of the Latin American historical experience, although the topic has not been fully explored. [78] The impact of the greater systematization, production, and standardization of statistical and nutritional information on the "Mexican miracle" of the following decades has yet to be determined.

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77 Macín, *Los salarios en México*.

78 For the case of Brazil, see Eve Buckley, "Debating Hunger and Overpopulation from the United States and Brazil during the Early Cold War," in Pohl-Valero and Vargas Domínguez (eds.), *El hambre de los otros,* 195–222. For the Chilean case see Yáñez Andrade, "Cuando los médicos hablaron de economía: familia, salario y alimentación en Chile (1930-1950)". For Colombia see Pohl-Valero, "Alimentación, raza, productividad y desarrollo. Entre problemas sociales nacionales y políticas nutricionales internacionales, Colombia, 1890-1950". For Argentina, see Buschini, "La Tercera Conferencia Internacional de la Alimentación y el problema nutricional en América Latina, 1939".

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