Style Guide: An Interdisciplinary Communication Tool to Support the Process of Generating Tailored Infographics From Electronic Health Data Using EnTICE³

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Survey of >5,800 primarily Latino members of northern Manhattan community

- Health literacy

- Anthropometric measures: blood pressure, waist circumference, height, weight

- Health behaviors: nutrition, physical activity

- Self-reported outcomes: depression & anxiety symptoms, overall health, sleep...

Plan to return data to participants using tailored infographics via community health portal GetHealthyHeights.org
ENTICE$^3$

Electronic Tailored Infographics for Community Engagement, Education, and Empowerment

- Needed process for generating tailored infographics from survey & clinical data
- Adaptable, reusable, generalizable approach: EnTICE$^3$
- High level of communication & collaboration between designer and framework architect
- Style Guide codifies design attributes :: framework architect transforms into formal computational processes
Style Guide Elements

- Variable(s)
- Units
- Comparator
- Tailoring
- Criteria
- Notes

- Versions
- Sample image
- Translation
- Text-only versions
- Text tailoring
- CMYK (color) values
**Vegetable Servings per Day**

**Variable(s):** Vegetable servings (per day), Age, Sex  
**Comparator:** Mean value for sex by age group: 18-30; 31-50; 51-64; 65+  
**Recommendation:** 3 for men <50; 2.5 for men >50; 2.5 for women <50; 2 for women >50.  

**Units:** Tenths  
**Tailoring:** Height of bar and value inside, centered vertically. Auto-generate text below graphic substituting “men” or “women” as needed.  
**Notes:** If 0, no bar; put “0” just above x-axis. May need to re-scale y-axis for high values.  
**Versions:** English, Female  
**Spanish, Female**  
**Spanish, Male**  

For reference:  

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**Vegetable Servings per Day**  

You reported eating about 2 servings of vegetables per day.  

**Men** in your age group reported eating an average of 1.8 servings of vegetables per day.  

It is recommended that **men** your age eat a minimum of 3 servings of vegetables per day.

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**Porciones de Vegetales por Día**  

Usted informó que comió alrededor de 2 porciones de vegetales por día.  

**Otros hombres** informaron que comieron un promedio de 1.8 porciones de vegetales por día.  

Se recomienda que **hombres** de su edad coman por lo menos 2 porciones de vegetales por día.

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**Porciones de Vegetales por Día**  

porciones (y-axis)  
Usted  
Otras mujeres de la misma edad que usted / Otros hombres de la misma edad que usted  
Recomendación mínima
Health Compared to Ideal

You
- Physical Activity
- Mental Health
- Fruit & Vegetable Consumption
- Overall Health

Ideal
- Physical Activity
- Mental Health
- Fruit & Vegetable Consumption
- Overall Health
Health Compared to Ideal Cloverleaf

Variable(s): Fruit & Vegetable Consumption, Physical Activity, Overall Health, Mental Health
Comparator: Ideal is a static image.

Units: Fruit & Vegetable Consumption – Full petal if meets both f & v minimums (excellent/excelente). Middle petal if only meets one (good/bueno). Small petal if meets neither but one or more values is >0 (fair/bajo). Tiny petal if both values are zero (poor/muy bajo).

Physical Activity – Calculate adjusted exercise minutes: [moderate + 2(vigorous) = adjusted minutes]. Full petal if adjusted minutes > 150 (excellent/excelente). Middle petal if 75 < adj. min. < 150 (good/bueno). Small petal if 0 < adj. min. < 75 min (fair/bajo). Tiny petal if zero (poor/muy bajo).

Overall health – Five petal sizes correspond to poor, fair, good, very good, and excellent / mala, regular, buena, muy buena, excelente.

Mental Health – CDC 30-day measure days mental health was not good. Full petal for 0 days (excellent/excelente). Large petal for 1-5 days (good/bueno). Medium petal for 6-10 days (fair/regular). Small petal for >10 days (poor/mala).

Tailoring: Size of petal.
Notes: none
Versions: English
Spanish

For reference:

Health Compared to Ideal

Compared to the ideal:
• Your amount physical activity was good.
• Your overall health was very good.
• Your fruit and vegetable consumption was poor, and
• Your mental health was excellent.

Salud en Comparación con el Ideal

Comparado con el ideal
• Su nivel de actividad física fue bueno.
• Su salud general estaba muy buena.
• Su consumo de frutas y vegetales fue muy bajo, y
• Su salud mental estaba excelente.
Contribution to a Learning Health System

Style Guide:

- Provides framework for ongoing development.
- Lowers barriers to expansion/modification.

Infographics:

- Can facilitate patients' communication with clinicians.
- Convert research data into health communication and community engagement tools.
- Help to build a strong fabric of trust by creating value for the community from data contributed by its members. Building trust is especially important among racial/ethnic minorities.
Useful Take-Aways

- Interdisciplinary communication may be facilitated by a structured style guide.

- Encourages efficient design by minimizing moving parts.

- Style guide promotes consistency and specificity across the product.

- Leaves framework architect with a great deal of latitude for implementation strategy.
Limitations

- Specific format may not meet needs of other projects
- Tool is only as good as the quality of the input

Evaluation

- Note areas of impaired communication, pain points
- Congruence between design prototype and final product