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SWIPE-RIGHT OR SWIPE-LEFT: AN ANALYSIS OF SKIN-COLOR PREFERENCES IN ONLINE DATING MARKET IN MEXICO.

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To Daniela and Ximena

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Swipe-Right or Swipe-Left: an analysis of Skin-Color Preferences in Online Dating Market in Mexico

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1 Introduction

Selecting a life partner is a remarkably complex decision that has changed over the last few years. The introduction of online dating applications translated traditional dating markets into virtual ones. However, there is a main mechanism intrinsic to this choice: beauty.

The perception and conceptualization of beauty have undergone ongoing transformations. There have been many trials to migrate from subjective interpretation to more standardized ideals of beauty. Physical attributes have become the main standard of beauty. White skin color with European racial features has become the worldwide hegemonic standard of beauty (Hunter, 2002).

Online dating applications such as Tinder have become worldwide used since it was launched in 2012. Nowadays, the application is used in more than 190 countries (Wise, 2023) with more than 75 million users (Barnett, 2023). Although many people, particularly men, use this type of application to establish short-term no serious relationships (Abramova et al., 2016), other types of relationships emerge from these sites.

Despite the popularity of the application and the popular conception of beauty, no study has examined this relationship in Mexico. This presents an opportunity to contribute to the existing literature in the online dating market and in discrimination literature by physical characteristics, specifically skin color. It is well-documented that discrimination based on skin tone exists across various sectors, including the labor market, credit market, and electoral arena (Arceo-Gomez and Campos-Vazquez, 2014, Hernández-Trillo and Martínez-Gutiérrez, 2022, Campos-Vazquez and Rivas-Herrera, 2021). By examining the influence of skin color on online dating preferences, this study aims to shed light on this important yet understudied aspect and further our understanding of discrimination

dynamics in Mexico.

With this information, this master's thesis hypothesizes that Mexican males have a higher preference for white-skinned women, particularly in the context of dating apps such as Tinder. Subsequently, the objective of this study is to identify male Mexican preferences over female profiles differentiated in skin tone. To achieve this, a correspondence study will be conducted using fictitious profiles on the popular dating mobile app, Tinder. This is the common method to detect discriminatory preferences in different markets based on the differentiation of two profiles and a particular characteristic.

The study will specifically focus on the perception of beauty related to skin tone while keeping all other profile characteristics constant. By altering only the skin tone of the photographs and maintaining consistent physical characteristics, the study aims to isolate the impact of skin tone on the preferences of male users.

The study employs a descriptive analysis and empirical approach with linear probability models considering the likelihood of establishing a match as the dependent variable. As a preview, there are two main findings. First, male users exhibit a preference for women with white-skin tones over those with dark skin tones. Secondly, there are variations in behavior across different cities. Particularly, Mexico City and Guadalajara present a similar pattern in terms of match percentages while Tuxtla Gutierrez shows the smallest difference between the percentage of established matches.

The remainder of the study is structured as follows. The next section describes previous literature on skin tone discrimination, beauty, and dating apps. Section 3 provides details about the experimental design and profile creation. Section 4 introduces the empirical strategy. Section 5 provides the descriptive findings derived from the analysis. Section 6 presents the empirical results obtained from the study. Lastly, in Section 7 the study concludes by summarizing the key findings and their implications.

2 Literature Review

The process of selecting a life partner is influenced by various internal factors. As rational human beings, people establish preferences over all the existing markets. These preferences ultimately shape our choices and life trajectories. The decision to choose a life partner, particularly in the context of marriage, carries substantial social and demographic

implications. It impacts factors such as fertility rates, labor force participation, social mobility, and others (Becker, 1973 Lee, 2016 Kreager et al., 2014). Thus, this decision holds economic significance not only in personal lives but also on a larger scale.

From an economic perspective, the decision to marry is motivated by the expectation of increasing individual utility. Becker, 1973 developed a theory of marriage that posits individuals make choices in a marriage market based on factors such as income, time allocation, and the goal of maximizing their overall well-being. Both men and women consider economic outcomes as well as the social desirability of their potential partners in this decision-making process. By considering economic factors alongside social desirability, individuals aim to optimize their utility through marriage.

This concept of social desirability is defined as the sum of individual assets including physical attractiveness, popularity, and even personality (Berscheid, Dion, Walster, and Walster, 1971) Is at this point where the beauty debate is included in the discussion. What does beauty mean? and How is this included in the life-partner choice?

Beauty is not a robust concept strategically and uniquely defined. *Beauty* is a subjective and culturally influenced concept, varying across societies and time periods. It is typically associated with features perceived as aesthetically pleasing. Beauty is evaluated in terms of weight, height, skin tones, etc. Some of these characteristics are signaled as undesirable characteristics in other markets as the labor market.

2.1 Skin tone discrimination

Discrimination in different markets as a result of skin tone differences is real. As previous research reveals, light skin is a form of social capital for women (Hunter, 2002) and also in general.

In terms of social mobility, being a person with light skin improves the opportunities for upward social mobility. People in the lightest skin color category have an average of 1.4 additional years of schooling and 53% more in hourly earnings than their darkest-skinned counterparts.

The labor market exhibits significant discrimination based on skin tone. The skin tone is not only signaled by photographs, this may be induced also by names. Research indicated that individuals with black-sounding names experience a 2.1 percentage point reduction in employer contact compared to those with white-sounding names (Kline et al.,

2021). Similarly, in the Mexican market, there is evidence of differential treatment. White applicants have higher callback rates than indigenous and mestizo applicants (Arceo-Gomez and Campos-Vazquez, 2014).

Skin tone discrimination extends beyond the labor market and permeates other sectors as well. In the credit market, there is a differential treatment where white-skinned applicants receive more information and more probability to obtain credit (Hernández-Trillo and Martínez-Gutiérrez, 2022). Similarly, in the Airbnb market, discrimination against individuals characterized as African American has been documented (Edelman et al., 2017). These examples highlight the pervasive nature of skin tone discrimination across various markets and sectors.

Skin tone discrimination even extends to the electoral market, where dark-skinned candidates face lower probabilities of winning elections compared to candidates with lighter skin tones (Campos-Vazquez and Rivas-Herrera, 2021). The evidence of discrimination is not limited to specific sectors but can also be observed in traditional markets, where black sellers experience worse market outcomes compared to their white counterparts (Doleac and Stein, 2013).

This discrimination permeates even into specific markets, as evidenced by the escorts market. Research has shown that darker-skinned women face a penalty in the form of lower hourly prices for their services compared to women with lighter skin tones (Campos-Vazquez and Gonzalez, 2020). This unfortunate reality highlights how deeply entrenched and pervasive skin tone bias can be, affecting various aspects of economic and social interactions.

2.2 Skin Tone and Beauty

Furthermore, the impact of skin tone discrimination extends to the beauty market, where societal standards of beauty often prioritize lighter skin tones. Light skin tone is interpreted as beauty, which is also considered social capital and can be transformed into economic capital and benefits (Hunter, 2002).

Being perceived as physically attractive can indeed confer certain privileges and advantages, often referred to as the "beauty premium." This concept encompasses the notion that individuals who are considered attractive tend to experience higher earnings, improved job prospects, and other comparative benefits. Various mechanisms contribute

to this type of discrimination. One prevailing factor is the prevalence of flawed perceptions of beauty, whereby employers mistakenly assume that physically attractive individuals are inherently more competent and productive in the workplace (Sierminska and Singhal, 2015).

Our personal perception of beauty can significantly influence the career choices we make. The level of social attractiveness an individual perceives themselves to possess can impact their aspirations and goals (Berscheid, Dion, Walster, and Walster, 1971). This self-perception serves as a guiding force in the self-selection process, leading individuals to choose careers that are more closely associated with beauty (Sierminska and Singhal, 2015).

The concept of beauty encompasses a variety of attributes, including height, weight, and facial features, among others. Discrimination can occur based on any of these factors, with individuals experiencing bias and prejudice due to their physical appearance. For instance, research conducted by Campos-Vazquez and Gonzalez, 2020 sheds light on discrimination against obese individuals, particularly women, in the labor market. This study highlights the additional challenges faced by individuals and the disparities in employment opportunities and outcomes.

Numerous studies, including those by Sierminska and Singhal, 2015, Hamermesh, 2011, and Hunter, 2002, have indicated a positive association between physical attractiveness and labor-market-enhancing skills. This association may influence the dynamics of employer-employee interactions within the labor market. As Hamermesh, 2011 suggests, good-looking individuals are often perceived as more sociable, engaging, and desirable companions. Their physical attractiveness can generate a natural attraction and create a desire in others to spend time with them.

Moreover, the association between physical attractiveness and positive social attributes extends beyond the labor market and can significantly impact the dating and marriage markets. This attractiveness advantage can play a significant role as individuals who are considered physically attractive may have a greater pool of potential partners and experience higher levels of interest and attention from others.

Individuals who are themselves very sociable and desirable will require that an appropriate partner possess more social desirability than will a less socially desirable individual (Walster et al., 1966). This is related to the theory of marriage where individuals select a

partner to maximize the added utility, even in these non-economic aspects.

As research suggests, the more attractive the subject is, the more attractive, personable, and considerate he expects his date to be (Walster et al., 1966).

Skin tone differences play a significant role in the selection of a life partner if we take this as a beauty definition. An article that analyzed this in the online dating market found that there is a persistent racial preference in online dating for those belonging to white skin groups (Curington et al., 2015). Also, the research shows that white women receive the fewest rejections, and black women are ignored but everyone but black men.

However, Güémez and Solís, 2022 found that in Mexico skin tone seems to be a less salient characteristic in defining union formation. Mexicans tend to prioritize other characteristics.

2.3 Online Dating

The advent of dating apps and the translation of traditional dating and marriage markets into the online world have indeed transformed the process of selecting a life partner. Dating apps have provided individuals with new platforms and tools to connect with potential partners, allowing for greater convenience, accessibility, and a wider range of options.

While the medium has changed, individuals still consider qualities they find desirable in a life partner, such as shared interests, personality traits, and physical attractiveness. However, the online dating environment has also given rise to new factors that influence partner selection, such as the presentation of oneself in a digital profile or the ability to engage in online conversation.

However, dynamics in online dating applications differ from traditional interactions, particularly in terms of gender dynamics. Research by Abramova et al., 2016 suggests that male users tend to exhibit a preference for short-term romantic relationships with lower levels of commitment. On the other hand, female users often express their intention to seek friendships or potential long-term marriage partners.

In online dating markets, there are notable differences in preferences between men and women. Men tend to prioritize physical attractiveness when visiting female profiles, placing less emphasis on educational information. In contrast, women tend to show a higher frequency of visiting male profiles that signal higher levels of education and income (Ong, 2016, Neyt et al., 2019).

Further research reveals that people in dating apps prefer attractive profiles regarding their own attractiveness. Additionally, it has been observed that highly educated men exhibit a preference for profiles of individuals with lower levels of education, while highly educated women show a preference for profiles of individuals with higher levels of education (Egebark et al., 2021).

2.4 Contibution of the study

This study represents a pioneering effort in examining online dating markets in Mexico and exploring national preferences based on skin tone and beauty. The research methodology employed follows extensive literature on correspondence studies with photographs. Secondly, the experimental design is focused entirely in discover differences in preferences driven only by skin-tone changes. This unique approach is the most particular contribution of the study. As the photograph is the same, we preserve the *beauty* for white and dark skin profiles. Furthermore, the study's contribution extends to the broader literature on discrimination, shedding light on patterns within a socially segregated country such as Mexico. By addressing these aspects, the research offers valuable insights into the dynamics of online dating preferences and their implications for societal dynamics and biases.

3 Experimental Design

3.1 A correspondence experiment approach

Correspondence experiments have been utilized to identify discrimination. These experiments rely on the differentiation of two profiles based on a particular characteristic. In the context of the labor market, such experiments have exposed discrimination based on factors such as race, physical appearance, and obesity (Bertrand and Mullainathan, 2004, Campos-Vazquez and Gonzalez, 2020, Rooth, 2009, Arceo-Gomez and Campos-Vazquez, 2014). This approach has also been employed in research on the dating market to identify discrimination based on educational attainment (Neyt et al., 2019). The present study is an extension of the correspondence experiments to the dating app Tinder to identify discrimination based on skin-tone differences.

3.2 Tinder: the mechanism of a dating app

Tinder has established itself as the world´s foremost dating application. It was launched in 2012 and is available in more than 190 countries (Wise, 2023). Nowadays the app has approximately 75 million users, of which 78.1% are men (Barnett, 2023). Tinder is one of the most engaging apps. However, users spend an average of 35 minutes per day swiping profiles. The app has registered more than 75 billion mutual likes or *matches* (Tinder, 2022).

Statistical data suggests that more than half of all members on the platform are 18-25 years old (Tinder, 2022). While some may view the app as a platform for establishing short-term, casual relationships based on sexual agreements, others consider it to be a highly efficient marketplace for finding long-term partners (Abramova et al., 2016).

Tinder has an easy-to-understand mechanism. Users only have to provide their name, birthday, gender, sexual orientation, and some optional information about their school formation, interest, and a brief biography. The next step is to determine the criteria for their objective sample: (i) their sexual preference - tinder can show men, women, or both-, (ii) the age range of people they want to meet, and (iii) the maximum distance of the profiles that can appear to them.

After this selection, Tinder applies the criteria and shows to the user a range of options. The users can see, one by one, all profiles of others users that fit their criteria. The information provided on the screen is (i) a picture of the person, (ii) name, (iii) age, (iv) city, (v) educational information: school, institution. Also, users have the possibility to click on a profile and visualize an extended version that shows (vi) the distance in km of the person, (vii) a short biography written by the person, (viii) interests, (ix) Instagram photos or favorite songs in Spotify. However, these last are optional entries.

Based on this information, Tinder works as a market with asymmetric information. The user decides anonymously to like a profile or not based on the premise of swiping left or right. If the person dislikes the profile then it is a swipe left but if otherwise the person likes the profile then the correct answer is a swipe right. Additionally, users can superlike a profile, which involves a swipe-up reaction; this action indicates a higher level of preference for the profile and notifies the user that someone has used a special gesture on their profile. After making the decision the users can move on to the next profile but if both users decided a swipe right then, after the decision, the screen will immediately show

a *match* advice and this provides a possibility to start a conversation. However, there exists another possibility after the decision choice moment. The user may choose to swipe right a profile, but may not perceive a positive response. This has two reasons: the other user may have swiped left, indicating a lack of interest, or the user may have not seen the profile yet. As a result, there is a chance of receiving an alert, after hours or even days, of the establishment of a match with someone who was swiped right on the profile.

3.3 Profile design

In order to test for differential responses based on skin tone, the experiment aimed to create fictitious profiles that were differentiated by skin tone. To achieve this, four models were used, all of whom were Mexican women born between 1997-1999 and had a defined original skin tone. Two of the models were considered to have white skin tones, while the other two were considered to have darker skin tones. Prior to the experiment, the models were interviewed to inform them of the study´s objectives and requirements. The models agreed to participate in the experiment considering the study's process and goals. They were also informed about the manipulation of their photographs, the methodology of the experiment, the profile creation process, the scope of this analysis, and the diffusion of the results. They agreed to participate but were also allowed to ask about information and all the concerns they may have. The study required at least three photographs for each model per Tinder´s guidelines.

The photographs were then processed by a specialist who used Humanae Pantones to homogenize the skin tones. Humanae is an ongoing photographic project artist Angélica Dass (Dass, 2023) that involves using Pantone colors to represent realistic human skin tones. Two Pantone colors were selected, one for the white skin profiles and one for the dark ones. As a result, the four models have two kinds of photographs: white skin tone and dark skin tone. All the models were modified of their original skin tone with a homogenization process; all have the same white skin tone and dark skin tone pantones.

Considering the models, the profiles were created with consistent characteristics. Women profiles were set to be born in 1995, women identify as heterosexual, not religious, and lead an active and healthy lifestyle. The profiles did not include details about education or occupation. The only differences among the profiles were the names, interests, and short biographies.

The names were selected randomly considering the list of most popular names in 2021 provided by INEGI, n.d. The dataset encompassed 430 names, ranked according to their popularity based on births in 2021. All the names were chosen from this dataset. These names were used in order to improve the attractiveness of the profile and also because the dataset is one of the few solid sources of popular names in the country.

In addition, five interests were selected for each profile, using an original dataset that consisted of almost 300 interests provided by Tinder as options during the account creation process. Subsequently, a short biography was constructed for each profile, drawing inspiration from examples of accounts of women in Mexico City who are of the same age. This ensured that the profiles had an original appearance.

After all this process, there are different sets of characteristics: name, interest, and a short biography. These sets were randomly assigned by model. As each model has two photographs with different skin tones then we create two profiles of a model with the same set of characteristics. This results in a set of eight profiles. Figure 1 illustrates an example of a model´s profile set. As the figure indicates, there are two profiles by model. These profiles pair have the same name, age, interests, and a short biography.

Figure 1: Example profile set

This experimental design enables us to evaluate differences in responses across and between the models by minimizing biases related to interests, names, age, and other factors.

Since the profiles created for each model have the same profile description, any differences in the number of matches can be attributed to the skin tone photograph alone. This approach helps to isolate the impact of skin tone on the outcomes of interest, allowing for a more accurate assessment of the influence of skin tone on the experiment´s outcomes. By carefully controlling for potential biases, valuable insights can be obtained into how skin tone may affect responses on the Tinder platform.

3.4 Application of the experiment

As there are two profiles by model, it is not optimal to deploy profiles with the same picture in the same city, as subjects could then encounter them and make conclusions. This may invalidate the experiment. Therefore, we may extend the analysis to include four different cities in Mexico: Mexico City, Monterrey, Guadalajara, and Tuxtla Gutiérrez.

This geographical expansion allows for a more diverse and representative sample, encompassing different regions of Mexico with varying demographics and social dynamics. By including multiple cities, better capture potential variations can be captured in responses to the experiment across different contexts. The inclusion of additional cities enhances the statistical power of the experiment, providing a larger sample size for analysis and increasing the validity and reliability of the study's results.

To execute the waves of the experiment in different cities there is an option named Tinder Plus, which is a premium extension of the Tinder app. Specifically, the experiment employs the *Tinder Passport* feature, which allows profiles to be positioned in different cities.

The experiment was conducted during the period of March to April 2023. The methodology involved positioning two profiles in each city, and then implementing a rotation every two weeks until the profiles were positioned in all four cities of the experiment. This resulted in four waves of information. By each city and wave, there were two profiles representing different models, with one profile featuring a white skin tone and the other a dark skin tone, to maintain a clear distinction. This is illustrated in Figure 2 for a better understanding of the design.

This methodology enables having a final dataset consistent with the goal of the study. This design guarantees information for the two profiles per model in each of the four cities of analysis.

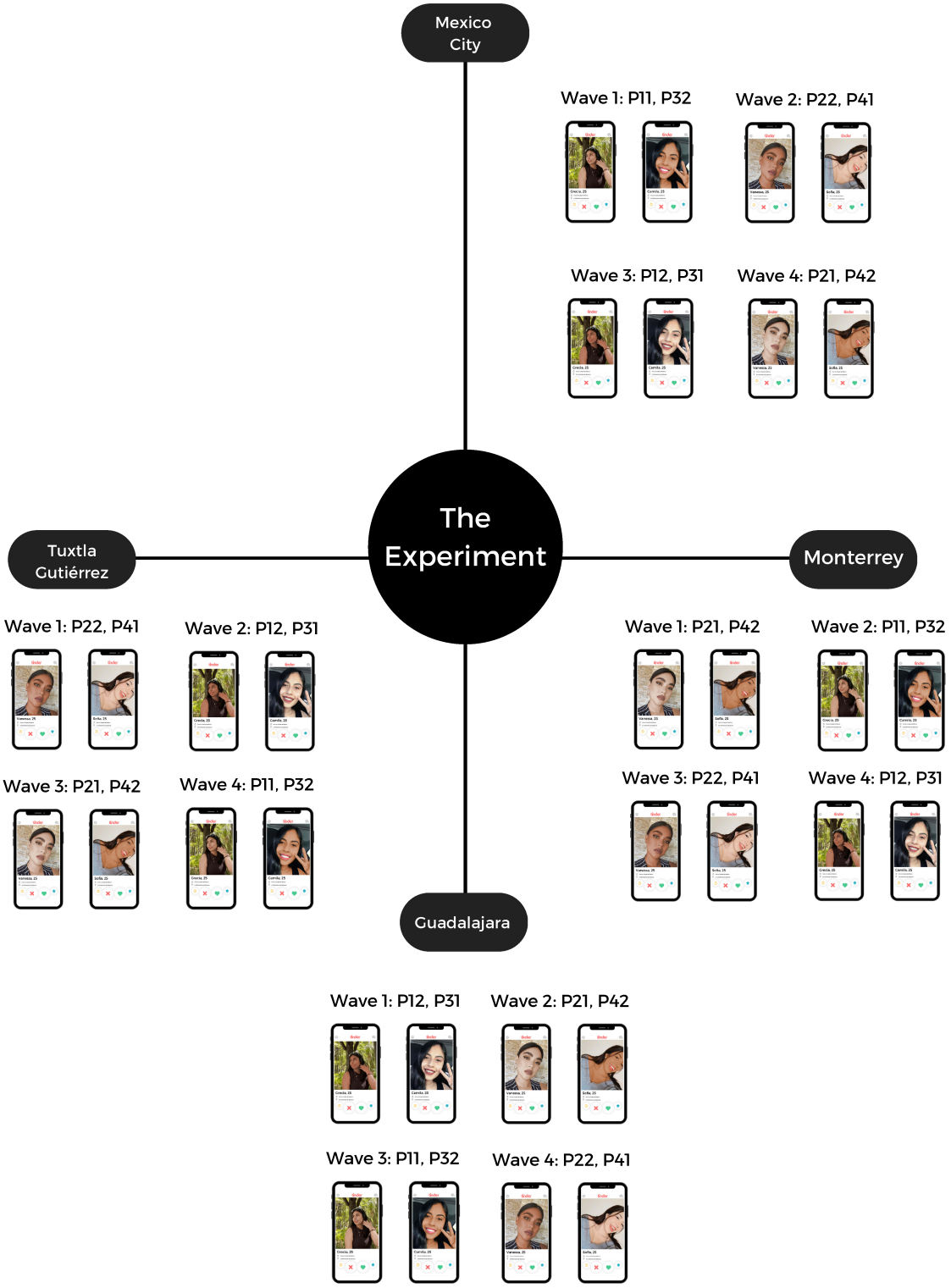


Figure 2: The experimental design

3.5 Sample and Data Set construction

To ensure that Tinder does not perceive the profiles as robots, the selection methodology is consistent with do not swipe right to all male profiles. To enhance this, it was necessary to establish a filter. The filter discard profiles without basic information such as profile picture, name, age or distance range. Otherwise, the profile receives a like or a swipe-right. This simple mechanism represent the preferences and a realistic interaction with the profiles.

The objective sample consists of all men active members of Tinder with 18 to 35 years old and on a maximum distance of 45 kilometers. These criteria guarantee the most prevalent aging group and a substantial distance range.

Based on the existing literature, there was a potential sample size following Neyt, Vanderbulcke and Baert, 2019. The female profiles should like the first 150 male profiles that met the filter criteria by city and wave. This enhances the veracity over the interactions and preserves a sufficient sample on the cities and the waves.

The data collection was with a form. First, the profiles were classified over a dichotomic variable with a value of 1 if there is a match and 0 if it is not. A match represents a mutual liking, othherwise that men liked the female profile. Then, the form collected several variables as (i) name, (ii) age, (iii) photography, (iv) city, (v) distance from our profile, (vi) reported education, (vii) reported occupation, (viii) reported institution as school or university, (ix) interests, and (x) short biography.

However, a primary challenge encountered in this experiment is the constraints imposed by Tinder's platform. The app has strict policies and vigilant monitoring of accounts, which makes difficult to maintain two profiles of the same individual without detection. Despite our best efforts, one of the model's photographs was flagged and banned by the application. Consequently, the final sample consists of three models across four cities, resulting in 3600 observations.

3.6 Ethical considerations

The creation of fictitious profiles on Tinder was indispensable for the research design. To minimize inconvenience to the subjects, there was never an interaction with the subjects once a match was established even when the male user send a message. Also, the accounts were disabled once the experiment was finished.

Also, we inform the models about the process and the experiment goals. They agreed to participate and not use dating apps during the experiment. They were allowed to change of minds at any time and also to request information in the process.

4 Empirical Strategy

The thesis hypothesizes that Mexican males have a higher preference for white-skinned women, particularly in the context of dating apps such as Tinder. This can be substantiated by analyzing the matches that profiles yield. To test such hypothesis a Linear Probability Model (LPM) is implemented, based on the existing literature methodologies. For this reason, the following regression is established to estimate the changes in the probability of obtaining a match.

$$\begin{aligned} Match_{ij} = \alpha_i + \beta_1 SkinTone_j + \beta_2 Age_i + \beta_3 Distance_i + \\ + \beta_k Education_i + \beta_k Occupation + X_c + X_j + u_i \end{aligned} \tag{1}$$

where:

The dependent variable $Match$ is a binary variable that takes the value of 1 if there is a match and 0 if there is not. i refers to a person i where $i \epsilon \{1, 2, ..., 1200\}$ and j refers to the model j where $j \epsilon \{1, 2, 3\}$. Controls include a binary variable $SkinTone_j$ that takes the value of 1 if j is a dark-skin profile and 0 if j is a white-skin profile. Then, we include a variable called Age_i which is a continuous variable of the age of person i. Also, we include a continuous variable called $Distance_i$ which is the distance of person i from model j in km based on the reported distance in the application. Next, the equation includes a series of dummy variables of education categorized into five sections and one more for unreported data. Then, we include a second series of dichotomies variables called $Occupation$ where $k \epsilon \{0, 1, 2, 3, 4, 5, 6\}$ categories. Finally, we include X_c that are fixed effects by city c and X_j fixed effects by model j

In detail, five education categories are high school, university student, bachelor's degree, master's student, and postgraduate. While the occupation dummies are: (i) students, (ii) professionals, technicians, and education workers, (iii) art workers, (iv) officials and managers, (v) administrative activities, (vi) merchants, street vendors, personal service workers, and domestic service workers, and (vii) other workers.

Based on our hypothesis, the expected result consistent with the theory is evidence of a preference for white skin tones. For this reason, the β_1 estimate should have a negative coefficient and be statistically significant.

The principal equation is estimated six times with simple variants of the main equation. The following section presents the main results of these estimations and an analysis of the effects of discrimination by skin tone differences.

5 Descriptive Results

The previous section presented the experiment strategy and the anticipated outcome. This section entails an analysis of the final sample. Because of the mechanisms, the main indicator for this article is the *Match Indicator*. By monitoring the profiles, the dating app shows the moment when a man liked one of our profiles and established a match. Therefore, we can discern between two possible outcomes: a match or no match, which can be interpreted as a like or dislike decision. Table 1 provides an overview of the frequency distribution of these outcomes across the cities. When considering all the subjects, approximately 45% expressed interest in one of the female profiles, resulting in a total of 1,614 matches established across the four cities. The distribution of matches among the four locations may indicate a generalized trend in the country.

Table 1: Summary statistics of the outcome variable for the full sample and by city.

	(1)	(2)	(3)	(4)	
	CDMX	**MTY**	**GDL**	**TXTLA**	**Total**
No-Match	524	492	528	442	1,986
	(58.22)	(54.67)	(58.67)	(49.11)	(55.16)
Match	376	408	372	458	1,614
	(41.78)	(45.33)	(41.33)	(50.89)	(44.83)
Total	900	900	900	900	3,600

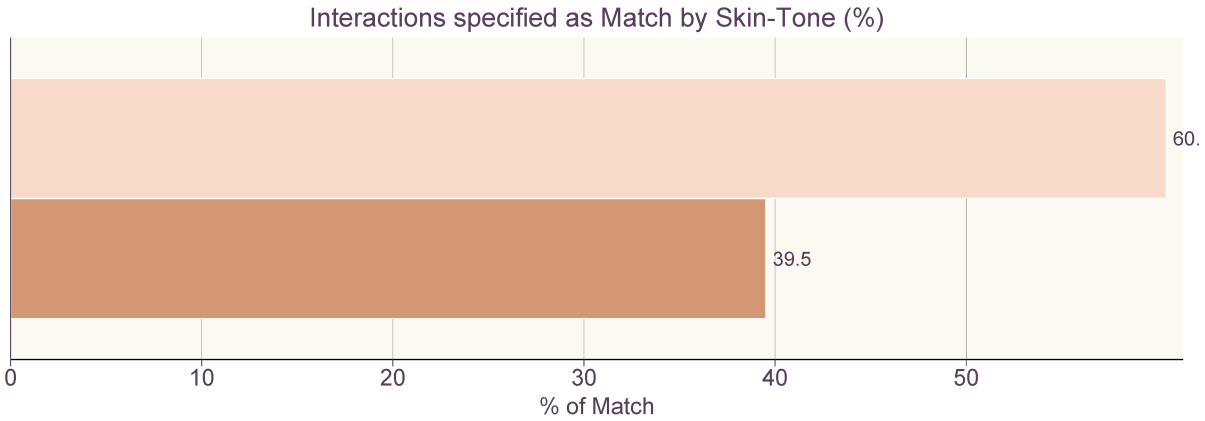
Note. Absolute numbers are reported with proportion of all observations in parentheses.

First of all, the preliminary findings suggest that the profiles created for the experiment successfully conveyed an authentic impression to users. Participants did not perceive any discernible distinction between the photographs, names, or profile descriptions. Also, the spacing between waves of the experiment ensured that individuals had sufficient time to

forget a specific profile before encountering a subsequent one. This design contributes to the validity of the results.

Figure 3 provides a general overview of men's preferences regarding female skin tones in Mexico. This reveals a preference for white skin-tone profiles. However, we can extend this analysis in order to understand the origins of these differences.

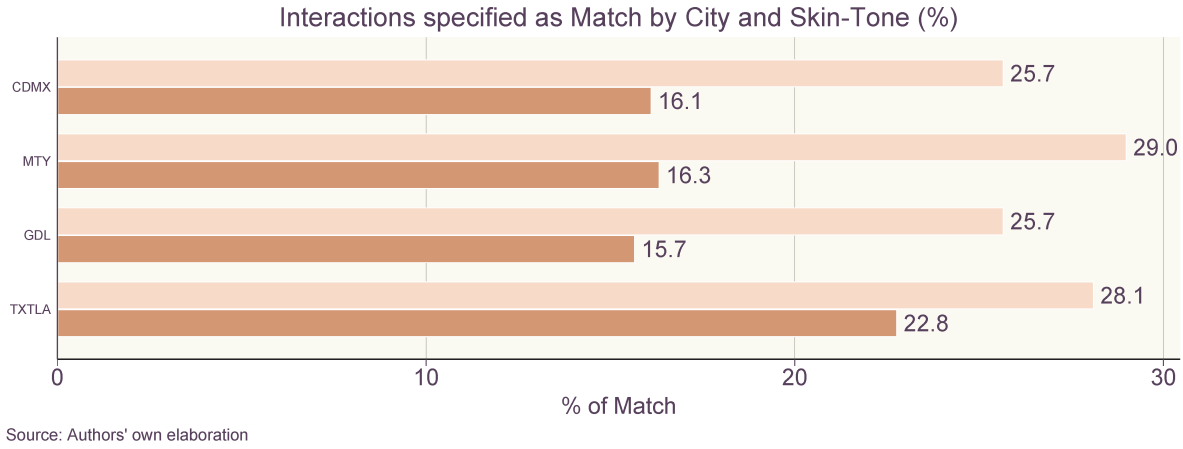
Figure 3: Interactions specified as Match by Skin-Tone



Source: Authors' own elaboration

Figure 4 illustrates an initial attempt to examine the variations among cities. Referring to the data in 1, it is noteworthy that Tuxtla Gutierrez recorded the highest number of matches with 458, whereas Guadalajara had the smallest dataset with 372 matches. When these results are disaggregated based on skin tone, there are interesting results. Firstly, Monterrey exhibits a stronger preference for white skin-tone profiles followed closely by Tuxtla Gutierrez. However, an intriguing pattern emerges in Mexico City and Guadalajara: both cities display a similar preference for white skin-tone women, with comparable proportions. Additionally, the behavior of Tuxtla Gutierrez is intriguing as well. Despite the preference for white skin-tone profiles, there is a notable percentage of matches involving dark skin-tone profiles. This phenomenon may be influenced by cultural factors, and prevailing skin-tone demographics in the city or even the state.

Figure 4

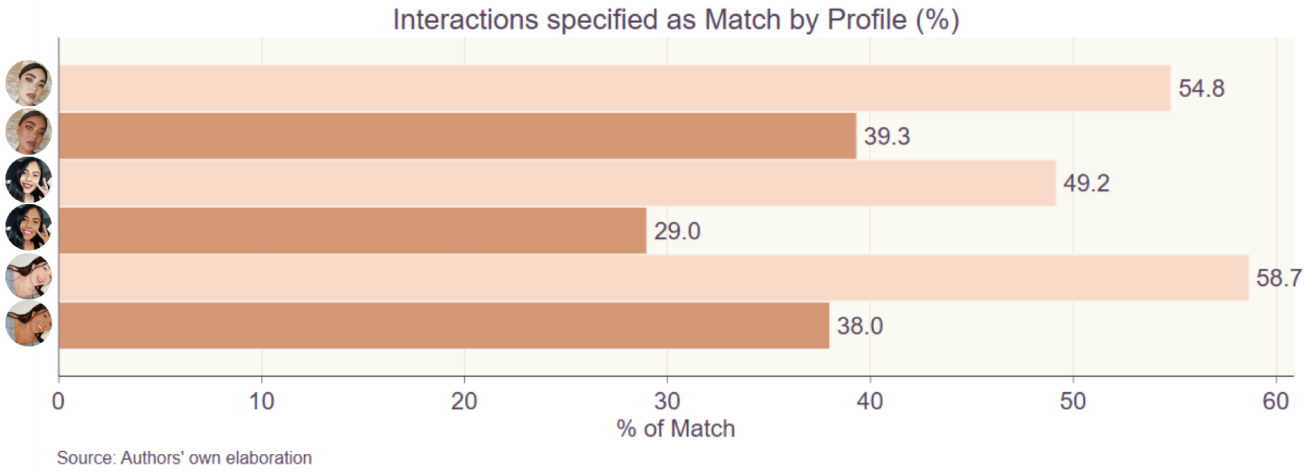


Source: Authors' own elaboration

Now, if we apply this analysis by profile the results are interesting. Of the three models, the one with the highest number of matches is model 4 (580 matches), followed by model 2 (565 matches), and then model 3 (469 matches). Now, when we extend the differences we see a 20 percentage point difference among the results of models 3 and 4. In the case of model 1, there is a difference but this is a smaller one. All the cases exhibit a clear preference for white skin-tone profiles which enforces the main hypothesis of men's preferences in Mexico.

Upon conducting a profile-based analysis in Figure 5, important results emerge. Among the three models, Model 4 obtained the highest number of matches (580), followed closely by Model 2 (565), and then Model 3 (469). Upon further examination, there is a 20 percentage points difference in the results of Model 3 and Model 4. While Model 1 also exhibits a difference, it is relatively smaller in magnitude. Nonetheless, all cases demonstrate a clear preference for white skin-tone profiles, thereby reinforcing the primary hypothesis of men´s preferences in Mexico.

Figure 5



Now, in Figure 6 and Figure 7 there is established a comparison among the cities and models. The graphs illustrate the percentage of the interactions specified as Match considering the total of matches established in that city. At first sight, in Mexico City, there is no difference between the model´s preferences. However, this is not the case for Tuxtla Gutierrez where, as it is illustrated, men prefer Model 4 over the rest and the difference is almost 4 percentage points. Then, when we analyze the results for the dark-skin profiles we see a clear difference of preferences among the models. For example, Mexico City prefers Model 2 and 3 before Model 4. This trend is not preserved in the rest of the cities. This trend changes drastically in Tuxtla Gutierrez where they tend to prefer Model 2.

By contrasting both graphics, we can discern the variations among the cities in terms of their preferences. For example, Mexico City prefers Models 2 and 3 before Model 4 in both skin tones. In contrast, Monterrey prefers Models 2 and 3 in a white skin tone but Model 4 when is a dark-skin tone perspective. A similar pattern emerges in Tuxtla Gutierrez where Model 4 is preferred with a white skin-tone photo but they established more matches with Model 2 when there is a dark skin-tone photograph. These trends are intriguing, as they highlight the influence of skin tone preferences in men's decision-making. It is worth noting that the photographs used in the experiment have no been altered in terms of attractiveness or other features, underscoring the significance of skin tone as a determining factor in preferences.

Figure 6

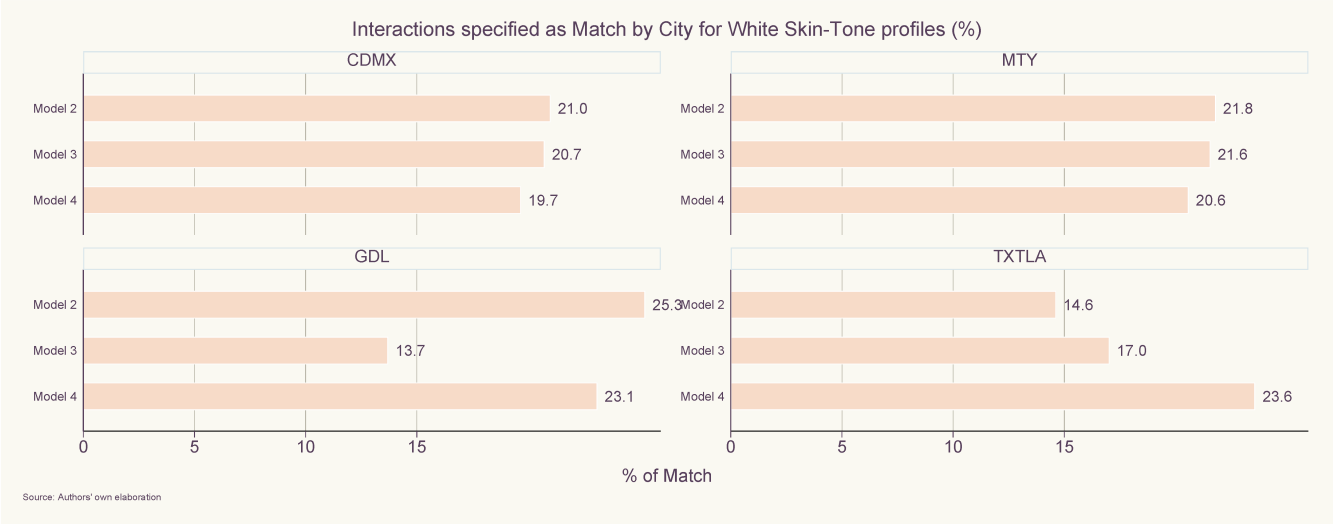
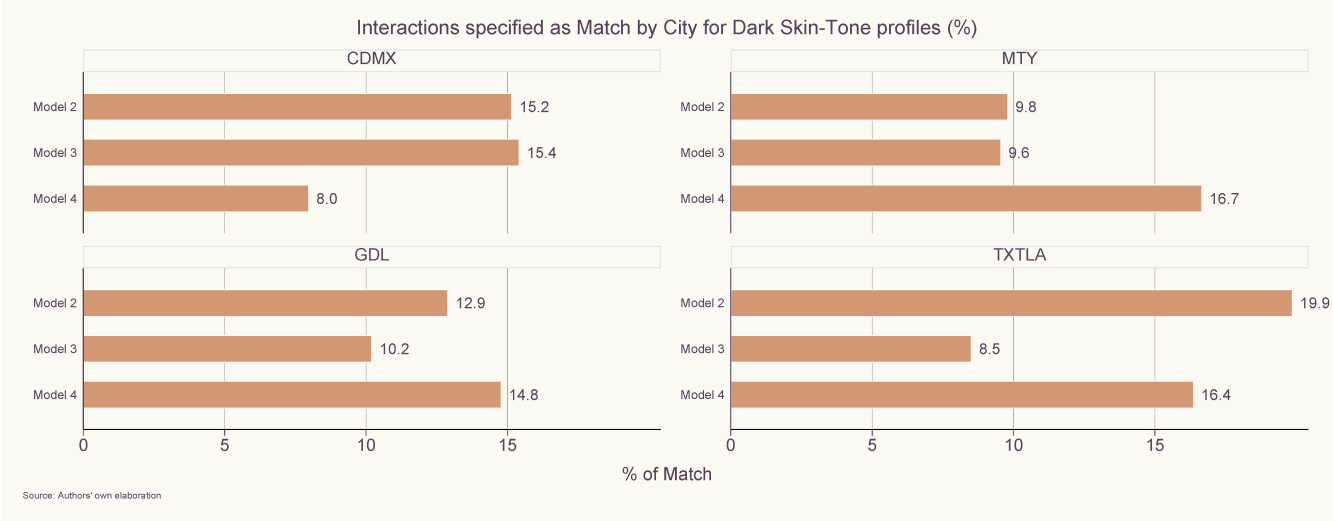
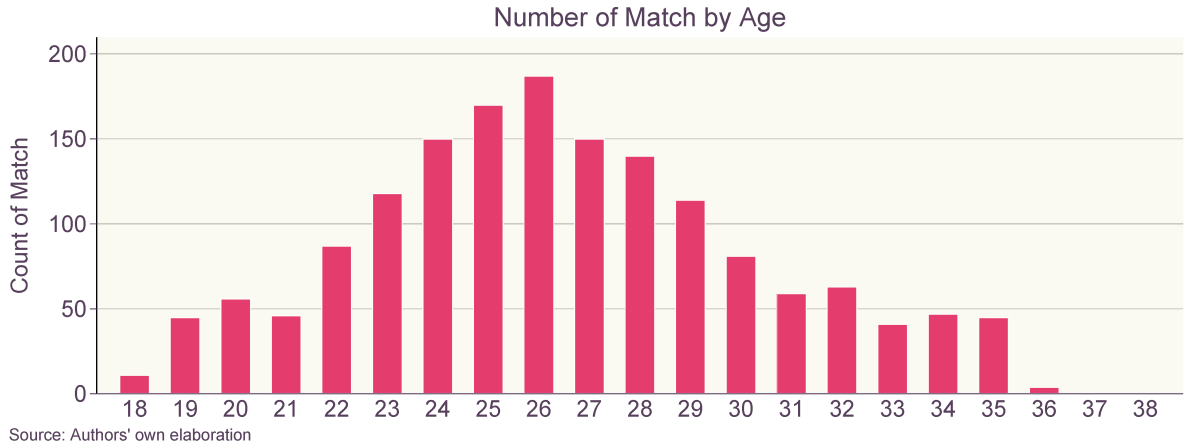


Figure 7



Analyzing the male sample is crucial for understanding the characteristics of individuals whose profiles resulted in a match. The age distribution, as depicted in Figure 8, reveals that the majority of matches are concentrated among men between the ages of 22 and 30. Specifically, the highest number of matches is observed at age 26. This finding aligns with global statistics indicating that this age group constitutes the most prevalent user demographic on the application.

Figure 8



It is worth noting that education information is not consistently reported in the profiles. Many individuals choose not to disclose their educational background or occupation in their profiles. When examining the male sample and categorizing it based on reported education, the most prevalent category is Bachelor's degree, followed by University Students and Postgraduate Education as shown in Figure 9. However, these results may not be fully representative considering the missing data.

Figure 9

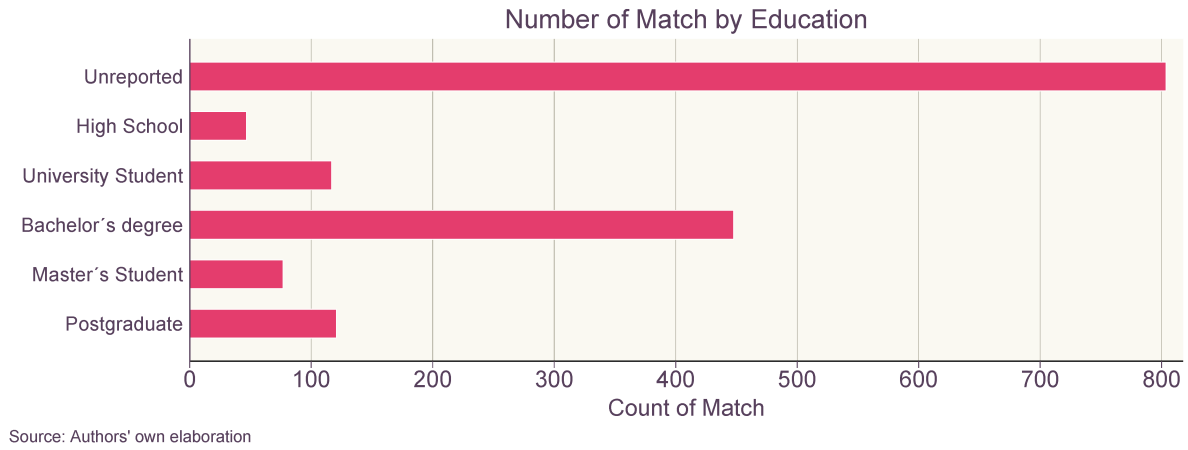


Table 2 provides the men's differences between men who had a match and those who did not, based on key variables. Significant differences are observed for age groups at the extremes of age distribution, with statistical significance at all levels. In terms of

educational information, men in the match-established group have a higher percentage reporting Bachelor's degrees and Postgraduate education, which is statistically significant at the 99% confidence level. Conversely, the no-match group has a higher percentage of reporting High School education. Regarding occupation, the only significant difference is observed among the category of Professionals and workers.

6 Results and discussion

This section presents the findings regarding the relationship between the probability of establishing a match and its returns as estimated using linear probability models.

Table 3 presents the results of the multiple linear probability models with the dependent variable being the probability of establishing a match. Model 1 represents a simple linear regression without any additional control variables. Model 2 introduces basic controls for age, educational information, and distance. Model 3 expands on this by including occupation dummies. Models 4, 5, and 6 replicate the previous models but incorporate fixed effects at the city and model levels to capture specific variations within each category.

The variable "Skin-Tone" indicates whether the profile features a dark skin-tone model, taking a value of 1 in such cases. The results demonstrate that being a dark-skin woman decreases the probability of receiving a match by 0.18 across the six models. This reduction is statistically significant at the 99% confidence level in all instances. Furthermore, the findings suggest that as men grow older, their likelihood of establishing a match increases. Regarding distance, the coefficient for the variable is positive, but it lacks statistical significance. This is specified by a continuum age variable.

According to previous literature, education may be important when people choose a life partner. Particularly in dating apps like Tinder, women strongly prefer a highly educated partner but men do not feel interested in this characteristic (Neyt et al., 2019). In the context of this experiment, the results indicate that reporting a High School education in the app may reduce the probability to establish a match by 0.9 with and without fixed effects and this is statistically significant. Conversely, reporting a Bachelor's degree increases the probability and this coefficient presents more significance when we include fixed effects. Also, having postgraduate education also increases the probability.

Men who are reported to be students or university or master's students have a lower

Table 2: Mean Differences between Match and No-Match

Variable	Description	(1) Match	(2) No-Match	(3) Difference
Distance	Continuous variable (km)	19.357	15.127	-4.231*
				(2.066)
Age Groups				
18-24 years	1 if belongs, 0 otherwise	0.318	0.430	0.112***
				(0.016)
25-29 years	1 if belongs, 0 otherwise	0.471	0.462	-0.010
				(0.167)
30-34 years	1 if belongs, 0 otherwise	0.180	0.094	-0.087***
				(0.012)
35-39 years	1 if belongs, 0 otherwise	0.030	0.015	-0.016**
				(0.005)
Education Groups				
High School	1 if reported level, 0 otherwise	0.029	0.053	0.024***
				(0.006)
University Student	1 if reported level, 0 otherwise	0.072	0.096	0.024*
				(0.009)
Bachelor´s degree	1 if reported level, 0 otherwise	0.278	0.221	-0.057***
				(0.014)
Master´s Student	1 if reported level, 0 otherwise	0.048	0.050	0.003
				(0.007)
Postgraduate	1 if reported level, 0 otherwise	0.075	0.046	-0.029***
				(0.008)
Occupation Groups				
Professionals and workers	1 if belongs, 0 otherwise	0.185	0.141	-0.044***
				(0.012)
Art workers	1 if belongs, 0 otherwise	0.014	0.014	-0.000
				(0.004)
Managers and Officials	1 if belongs, 0 otherwise	0.007	0.008	0.000
				(0.003)
Administrative activities	1 if belongs, 0 otherwise	0.021	0.019	-0.002
				(0.005)
Small traders	1 if belongs, 0 otherwise	0.017	0.022	0.005
				(0.005)
Other Occupations	1 if belongs, 0 otherwise	0.008	0.008	-0.001
				(0.003)
Observations		1614	1986	3600

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

probability of establishing a match. On the other hand, if a man is reported to be a professional or a worker, the probability of establishing a match increases. This trend is also observed when the occupation is specifically related to artistic work.

These results are consistent with the literature on lower preferences for dark-skinned people in different markets including dating markets. For example, in the credit market, loan officers perceive white-skinned people as more creditworthy than their dark-skinned counterparts (Hernández-Trillo and Martínez-Gutiérrez, 2022). Also, in the labor market the findings suggest that, for women, indigenous applicants must send 18 percent more resumes than whites to get the same number of callbacks (Arceo-Gomez and Campos-Vazquez, 2014). Thirdly, in the electoral markets, dark-skinned candidates are 20-38 less likely to win an election than someone with an intermediate skin tone (Campos-Vazquez and Rivas-Herrera, 2021).

In terms of earnings, individuals in the darkest category are 20 percentile and rank lower in the wealth distribution (Campos-Vazquez and Medina-Cortina, 2019) which can be related to different aspects of the labor market. These results indicate that Mexican society prefers white skin-women over dark-skinned ones in different markets.

The results show an increase of 18.8 percentage points which is a 35% increase in the response rate considering the interactions specified as matches, with a baseline match probability of 0.542. This effect is higher in comparison to the response rate of resumes where indigenous applicants must send 18% more resumes than whites to get the same response rate (Arceo-Gomez and Campos-Vazquez, 2014). Also, it is a higher response rate than the one observed in Edelman et al., 2017 where people with African American names are 16% less likely to be accepted. However, the result it is similar to the effect found in Bertrand and Mullainathan, 2004 where white names receive 50% more callbacks for interviews.

In terms of education, the results are consistent with previous findings. Higher education may be important at the moment of establishing a match, particularly in the men's case. But also presents an interesting result in contrast of earlier studies, which is a penalization of low educational education as High School.

Something similar is inferred in the occupation dummies. The results do not present statistical significance. Occupations considered as jobs with higher earnings present a positive coefficient in the regressions. This suggests that people are looking to maximize

their utilities when looking for a partner which is consistent with the marriage theory.

Table 3: Linear Probability Models results of the association of a match on characteristics.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Skin-Tone	-0.188***	-0.181***	-0.180***	-0.188***	-0.180***	-0.180***
	(0.0163)	(0.0162)	(0.0162)	(0.0162)	(0.0160)	(0.0161)
Male age		0.0190***	0.0188***		0.0192***	0.0190***
		(0.00217)	(0.00219)		(0.00219)	(0.00221)
Distance		0.000168	0.000168		1.00e-04	9.55e-05
		(0.000145)	(0.000146)		(0.000153)	(0.000154)
High School		-0.0997***	-0.0981***		-0.0955**	-0.0947**
		(0.0375)	(0.0377)		(0.0377)	(0.0380)
University Student		-0.0155	0.0391		-0.00788	0.0451
		(0.0294)	(0.0612)		(0.0296)	(0.0609)
Bachelor´s degree		0.0401**	0.0385*		0.0535***	0.0490**
		(0.0202)	(0.0210)		(0.0202)	(0.0209)
Master´s Student		-0.00690	0.0363		-0.000686	0.0402
		(0.0367)	(0.0597)		(0.0366)	(0.0586)
Postgraduate		0.0692*	0.0679*		0.0743**	0.0710*
		(0.0359)	(0.0361)		(0.0361)	(0.0362)
Student			-0.0628			-0.0613
			(0.0614)			(0.0608)
Professionals and workers			0.0148			0.0250
			(0.0246)			(0.0245)
Art workers			-0.00507			0.0198
			(0.0757)			(0.0733)
Managers and Officials			-0.0974			-0.0629
			(0.0938)			(0.0930)
Administrative activities			0.00393			0.0130
			(0.0592)			(0.0594)
Small traders			-0.0630			-0.0425
			(0.0557)			(0.0539)
Other Occupations			0.0317			0.0269
			(0.0950)			(0.0989)
Constant	0.542***	0.0393	0.0422	0.534***	0.00756	0.0127
	(0.0117)	(0.0578)	(0.0580)	(0.0218)	(0.0625)	(0.0628)
Observations	3,600	3,600	3,600	3,600	3,600	3,600
Mean	0.542	0.542	0.542	0.542	0.542	0.542
Adjusted R-squared	0.035	0.064	0.063	0.047	0.077	0.076
City FE				YES	YES	YES
Model FE				YES	YES	YES

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

7 Conclusions

This study examines the effect of variation in skin color over the preferences in a dating app and the likelihood of establishing a match. The approach is a correspondence study with photographs in Tinder, a widely used dating app globally. The unique approach of the experiment allows the possibility to measure differences driven entirely by contrasting skin tones. The experiment employs different treatments across models and cities, providing valuable insights. Based on a sample of 3,600 male Tinder profiles, the study reveals a penalization to dark skin-tone profiles. This finding aligns with existing literature that highlights discrimination against individuals with darker skin tones in various markets, including labor, credit, and electoral sectors.

The importance behind the life partner selection is aligned with economic and demographic results. However, one of the main concerns is the social conceptualization of beauty. Even when science has established objective definitions, this still variates across cultures and time. As the photographs are the same between profiles and the main difference is the skin tone we can infer that differences in match establishment are arranged only to this characteristic. This is also supported by the coefficient of education and occupation dummies and the lack of statistical significance which means that the differences in probabilities are not driven by these reasons.

Additionally, we extend the analysis at a city level to find a similar pattern between Mexico City and Guadalajara with similar percentages over the established match with white and dark skin profiles. However, Tuxtla Gutierrez presents distinctive trends that deviate from this pattern. This suggests that the concept of beauty may vary across cultures and regions. In the case of Tuxtla Gutierrez, it is possible that the prevalence of dark skin tone women is higher, and therefore, dark skin may be considered the standard of beauty within that particular city.

In conclusion, it is important to acknowledge the limitations of this study. Firstly, due to ethical and practical constraints, the number of profiles and cities included in the analysis was limited. This may restrict the generalizability of the findings to a larger population. Additionally, it is important to note that the analysis primarily focuses on initial impressions based on profile evaluations, which may not fully capture the complexities and dynamics of the entire process of selecting a life partner.

Finally, this study has notable strengths that contribute to its significance in the

field. The use of two profiles per model, with the only differentiating factor being the skin tone, provides a clear and controlled comparison. Additionally, by keeping the other profile elements consistent, such as photographs, biographies, names, ages, and interests, the study isolates the impact of skin tone on the preferences observed. The findings from this research can be seen as representative of Mexican society and contribute to our understanding of the higher preference for white skin-tone profiles. Further research could delve into the importance of intermediate skin tones and explore their interaction with other characteristics, offering additional insights into the existing literature.

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