

Examining Emoji Color Spaces: A Strategy for Improving the Coverage of Heart Emoji

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To: Unicode Technical Committee

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I. Background

Hearts are among the most frequently used emoji. Users of emoji often juxtapose the existing nine colored-heart emoji next to each other to denote markers of emotion, identity or affiliation that are not represented with atomic emoji in the Unicode Standard (ex. Support of Belarus: 🇧🇪🇷🇺🇧🇪, Bisexuality: 🌈💙💜, etc.).¹ It has also recently come to our attention that colored hearts are [the most common emoji used in non-messaging spaces](#) like Twitter bios.

Identifying emoji additions that have multiple-uses is increasingly important as emoji gain in popularity. The more emoji can operate as building blocks instead of specific images the more versatile, fluid, and useful they become.

What follows does not constitute a proposal but lays the strategy regarding intent to draft proposals for a small set of colored hearts: PINK HEART, GRAY HEART, and LIGHT BLUE HEART, thus completing the set of colored hearts to align with what we understand about color theory and meet digital communication needs.

¹ This follows similar behavior with other types of emoji, pairing two together to convey something more specific like, “😍😭” to say “so cute” or “🇮🇹🥟” to communicate italian dumplings aka ravioli ;-)

Introduction

The original intent of adding a small set of colored emoji to the Unicode standard was to lay the technical groundwork to [standardize color variation](#) using ZWJs; however, there has been little to nearly no adoption.

So what to do about it? This is where  come in.

What follows is a strategy that looks at some of the most frequently used emoji (hearts) and how to improve their coverage. Early analysis indicates that there are only a few gaps in the color spectrum of emoji offerings to complete the set. By encoding a finite number of additional colored hearts we unlock a much broader range of expression and representation.

We want to avoid new single use-case emoji like flags. Flag emoji are the bulk of emoji fonts' file size and yet they are the least frequently used of all emoji. See: *Regarding Multiple Uses*.

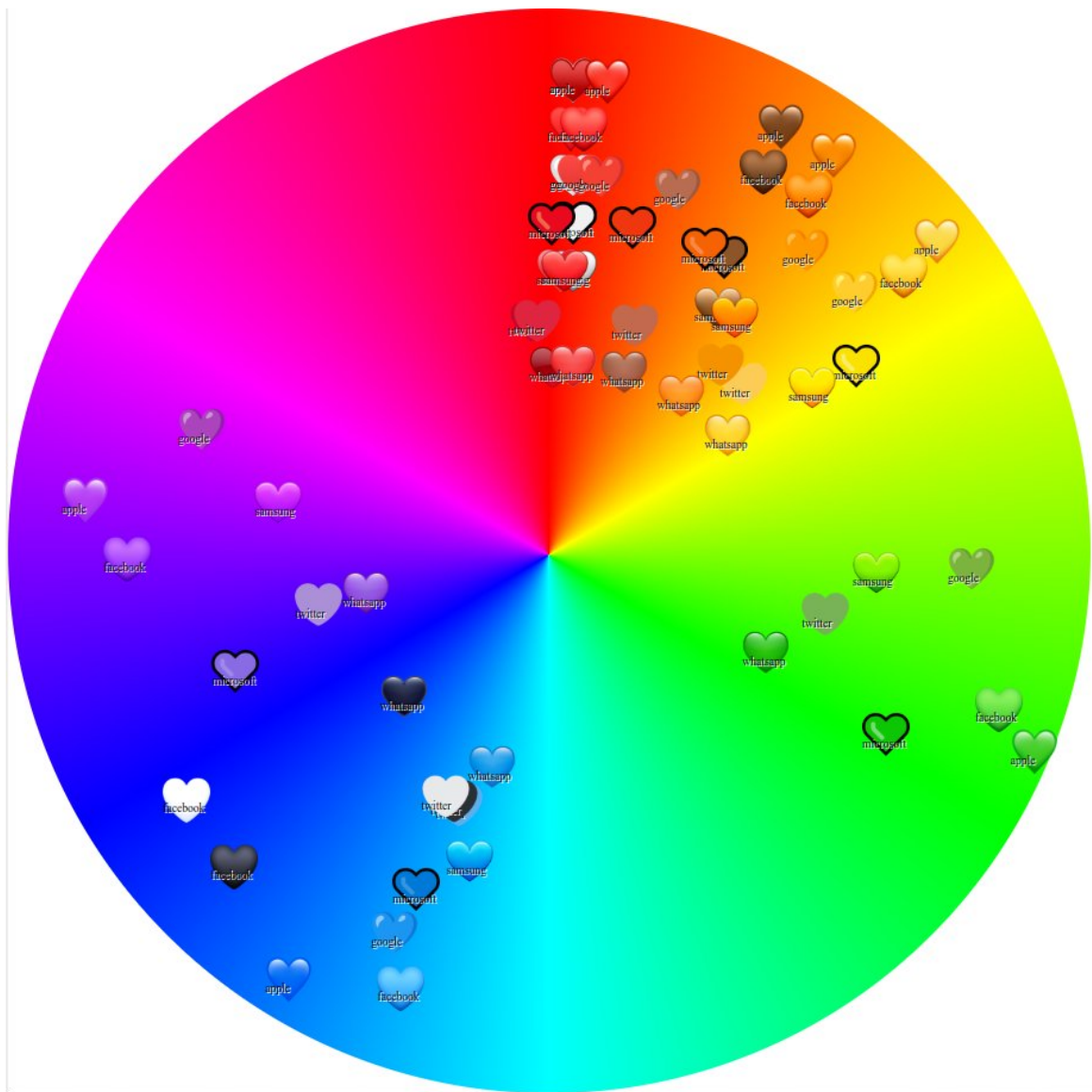
Identifying strategies and solutions such as this one is critical to meet user demand and keep up with the speed of language online.

We want to do three things:

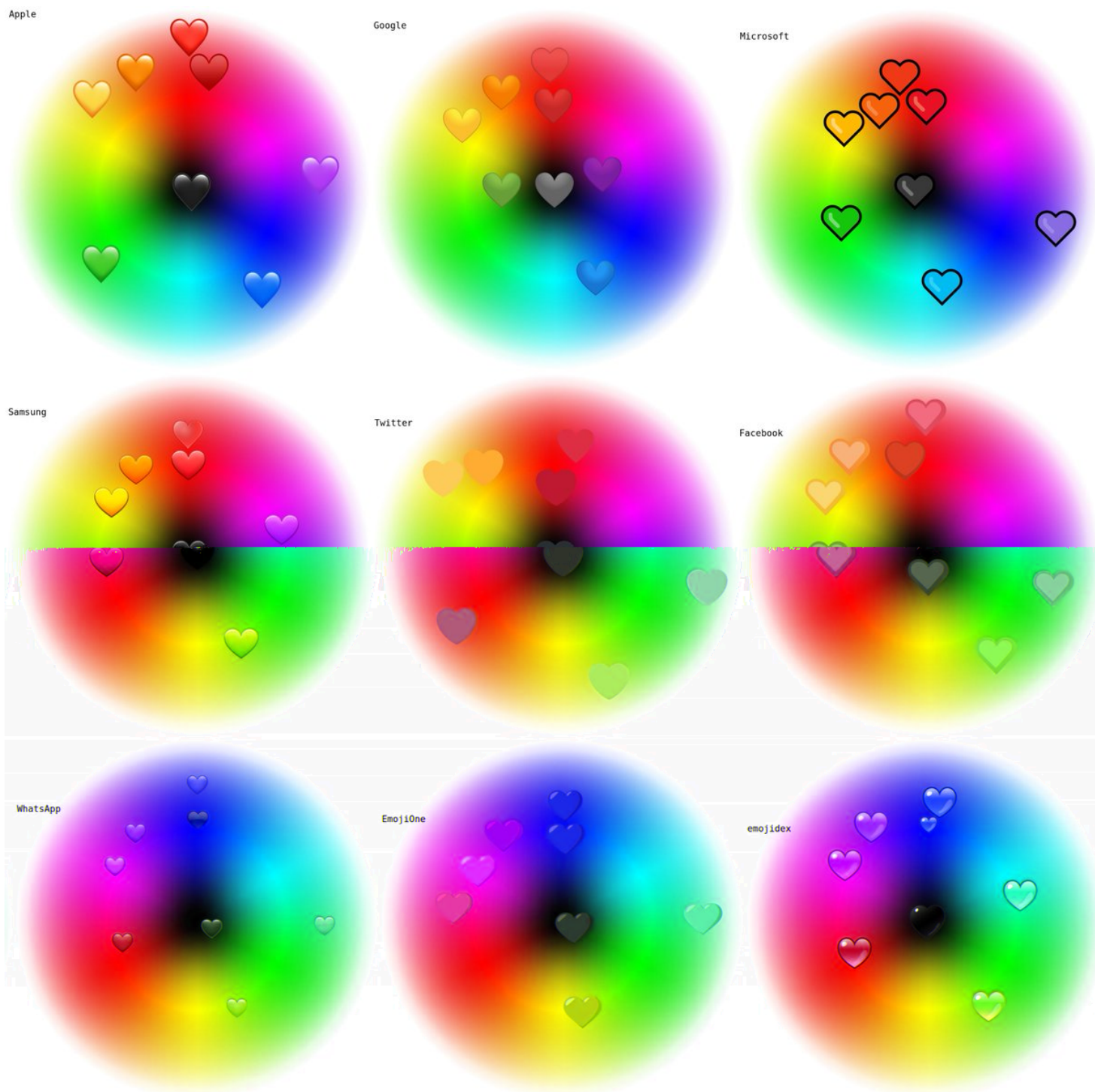
1. Investigate one of the most frequently used emoji type — hearts — and strengthen the set by broadening their range of utility as described in *Background and Regarding Multiple Uses*.
2. Identify new colors and understand the impact of these additions
3. Slightly modify the color of existing heart emoji for more equal distribution of color in pursuit of adding a small number of new colored heart emoji to complete the set.

Investing Gaps in Colored Hearts

Working with closed sets is important when making emoji additions. In pursuit of understanding what this looks like for color we first have to understand the status quo. Below is a visualization where vendors currently fall with regard to the existing color spectrum. It neatly illustrates color spaces that are more dense than others. When adding new emoji ensuring that they definitively break new ground without risk of needing to add more later is a top priority.



Note: RGB converted to hue only. The different radiuses are the different vendors. Caption: While the upper left quadrant is quite crowded, there are clear leaps between red and purple, purple, and blue, cyan and green, and green and yellow. Most vendors put Purple too close to Blue, and Blue too close to Cyan. Green is often too yellow. *Image with permission and courtesy of @fakeunicode*



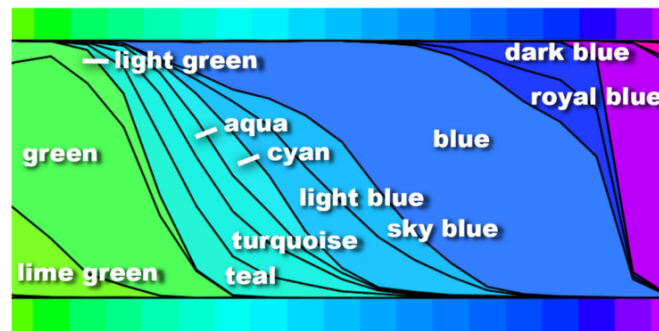
Above: Color spectrums broken down by vendor. Image with permission and courtesy of [@fakeunicode](#)

These charts clearly illustrate the large gaps between blue and green and red and pink. They also suggest that if vendors slightly adjust the color of their yellow, green, and blue emoji we'd have a more even distribution without the need to add new colors. *Note: The platform vendors are onboard for this action.*

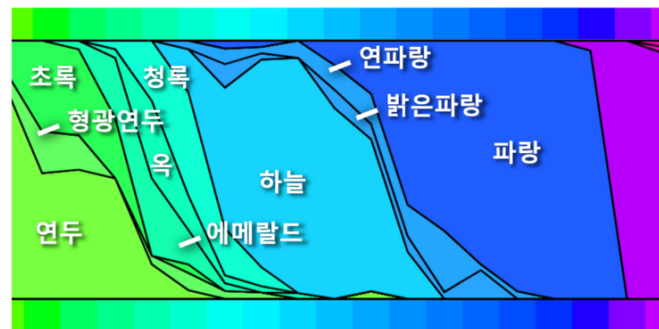
Identifying the Additional Colors

There is an existing literature in cross-linguistic study of color terms that suggests there are a maximum of 11 basic color terms across cultures ([Basic Color Terms](#), Berlin & Kay 1969). Of these, the current set of emoji hearts are only missing PINK and GREY, both 'Stage VII' color terms. We also suggest adding LIGHT BLUE as well, as there are languages, including [Russian](#) and [Korean](#), which do not have a single basic color term for blue, but divide the space in two.

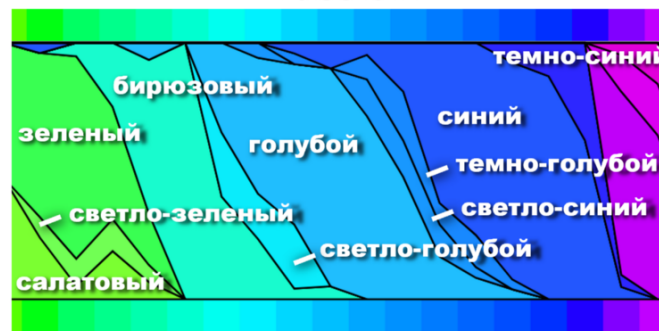
English



Korean



Russian



Caption: As you can see in the above, the "blue" area in English is used almost to the left end of the graph where the greens are, while in Korean and Russian, the dark blues ("파랑" and "синий") only extend part way to green, and there is a significant light blue color ("하늘" and "голубой") which extends the rest of the way to green.

Source: <https://medium.com/hci-design-at-uw/there-is-no-blue-in-korean-ea6ac0d25d34>

As languages evolve, they acquire new basic color terms in a broadly predictable sequence; if a basic color term is found in a language, then the colors of all earlier stages are typically present. The sequence is as follows:

- Stage I: Dark-cool and light-warm (covers a larger set of colors than just English "black" and "white".)
- Stage II: Red
- Stage III: Either green or yellow
- Stage IV: Both green and yellow
- Stage V: Blue
- Stage VI: Brown
- Stage VII: Purple, pink, orange, or gray

Basic Color Term theory has been debated and problematised, but we believe it still provides some useful basis for the approach to the expansion of the range of colored hearts available. One of the problems is that it doesn't account for major languages that have two distinct basic terms for blue, as discussed above. We do not presume that the lexical patterns found across languages represent fixed cognitive perspectives, for example we do not presume that people can only distinguish between the colors if they have distinct terms for them, or that they will only be useful if the color terms are lexified in a particular language. We do not presume that all people will find the additional hearts equally useful, but that each provides more flexibility for the current emoji set. Using Basic Color Terms as a theoretical underpinning of this strategy document means we are likely covering the broadest possible set of basic colors in a large number of languages and cultures.

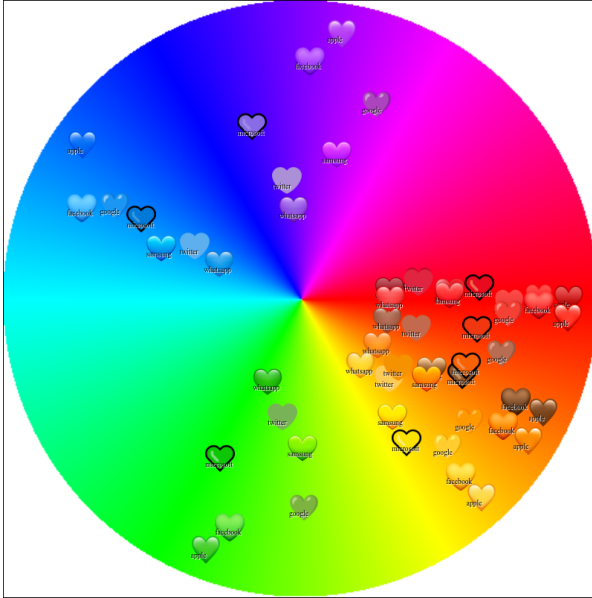
In the past there has been feedback from the UTC that the concept of "pink" is not a universal concept and people who didn't grow up with a word for a color could not distinguish it from other nearby colors. This confusion is not unique to pink — confusion most of us have over cyan/blue is similar to what some cultures had over yellow/green. All that being said, just because a culture doesn't have a word for a particular color does not mean it will result in confusion; English speakers do not generally consider the distinction between light purple and dark purple to be a basic distinction, but that doesn't mean we would expect the Los Angeles Lakers to play in lavender uniforms.

Note, to be a "basic color term," it can't be describable using another color (e.g., because teal or turquoise can be meaningfully described as "blue-green," it doesn't qualify in English) or a physical object as a reference (e.g., rose, peach, salmon).

Required Design Modifications

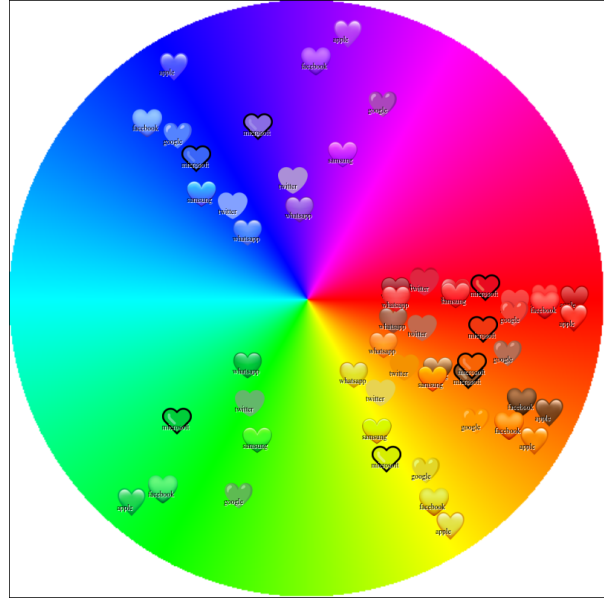
What would this look like?

Status Quo: Existing Set



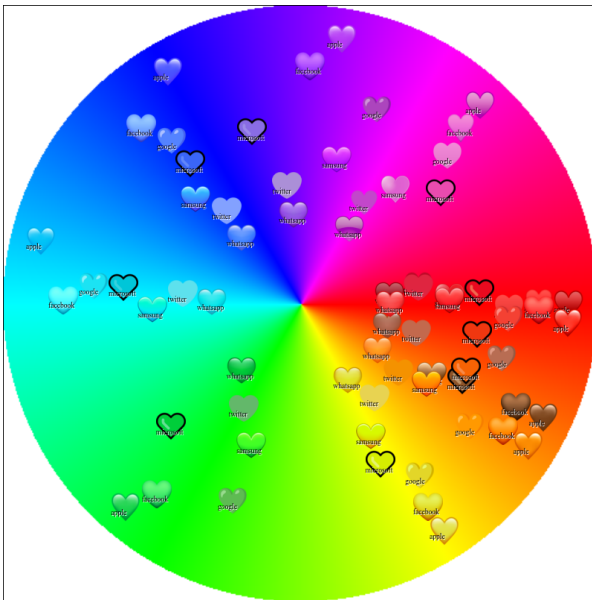
Caption: The current set of saturated emoji (omitting black, gray, and white) mapped to RGB. [@fakeunicode](#)

Future: Existing Set with Colors Shifted to Accommodate Possible Additions



Caption: Yellow has been hue shifted +10 degrees, green +20 degrees, and blue +25 degrees [@fakeunicode](#)

Future: Includes Possible Addition of Pink Heart and Light Blue Heart



Caption: Cyan and Pink added to the shifted set. [@fakeunicode](#)

For demonstration only, this is what the hearts could look like cross vendors :



Caption: A possible future. Note: blue, green, and yellow hearts show proposed shifted hues @fakeunicode

The ESC recommends vendors modify their colored hearts so the color spectrum is more evenly distributed. The ESC will follow up with three proposals for PINK, LIGHT BLUE, and GREY heart for review. All major platform vendors support this change.

Regarding Multiple Uses

The above stated proposals will go in further detail regarding the criteria for inclusion; however, it is worth reiterating that a primary motivating factor in these recommendations regards encoding concepts that can operate as building blocks particularly to meet demand for identity flags ([sexuality](#), gender, sports, subregional, etc.). Many of these flags draw upon PINK, GREY and LIGHT BLUE in their design:

PINK

[Bisexual](#) flag

[Pansexual](#) flag

[Polysexual](#) flag

[Genderfluid](#) flag

GREY

[Aromantic](#) flag

[Asexual](#) flag

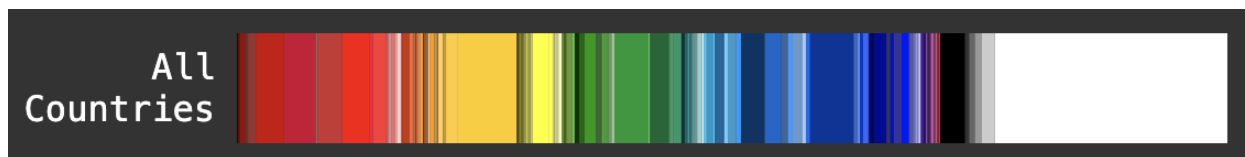
[Demiromantic](#) flag

[Demisexual](#) flag

[Agender](#) flag

LIGHT BLUE

[Pansexual](#) flag



Caption: Sub-regional flags broken down by color. The addition of light blue and gray would extend coverage of representation. Chart by Adam Peirce, used with permission. Source: <https://blocks.roadtolarissa.com/1wheel/ba7b6295c9e3e9aea7b164e1e22e9366>

The world also uses emoji for sports teams, whether local, college or national level. Many teams are currently accommodated by the range of hearts offered, but expanding the range allows for more sports fans to show their affection. (ex. Currently fans of the San Antonio Spurs are missing the sliver/grey heart, and their colors are listed as one of the five most popular color schemes in US sport today.)

Lastly, the ESC does not propose extending more colors to the circle and square emoji which are used far less frequently than hearts.

Acknowledgements

Special thanks to [@fakeunicode](#) for generously generating many charts for this proposal. [Adam Pearce](#) for his investigation of color in subregional flags. Charles Carson and Lauren Gawne for their expertise and Mark Davis for his guidance.