



**A case study of the *Discover Health*
exhibit at one library site
(Summative evaluation report 2 of 2)**



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Knight Williams Inc.

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Introduction

Discover Health/Descubre la Salud (Discover Health) is a bilingual English/Spanish informal health education project funded by the Science Education Partnership Award (SEPA) program at the National Institutes of Health (NIH). The project represents a partnership between the Colorado Area Health Education Center (COAHEC) at the Anschutz Medical Campus in Denver, the [STAR Library Network \(STAR Net\)](#) managed by the Space Science Institute's National Center for Interactive Learning, and the Latin American Center for Arts, Science and Education ([CLACE](#)).¹ The project's primary deliverable is a travelling library exhibit supported by community programming designed to engage library patrons within the state of Colorado to learn about key public health issues related to cardiovascular health, diabetes, and obesity.

The exhibit toured a total of 10 library sites over a 35-month period from January 2017 to November 2019. At each library site staff generally followed an implementation model that involved participating in a training workshop led by the project team; identifying patrons' needs and interests through a local Community Dialogue²; and developing a partnership with the library's regional Area Health Education Center (AHEC) to help inform, support, and extend the library's health programming and other activities related to the exhibit.³

Evaluation overview

As a condition of the project's NIH funding, *Discover Health* also included an external evaluation conducted by an independent evaluation firm, Knight Williams Inc., which specializes in the

¹ *STAR Net* is a production of the Space Science Institute's National Center for Interactive Learning (NCIL) in collaboration with the American Library Association, the Lunar and Planetary Institute, and the Afterschool Alliance. Major funding is provided by the National Science Foundation, NASA, and the National Institutes of Health (SEPA). *STAR Net* focuses on helping library professionals build their STEM skills by providing "science-technology activities and resources" (STAR) and training to use those resources. *STAR Net* includes a STEM Activity Clearinghouse, blogs, a webinar series, workshops at conferences, and a monthly e-newsletter. Partners include the American Library Association, Association of Rural and Small Libraries, Collaborative Summer Library Program, Chief Officers of State Library Agencies, Afterschool Alliance, Lunar and Planetary Institute, Area Health Education Centers, and others.

² During the grant period, the project team developed a [Community Dialogue Guide for Public Libraries](#) resource guide to help libraries address STEM topics with their communities. As noted in the [STAR Net Community Dialogue resource page](#), "Public libraries are vital community centers offering resources, activities, and other learning opportunities. In order to best serve their communities, libraries must look outward to discover more about how community members think and feel about important topics and to make connections with local organizations and partners that can help address these issues to achieve a common goal." As part of the *Discover Health* project, the project team developed the Community Dialogue approach drawing on current work in Participatory Action Research and Participatory Evaluation (Selener, 1993; Button & Peterson, 2009; Kemmis et. al., 2013) and STEM Learning Ecosystems (Traill, & Traphagen, 2015). The approach was then refined in subsequent NSF-funded Project *BUILD* and the NASA-funded *NASA@My Library* programs (Holland and Dusenbery, 2018)².

³ The Area Health Education Centers (AHECs) were developed by Congress in 1971 to recruit, train and retain a health professions workforce committed to underserved populations. Nearly every state has an AHEC program. The Colorado AHEC system was established in 1977 (<http://www.ucdenver.edu/life/services/ahec/Pages/index.aspx>). Today, the State of Colorado is divided into six regions which partner with the Schools of Medicine, Dentistry, Pharmacy, Physician Assistant, Physical Therapy, and College of Nursing. The Colorado AHEC Program Office works with the regional offices to build state-wide network capacity and strengthen academic community linkages in four core mission areas: 1) Health Careers and Workforce Diversity, 2) Health Professions Student Education, 3) Health Professions Continuing Education, and 4) Public Health and Community Education.

development and evaluation of health and science multimedia and outreach projects targeting diverse audiences. The goal of the evaluation was to assess both the impact of the *Discover Health* library exhibit and related community programming on library patrons and the effectiveness of the library and AHEC partnerships that facilitated implementation at each site.

The evaluation produced two reports, the first of which presents a cross-site analysis of the implementation of the *Discover Health* project across all 10 library sites, drawing on the reporting information and reflections of the library and AHEC partners who collaborated to host the exhibit and coordinate programming.⁴ Partner feedback was gathered in four areas: the *Discover Health* exhibit, the *Discover Health* programming, the library-AHEC partnership model, and the partners' overall project experience. The second evaluation report, presented here, is a case study of the exhibit's impact on patrons at the final library in Colorado to host the exhibit.

Background

The centerpiece of the *Discover Health* project is an 800 square-foot exhibit. As illustrated in Image 1, the exhibit includes a variety of interactive multimedia experiences, ranging from computer-based activities to a larger scale heart model and other hands-on activities.



Image 1. *Discover Health* exhibit components
(as presented in project team promotional materials)

⁴ Knight Williams Inc. (2020). A cross-site analysis of the *Discover Health* exhibit, programming, and partnerships (Summative evaluation report 1 of 2).

Exhibit sites

As shown in Image 2, the exhibit was hosted at 10 libraries around Colorado in the following locations: Sterling, Evans, Aurora, Pueblo, Alamosa, Cortez, Grand Junction, Delta, Rifle, and Colorado Springs. Table 1 shows that the tour period spanned 35 months, from January 2017 to November 2019.

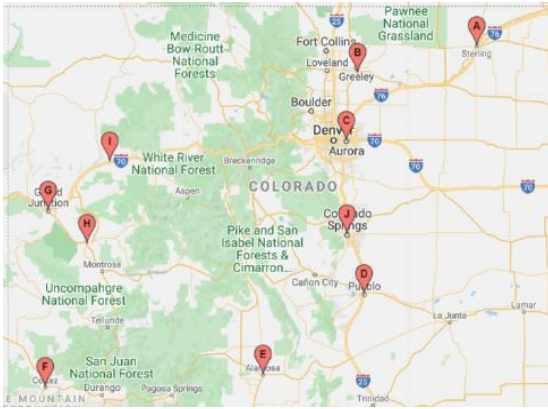


Image 2. *Discover Health* library locations

Table 1. *Discover Health* library locations and exhibit tour dates

Library	Location	Tour dates
A. Sterling	Sterling	Jan - Mar 2017
B. Riverside	Evans	Apr - Jun 2017
C. Aurora	Aurora	July - Sep 2017
D. Pueblo	Pueblo	Oct - Dec 2017
E. Alamosa	Alamosa	Jan - Mar 2018
F. Cortez	Cortez	Apr - Jun 2018
G. Mesa	Grand Junction	July - Sep 2018
H. Delta	Delta	Oct - Dec 2018
I. Rifle	Rifle	Jan - Mar 2019
J. Penrose	Colorado Springs	Sep - Nov 2019

Penrose library

The exhibit was hosted at the Penrose library in Colorado Springs from September through November 2019. The library is part of the Pikes Peak Library District which operates 15 physical locations. Along with its mobile library program, the district serves a population of more than 650,185 throughout El Paso County, Colorado. As noted on the Pikes Peak Library District website, the district's [mission](#) focuses on *“Providing resources and opportunities that impact individual lives and build community. Seek. Engage. Transform.”*

Library staff preparation

The *Discover Health* project team conducted a workshop at the Penrose library on August 30, 2019 in order to: introduce library staff to the key themes and components of the exhibit; provide them with hands-on training for setting up and maintaining the exhibit; and help facilitate the development of their collaboration with their regional AHEC partner. The project team then continued to collaborate with the library staff on set-up, implementation, and break down of the exhibit over the tour period.



Image 3. Exterior of Penrose library, from [library website](#)

Library staff goals for Discover Health

In their final report form prepared for the evaluation and project teams, the Penrose library staff described three goals for hosting the *Discover Health* project:

- Provide enriching educational opportunities to adults, teens, children, and families who may not have access or funds to participate in STEM learning activities;
- Introduce patrons to local health resources in the community, in particular low-cost healthcare options available to them; and
- Introduce STEM topics to adults experiencing homelessness.

In reflecting on their three-month tour period, the staff indicated that they generally felt these goals were accomplished.

Library staff description of Discover Health audiences

The library staff also described five primary audiences that visited the exhibit:

- 1) Public library patrons of all ages in the Downtown Colorado Springs area;
- 2) Adults and families experiencing homelessness or of lower socioeconomic status;
- 3) People who might be food insecure, lack access to healthy food sources, or reliable nutrition information;
- 4) People with limited access to healthcare due to socioeconomic status, lack of personal identification, lack of employment, or lack of mobility/transportation; and
- 5) English as a Second Language Students in the Pikes Peak Library District adult education programs.

As part of the partner final reporting for the project, the library staff estimated that the exhibit was visited by approximately 30,812 patrons, approximately one-quarter (25%) of the 123,250 patrons who visited the library during the three-month exhibit period based on electronic door count records.⁵

Patron time at exhibit areas

Given the complexities of arriving at a reliable estimate, the evaluation did not ask library staff to estimate the amount of time patrons spent with the exhibit. Assessing this dimension of use was also not a focus of the on-site evaluation given competing priorities. However, as the evaluation team was stationed at the library entrance, the team had an opportunity to informally observe 30 different patrons as they visited one or more of the seven exhibit areas located in the library entrance, three of which are pictured in Table 2 (page 8). The observations took place on five different days (including three weekdays and two weekend days), were unobtrusive, and did not ask patrons for information about prior visits to the exhibit or for other background information.







Image 4. Interior of Penrose library with some exhibit pieces situated near the circulation desk

⁵ Note that, given the library's methods of estimating the numbers of patrons and exhibit visitors, these totals likely do not represent unique patrons or exhibit visitors.

These limited observations showed that patron’s time in these exhibit areas ranged considerably, from a low of 15 seconds to a high of 22 minutes, averaging about eight minutes.

Patron use of exhibit components, based on kiosk metrics

As another indicator of exhibit use, the library staff, in collaboration with the project team, reported kiosk metrics for the exhibit’s four interactive pieces during the three-month tour period. Presented in Table 2, the kiosk data showed that the number of sessions that were at least five seconds in length ranged from 41 sessions for the *Body Systems Touch Table* to 332 for *Green Screen Surgery*, both of which were located near the library entrance. Also near the library entrance, the *Health Trivia* interactive recorded 164 sessions, while *Fact or Fiction* in the children’s area registered 124 sessions.

Table 2. Number of sessions at least five seconds in length registered by interactive exhibit pieces at Penrose		
Green Screen Surgery		332 sessions
Health Trivia		164 sessions
Fact or Fiction		124 sessions
Body Systems Touch Table		41 sessions

Methods

The evaluation plan and data collection activities proposed for the Penrose library case study were reviewed by the University of Colorado Anschutz Medical Campus IRB and then exempted from further review.⁶

Evaluation design

The evaluation was designed to gather exhibit feedback from four types of patron groups that represented different levels of patron experience with the *Discover Health* exhibit and programs. As summarized in Table 3, these included: no prior exhibit or program experience, prior program experience only, prior exhibit experience only, and prior exhibit and program experience.

**Table 3. Evaluation design planned for the exhibit case study:
Definition of groups and instruments administered**

1. **Group 1. No Prior Exhibit or Program Experience:** This group visits the exhibit while the evaluator is on site and then completes the Patron Exhibit Survey and the Patron Exhibit Interview (*excluding* questions about the exhibit and programming relationship), followed by the Patron Follow-up Survey one month later.
2. **Group 2. Prior Program Experience Only:** This group visits the exhibit while the evaluator is on site and then completes the Patron Exhibit Survey and the Patron Exhibit Interview (with additional questions about the exhibit and programming relationship), followed by the Patron Follow-up Survey one month later.
3. **Group 3. Prior Exhibit Experience Only:** This group completes the Patron Exhibit Survey, the Patron Exhibit Interview (*excluding* questions about the exhibit and programming relationship), and the Patron Follow-up Survey based on their prior experience with the exhibit. Since this group was exposed to the exhibit prior to the evaluation site visit, it serves as a delayed respondent group with their responses based on recall of prior exhibit experience.
4. **Group 4. Prior Exhibit + Program Experience:** This group only completes a short set of interview questions about their experience of the relationship between the exhibit and programming, asked as part of the Patron Recruiting Script. Since this group was exposed to both the exhibit and program prior to the evaluation, it is challenging to separate these two experiences in their responses; thus the focus in this case is to be on the perceived relationship between the exhibit and programming.

⁶ University of Colorado Anschutz Medical Campus, COMIRB Protocol 18-1788 Initial Application, Certificate of Exemption Submission ID APP001-1, approved 09-09-2018.

Recruitment procedure

To naturally separate patrons into the four possible groups described in Table 3 (page 9), a Patron Recruiting Script (Appendix 1) was developed to ask patrons about their prior exposure to the exhibit and related programs. The evaluation plan involved recruiting Groups 1 and 2 (neither of which had prior experience with the exhibit) to visit the exhibit while the evaluator was on site and then provide feedback, while Groups 3 and 4 (both of which had prior experience with the exhibit) answered questions based on their prior experience.

The evaluation was designed so that each group would complete one or more of the four evaluation instruments developed for the project, as applicable, including: 1) an exhibit/program relationship interview that was part of the Patron Recruiting Script (Appendix 1); 2) the Patron Exhibit Survey (Appendix 2); 3) the Patron Exhibit Interview (Appendix 3); and 4) the Patron Follow-up Survey one month later (Appendix 4).

Table 4 outlines the patrons' experience with the *Discover Health* exhibit and programming, and the number of patrons that completed each of the respective instruments planned for each group. Although the exhibit instruments were each translated into Spanish and made available to patrons, all of the instruments were completed in English.

Group	<i>Discover Health</i> experience		Completion of instruments			
	Exhibit experience	Program experience	Exhibit/program relationship interview ⁷	Exhibit survey	Exhibit interview	Follow-up online/phone survey
1	Yes (day of evaluation)	No	NA	31	29	5
2	Yes (prior to day of evaluation)	Yes	NA	0	0	0
3	Yes (prior to day of evaluation)	No	NA	56	51	19
4	Yes (prior to day of evaluation)	Yes	0	NA	NA	NA
Total responses			0	87	80	24

A total of 87 patrons participated in the evaluation, all of whom were categorized as Group 1 (n=31) and Group 3 (n=56), as none of the patrons indicated prior experience with the *Discover Health* programming at the library (Group 2) and none had both prior exhibit and program experience (Group 4).

⁷ As summarized in Table 3 (page 9), this interview was to be completed as part of the Patron Recruiting Script.

Data collection

Data collection spanned a total of nine days (including both weekday and weekend days) during two separate site visits in November 2019. Two evaluation team members were stationed at a table near the library entrance, shown in Image 5. The table had a sign made by the library staff that described the evaluation opportunity to provide feedback on the exhibit. Recruiting primarily occurred at the table as patrons visited to inquire about the evaluation, and also in the vicinity of the library entrance area as evaluation team members approached patrons and invited them to participate in the evaluation as they left the library. Patrons in the children's area of the library were also approached about the opportunity as some patrons entered the library through a rear parking lot entrance.



Image 5. Patrons asking an evaluation team member about the evaluation opportunity at a table situated near the library entrance

The recruiting focus was on adult patrons, both with and without children. As the library entrance area was at times very busy with patrons entering and leaving the library, tracking refusal rates proved challenging such that it wasn't possible to consistently track the number of patrons asked to participate. Notably, however, the evaluation team found few people declined to participate, likely fewer than a tenth (10%) of those invited to participate. When feasible, evaluators recorded patrons' reasons for not participating which included not having time, tending to children's needs, lack of interest, lack of familiarity with the exhibit, having to meet other members of a group, or having parking meter time restrictions.

Those who opted to participate in the onsite evaluation were offered a small thank you gift, choosing from among mini hand sanitizers, bookmarks, stickers, or stress balls, items which the library previously provided to patrons as small gifts during events. Patrons who also participated in the online Patron Follow-up Survey (or telephone interview) one month later were provided with a \$10 gift certificate to amazon.com, Walmart, Target, or Home Depot.

Exhibit outcomes and instruments

During the *Discover Health* planning phase, the project team envisioned that the exhibit would have short, medium, and long term impacts on patrons, as summarized in the logic model shown in Image 6 (page 12). The evaluation implemented at Penrose gathered feedback from adult patrons to assess whether the short and medium term outcomes were realized from their perspective. As noted on page 10, the evaluation relied on the use of three primary instruments, the Patron Exhibit Survey, the Patron Exhibit Interview, and the Patron Follow-up Survey, also included in Image 6 to show the relationship between the instruments and the logic model outcomes.

Penrose Library Case Study Exhibit Evaluation Patron audiences and instruments mapped to logic model outcomes

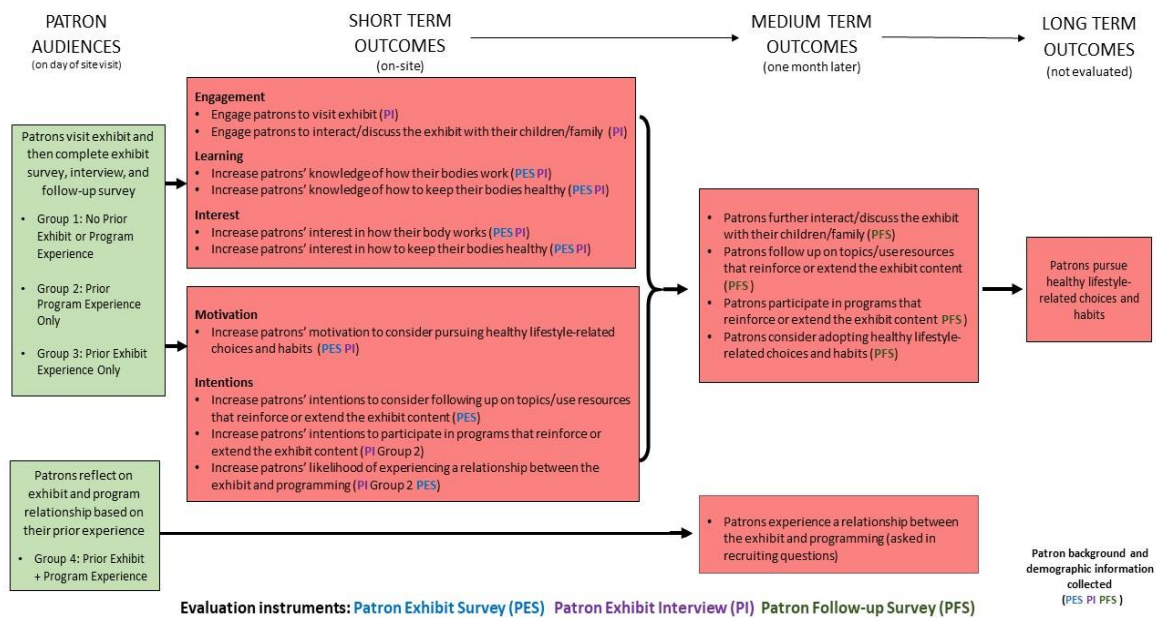


Image 6. Evaluation patron audiences and instruments mapped to *Discover Health* logic model outcomes

The project team’s decision to prioritize the outcome areas of engagement, learning, interest, motivation, and intentions was rooted in the team’s focus on similar outcomes in prior library informal science exhibit *STAR Net* projects such as *Discover Earth*, *Discover Tech*, and *Discover Space* (Fitzhugh et al. 2013; Fitzhugh et al., 2019) and *From Our Town to Outer Space* (Coulon, 2018), which generally drew on the “strands of science learning” framework proposed in the National Research Council (2010) [Learning Science in Informal Environments](#).⁸ As noted by the framework authors, “although the strands reflect conceptualizations developed in research, they have not yet been tested empirically. Nonetheless, they provide a useful framework for helping educators, exhibit designers, and other practitioners in the informal science education community articulate learning outcomes as they develop programs, activities, exhibits, and events” (page 43).

While the framework incorporates six interrelated strands, the *Discover Health* and prior *STAR Net* exhibit projects prioritized strand 1, wherein learners who engage with science in informal environments experience “excitement, interest, and motivation to learn about phenomena in the natural and physical world” (page 43). As the framework authors observed, this strand is especially appropriate for informal learning environments: “Strand 1 focuses on generating excitement, interest, and motivation—a foundation for other forms of science learning. Strand 1, while important for learning in any setting, is particularly relevant to informal learning environments, which are rich with everyday science phenomena and organized to tap prior experience and interest” (page 4).

⁸ The idea of science learning strands was explained as follows by the National Research Council: “Science learning can be envisioned as strands of a rope intertwined to produce experiences, environments, and social interactions that provide strong connections to pull people of all ages and backgrounds toward greater scientific understanding, fluency, and expertise. Informal science learning experiences often occur in situations that immediately serve peoples’ interests and prepare them for their future learning in unanticipated ways. Learning experiences in informal settings also grab learners’ attention, provoke emotional responses, and support direct experience with phenomena. (Bell et al., 2012, page 42).

In the case of *Discover Health* and the earlier *STAR Net* exhibit projects, the informal environments were all public libraries, In the case of the *Discover Health* project specifically, the STEM content involved personal health focused topics (how the body works and how to keep it healthy). This aspect of the *Discover Health* exhibit represented a new direction.

Patron respondent group

A total of 87 patrons participated in the evaluation. As noted under Recruitment procedure, all of these patrons were categorized as Group 1 (n=31) and Group 3 (n=56), as none of the patrons indicated prior experience with *Discover Health* programming at the library (Group 2) and none had prior exhibit and program experience (Group 4).

Gender.

Three-fifths of the patrons were female (60%) and two-fifths were male (40%).

Age

The patrons' ages ranged from 18-71, and the average age was 40. Figure 1 shows the age distribution for the group.

Figure 1. Patrons' age distribution (N=87)

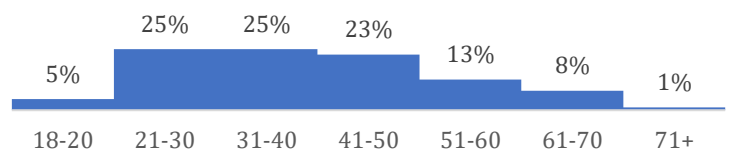
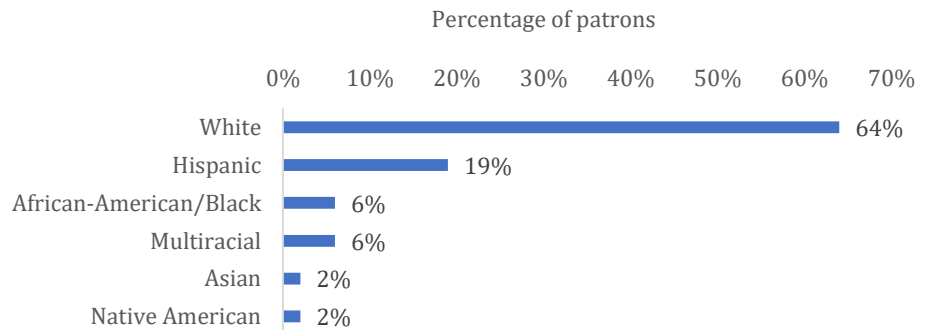


Figure 2. Patrons' racial/ethnic background (N=87)



Racial/ethnic background

As shown in Figure 2, the patron group was two-thirds White and one-fifth Hispanic, with less than one-tenth each reporting they were Black, Asian, Native American, or multiracial.

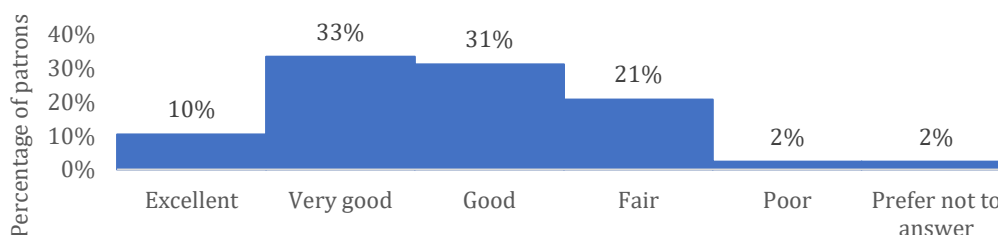
Parental/guardian status

About half (52%) of the 80 patrons who completed the interview following the survey said that they were parents/guardians.

Self-reported health status

Figure 3 shows that two-thirds of the patrons assessed that their health was generally good or very good, with one-fifth assessing it as fair, and one-tenth as excellent. A few patrons assessed their health as poor or preferred not to answer the question.

Figure 3. Patrons' self-assessment of personal health (N=87)



Self-described experience of homelessness

Although the evaluation survey and interview questions did not ask patrons about their living arrangements, approximately one-third (30%) described themselves as experiencing homelessness within their survey and/or interview responses. As noted under the Penrose staffs' description of their library's *Discover Health* audiences (page 7), adults and families experiencing homelessness were among the five primary exhibit audiences at Penrose.

Analysis

Quantitative data

Statistical analyses were conducted on all quantitative data generated from the evaluation using R 3.6.3 (R Core Team, 2020). As illustrated in the logic model in Image 6 (page 12), quantitative data was generated from survey questions about patrons' learning about the exhibit's health topics, their interest in these health topics, and their intentions to pursue exhibit-related activities as a result of their seeing the exhibit. All patron ratings statements were based on a 5-point Likert rating scale from 1 (strongly disagree) to 5 (strongly agree).

Correlations were measured to explore possible relationships between the Learning, Interest and Intentions scales. Correlations were also measured to explore possible relationships between these three scales and background variables of age, gender, and self-assessed health status, and questions regarding patrons' engagement with the exhibit with respect to the number of exhibit pieces they had seen and the last time they saw the exhibit, as well as their perceived motivation to adopt a healthier lifestyle as a result of seeing the exhibit.

Point-biserial r_{pb} was used for the dichotomous variable of gender. Spearman's r_s was used for the ordinal variables of level of motivation to adopt a healthier lifestyle, number of times seeing the exhibit (which were recorded based on categories), and self-assessed health using a 5-point Likert item format. For the interval variables of age and number of exhibit pieces, Spearman's r_s was also used as the three Likert scales, with limited items and 5-point values, were treated as ordinal.⁹

A reliability analysis was performed on all scaled items, the results of which are reported in the text. Although a 5-item or greater scale is preferable to increase the robustness of the reliability measures, due to the necessity of using a one-page survey for the evaluation, there were two-item scales (Interest and Learning). In these instances, the Spearman Brown Formula was used to estimate reliability. In the third instance (Intentions), a three-item ordinal omega was used to test for reliability.

As there was minimal item non-response, the study did not explore additional methods of substituting missing values with estimates, either by multiple imputation methods or maximum likelihood procedures.¹⁰

⁹ Statistically significant findings (hereafter referred to as "significant") at $p \leq .05$ are reported in the text. All statistical tests were two-tailed unless otherwise indicated.

¹⁰ Where evaluators encountered blank questions, they asked respondents if they wished to complete those questions. In each case left blank the respondent indicated and recorded they didn't know or had no response.

Qualitative data

Qualitative data was generated from patrons' responses to open-ended questions in the areas of Engagement, Learning, Motivation, and Intentions shown in the logic model in Image 6 (page 12). The content analyses performed on this data were both deductive, drawing on the exhibit's goals, and inductive, by looking for overall themes, keywords, and key phrases. Patrons' responses were coded by two independent coders and any differences that emerged in coding were resolved with the assistance of a third coder.

Reporting of findings

As the final respondent group included patrons in Groups 1 and 3 only, the evaluation findings reported below correspond to the responses from these two groups. Findings are presented for the overall patron group (N=87) and differences with respect to exhibit experience are noted where applicable.

The findings are divided into the following six parts.

- Part 1. Patrons' engagement with the exhibit
- Part 2. Patrons' interest in the exhibit's health topics
- Part 3. Patrons' learning from the exhibit
- Part 4. Patrons' health-related motivation and intentions following their exhibit experience and their closing thoughts about the exhibit
- Part 5. Association of patrons' exhibit outcomes and background variables
- Part 6. Patrons' subsequent reflections on and engagement in exhibit-related activities

Findings

Part 1. Patrons' engagement with the exhibit

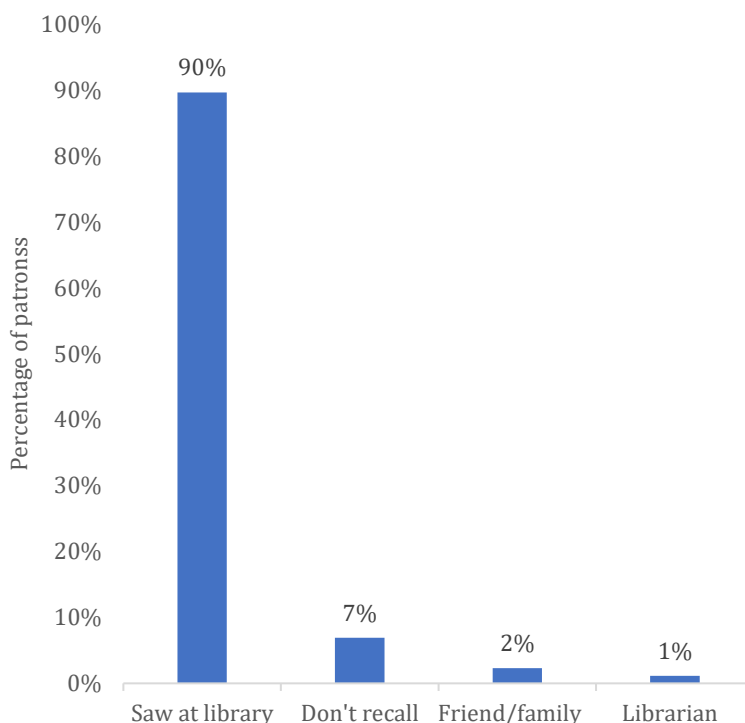
1.1 How patrons heard about the exhibit

Patrons were asked to identify the different ways they heard about the exhibit from the following options: *Discover Health*-related programming, mailing, newsletter, librarian, library print flyer/poster, library website, local health organization, friend/family, social media, television, radio, local newspaper/magazine, other, don't recall, and/or saw it at the library.

Figure 4 shows that nine-tenths of the patrons indicated they saw the exhibit while they were at the library.¹¹ These patrons typically explained that they saw the exhibit when they “walked in one day” or by “being in the library.” A few patrons indicated they couldn't recall how they heard about the exhibit, while a couple mentioned they heard about the exhibit from friends or family, and one patron heard about it from the Penrose library staff, elaborating: “I heard about this from the library staff at one of the crafting events here. I think the exhibit was just about to show up and they were telling us how cool it was going to be. It's a great exhibit.”

Image 7 (page 17) shows some of the different ways Penrose promoted the exhibit, including through Facebook posts (top left), the local newspaper (top right), and flyers (bottom left and right).

Figure 4. How patrons heard about the exhibit (N=87)



¹¹ By contrast, the 42 respondents who completed a survey after attending a *Discover Health* program at Penrose and two other library sites that featured the exhibit during the last year of the *Discover Health* tour cited hearing about their programs through various means. Roughly one-third each of patrons heard about the program from the library and/or from a print flyer/poster, while about one-fifth heard about it from a friend or family member. Smaller percentages of patrons heard about the program via social media, websites (specifically library websites), newspapers/magazines, or their local health organization, while none heard about it through radio or television promotions. Other sources of hearing about the program were from other library or community programs, an email, or another individual.



Pikes Peak Library District - Penrose Library updated their cover photo.

September 16, 2019 · 🌐

This traveling exhibition addresses the nation's most serious public health issues, especially among underserved and rural populations (diabetes, obesity, and cardiovascular health).

It also encourages youth, especially those from at-risk communities, to pursue careers in health care professions.



Like



Comment



Share



Pikes Peak Library District - Penrose Library

September 13, 2019 · 🌐

Join us this Sunday for the Grand Opening of the Discover Health Exhibit! The exhibit includes lots of fun hands-on activities for families and individuals to better understand health issues. Sunday, Sept. 15, 12:30 p.m.

EXHIBIT OPENING CELEBRATION!



This traveling exhibition addresses the nation's most serious public health issues, especially among underserved and rural populations (diabetes, obesity, and cardiovascular health).

It also encourages youth, especially those from at-risk communities, to pursue careers in health care professions.

**SUN., SEPT. 15
12:30 P.M.
PENROSE LIBRARY**

Join us to explore the exhibit, and to enjoy healthy activities, crafts, giveaways and refreshments!



The Gazette

PULITZER PRIZE-WINNING JOURNALISM. EST. 1872

Pikes Pick: Health lessons on display at library

Jennifer Mulson jen.mulson@gazette.com Oct 9, 2019



A bronze sculpture of a child carrying books which had been located at The Chinook Bookshop has been moved outdoors at the Penrose Library's Judy Noyes Children's Garden. 08/19/15 Photo by Linda Navarro

[linda.navarro](#)



Sure, you can check out books on the human body from Pikes Peak Library District, but now you can get 3D health lessons. The "Discover Health Exhibit," on display at the downtown Penrose Library, is a bilingual traveling show that speaks to some of our more serious public health issues, such as diabetes and obesity. The interactive exhibits, which include life-size fake body parts and colorful posters, also encourage kids to pursue careers in health care professions. The exhibit is up through November; 20 N. Cascade Ave.



Pikes Picks



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Who? - University of Colorado's Area Health Education Centers, STAR Library Network, & CLACE (Latin American Center for the Arts, Science, and Education)

What?- This bi-lingual traveling exhibition addresses the nation's most serious public health issues, especially among underserved and rural populations (diabetes, obesity, and cardiovascular health). It also encourages youth, especially those from at-risk communities to pursue careers in health care professions. In addition to the interactive exhibits, the library will host health focused programming throughout the exhibition period.

When? - September- November 2019

Where?- Penrose Library
20 N. Cascade Ave. 80903



Visit: starnetlibraries.org for additional exhibit info
Or
Ppld.org/programs for library program information

Image 7. Examples of how Penrose library promoted the exhibit

1.2 Exhibit areas patrons visited

1.2a Which exhibit areas patrons visited

Patrons were asked to point to the exhibit areas they had visited in the library, using an exhibit map created by the Penrose library staff. Image 8 presents a heat version of the map, with depth of color indicating higher engagement. In general, areas located near the library entry (bottom right) were visited by a higher percentage of patrons than those located in other parts of the library. The exhibit area located in the outdoor section of the children's area (middle right) was visited by relatively few patrons.

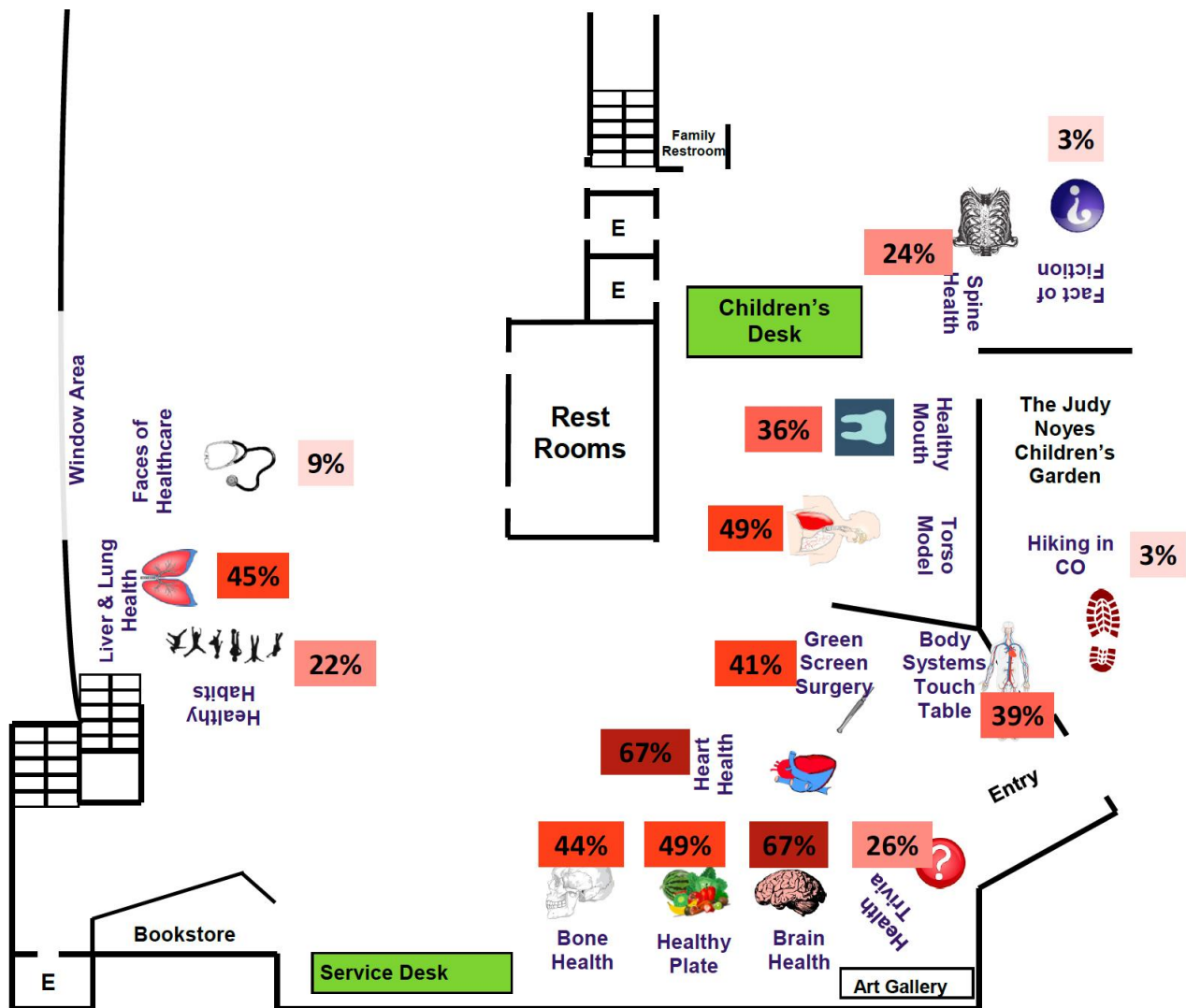
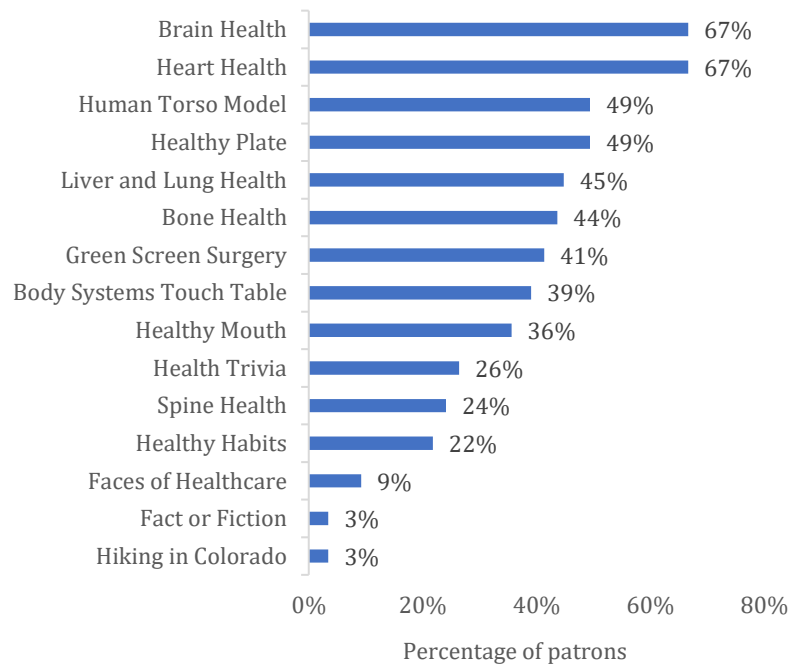


Image 8. Heat map indicating patron engagement, created from exhibit map developed by Penrose library staff

Figure 5 shows the percentages of patrons who reported visiting each exhibit area shown in Image 8 (page 18). About two-thirds of the patrons reported visiting *Brain Health* and *Heart Health*, and about half reported visiting the *Human Torso Model* and *Healthy Plate*. At least two-fifths reported visiting the *Liver and Lung Health*, *Bone Health*, *Green Screen Surgery*, and/or *Body Systems Touch Table* areas. Somewhat smaller groups of between one-fifth and one-third each reported visiting the *Healthy Mouth*, *Health Trivia*, *Spine Health*, and *Healthy Habits* areas. Less than one-tenth said they visited the *Faces of Healthcare*, *Fact or Fiction*, or *Hiking in Colorado*.

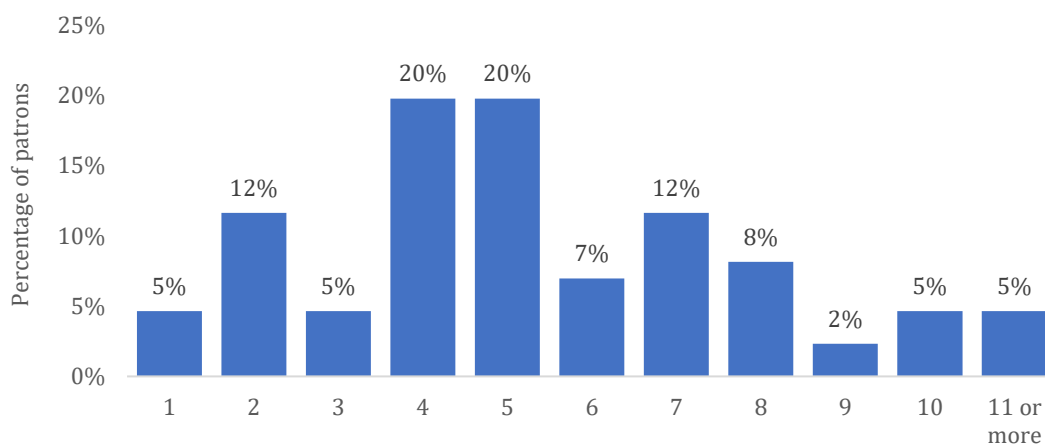
Figure 5. Percentage of patrons who visited each exhibit area (N=87)



1.2b Number of exhibit areas patrons visited

The number of exhibit areas that patrons visited ranged from one to 15, out of the 15 possible areas, with an average of five areas visited per patron. As shown in Figure 6, nearly four-fifths (78%) of the patrons reported having visited four or more areas.

Figure 6. Number of exhibit areas patrons visited (N=87)

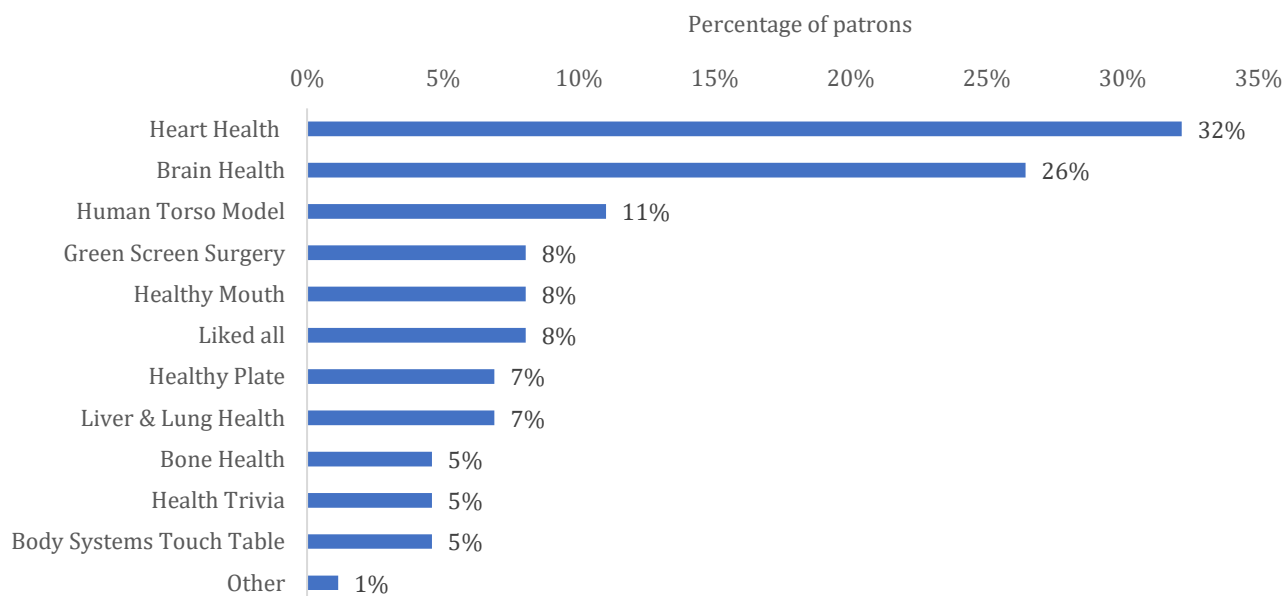


1.3 Exhibit areas that stood out for patrons and why

1.3a Exhibit areas that stood out for patrons

Figure 7 shows the exhibit areas that patrons said stood out for them. Although no one area stood out for the patrons overall, 12 of the 15 areas were each mentioned by at least a few patrons.¹² The two areas cited most often were *Heart Health* and *Brain Health*, mentioned by one-third and one-quarter of the patrons, respectively, followed by the *Human Torso Model* mentioned by just over one-tenth of the patrons.¹³ All other areas were mentioned by less than one-tenth of the group.

Figure 7. Exhibit areas that stood out for patrons (N=87)



1.3b Why the exhibit areas stood out for patrons

When invited to explain why the exhibit area they selected stood out for them, no one particular theme stood out for the patron group overall. One-quarter of the patrons indicated that the exhibit area gave them an opportunity to see a model or a real specimen that showed them how parts of the body look or relate, while another quarter explained that the exhibit area addressed a health topic that was personally relevant to them for various reasons, such as the heart model because they had a heart attack and wanted to learn more, or the lung model because they were trying to stop smoking. About one-fifth appreciated that the exhibit area was interactive or hands-on, while one-tenth enjoyed that the area was attention grabbing and a slightly smaller group said they liked all of the areas.

¹² The three pieces that were not selected by any patrons were each visited by less than one-tenth of the group, as shown in Figure 5 (page 19): *Faces of Healthcare*, *Fact or Fiction*, and *Hiking in Colorado*. None of these pieces were near the main library entrance, and one of the three was located outside.

¹³ Note that the *Human Torso Model* area also included a model of the ear not specifically shown on the exhibit map. A few patrons pointed specifically to the ear model, and their responses are included as part of the *Human Torso Model* area.

Examples of patrons' comments follow in Table 5.

Table 5. Patrons' reasons for why an exhibit area stood out for them (N=87)

Opportunity to see real specimen or model to see how parts of the body look, relate (24%)

- Lung and brain models. Real specimens. Heart model and healthy heart information.
- The brain exhibit. Was awesome seeing a real brain.
- Skeleton. How it looks, works, holds up.
- Big heart, I could see what is inside of it.
- The ear and torso, how it goes together.
- Heart, easy to see the detailed anatomy.
- I saw the ear hearing exhibit first. I've never seen one before. It showed me how the ear works.
- The human heart just its size makes it easy to see.
- The brain was interesting to me and was different from information about health I usually look into. I didn't realize how compact and convoluted it is.
- Brain dissection, brain is smaller than I thought.

Addressed health topic that was personally relevant/dealing with health issue (24%)

- Heart exhibit, I had a heart attack so I wanted to see what I could learn about it.
- Lung part, the clean and dirty lung. I've seen it every day and it makes me want to quit smoking.
- Brain, I'm into how we communicate and neurolinguistics and how communication with different communities get marginalized.
- Heart to learn how to keep it healthy for some heart problems run in family.
- My healthy plate. I had diabetes and through diet, I learned how to get insulin and lose weight. The plate exhibit was good to review what I've learned.
- My healthy plate. I'm looking to minimize minimal proteins.
- The lung/liver stand. I am a smoker so it was eye opening to see what my lungs could look like.
- The heart and the effects on the arteries. The models on lung and liver as they bothered me, made me really think about the effects of smoking, vaping, and other things that are bad for you.
- Toothbrush station for my kids, it was fun and good reminder for them how to brush, and that it is important.

Interactive/hands-on (22%)

- Human torso/head puzzle...it was hands on, and there was a stool to stand to reach it.
- My son really liked the heart. He likes that he can touch it and poke it around.
- My kids loved the giant teeth we also put the body together over and over
- The torso so we could put it together and apart a million times.
- The brain exhibit and all the parts of it. Putting it together like a puzzle.
- The interactive ones. My son liked the temperature one and doing surgery.
- Surgery dissection to role play is cool, unusual, fun, stimulating to reality
- Body torso, my daughter liked to put it together. It was fun to do with her.
- Body torso + teeth - fun for me to do.
- The heart and the quiz game. It was cool, I got some facts right and some wrong. It made me think.

Attention grabbing (10%)

- The heart exhibit, it's at the entrance and is very attention grabbing.
- The main organs working because they are the most riveting exhibit of atom bonding I have ever seen. The way food is digested, incredible!
- Heart exhibit because of the heart statue.

Liked all/no one piece stood out (8%)

- All, I have degrees in healthcare admin and medical specialist degrees, so it was all a refresher but I liked it!
- The topics in general, no one piece.
- I like how things are displayed, in general overall design, not of pieces.
- All. The exhibit is great, I know a large portion of what is taught here. The props are excellent.

1.4 Whether parents/guardians pointed out or talked to their children about exhibit areas

The 80 patrons who consented to an interview after completing the evaluation survey were asked if they had children in elementary school and older and, if so, whether they pointed out or talked about any of the exhibit areas with their child(ren). Those who said yes were asked which areas they had pointed out or talked about, and then they were specifically asked about the *Faces of Healthcare* exhibit area. More than half of those interviewed confirmed they had children in this age range (n=42), and while most of these patrons indicated they had talked to their child(ren) about at least one exhibit area, comparatively few said that the *Faces of Healthcare* area was one they pointed out or discussed, as detailed in the sections below.

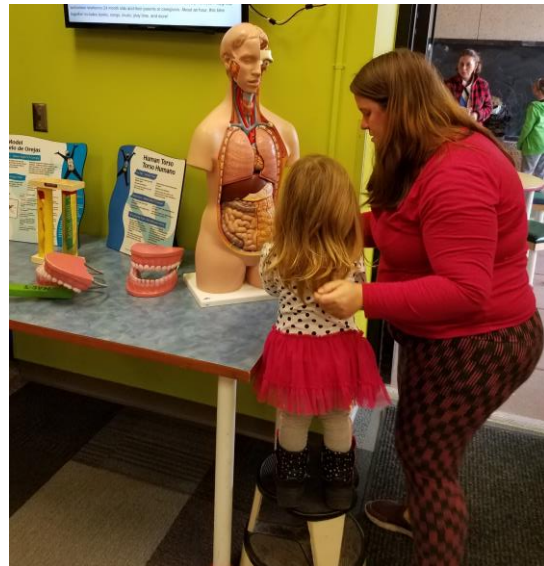
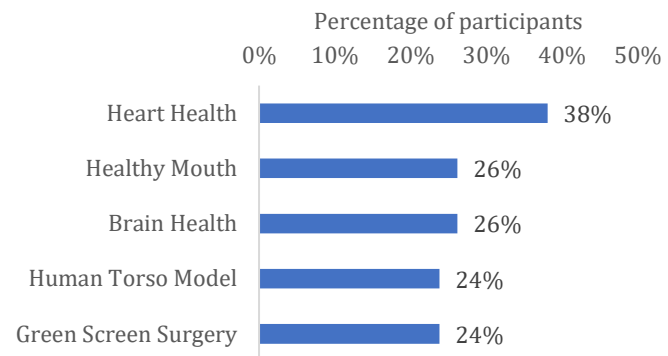
1.4a Exhibit areas parents/guardians pointed out or talked about

Among the patrons who reported they had children in elementary school or older, most (90%) confirmed that they had pointed out or talked with their child(ren) about at least one exhibit area.

As Figure 8 shows, nearly two-fifths of the parents/guardians mentioned *Heart Health*, while a few smaller groups of nearly one-quarter each mentioned *Healthy Mouth*, *Brain Health*, the *Human Torso Model*, and the *Green Screen Surgery*.

Examples of the parents'/guardians' comments about the areas they pointed out or talked about with their child(ren) are in Table 6 (page 23).

Figure 8. Exhibit areas parents/guardians pointed out or talked about with their children (n=42)



Images 9 and 10. Children playing with *Heart Health* and *Human Torso Model*

Table 6. Patrons' comments about the exhibit areas they pointed out to or talked about with their children (n=42)

Heart Health (38%)

- *My grandson, we did the heart. It is easy to put together.*
- *Talked about the heart - Dad read the display to her in Spanish.*
- *He's learning body parts, so he likes the heart the best. I think I haven't pointed them out to him though - he points to them when we walk in.*
- *He liked the heart, when we walked in one day he pulled me over to it to ask what it was. I told him, then he pointed to his chest and to my chest, where the heart is. He loves to learn.*
- *He liked the heart, the valve as it was for to put on and off. He is too young and doesn't what it is yet but it is interesting and fun for him. It's a start!*
- *...She also asked me some interesting questions looking at the heart info and asked if the plaque on your teeth is the same as the plaque in your heart. Is it the same? It made me wonder if my mom had that, she died of a stroke and was in the ER but didn't have anxiety or pain and they showed us scans but I didn't know what I was looking at. maybe she had plaque as well. Something I might look into.*
- *They liked to play with the heart and put the valve on and off and just look all around it as it is so big and colorful.*

Healthy Mouth (26%)

- *The toothbrush, it was fun to do.*
- *Talked about the healthy habit of brushing your teeth*
- *The teeth brushing. It's hard to show in the mouth and the big model and brush make it easy and fun.*
- *The teeth exhibit with the brush. It is so big and easy and sage for young ones to play with.*
- *They loved the teeth and kept going back to brush them. It is big and you could see the importance of brushing and the gums are shown which are important as kids don't often see or think about their gums I don't think.*

Brain Health (26%)

- *Brain - a lot how when dissected you can see how it looks for real. My son had a hard time believing that.*
- *.... Oh, they also liked the brain, my son asked if it was real. He wondered if it was alive or not and I explained that it was not alive but it was from someone who gave the brain to medicine.*
- *We played with the brain. I didn't really know how the parts fit together, there is a lot more going on there than I thought about so we learned about it together. We stood around it for the longest time trying to get the pieces in the head right and it was harder than it looks. It looks like it should just fit but it is layered so it took a few tries.*
- *My son challenged me to put the brain together and the fact that I couldn't do it brought him joy. He showed me how though, so we learned together.*
- *We also talked about the brain as I'm really interested in how our brain works and when you are conscious and unconscious. We talked about how that is possible looking at the different parts of the model.*

Human Torso Model (24%)

- *Body parts one-...we put the pieces together many times.*
- *They also liked taking the body parts out of the body and putting them back. Both are good because they are interactive, and they can touch them without them breaking and learn about where body parts like the different organs are. The torso is one we took apart and put back together many many times. It's absorbing and fun to do together. It's on a desk in the kids' area and you can sit there quietly and just work together.*
- *The torso... It's a nice place in the library where you can sit and work with the pieces and it's nice to do together.*

Green Screen Surgery (24%)

- *Yes, we did the recording of the surgery and I took a video of him taking out an appendix. He was pretending to be a doctor and thought that was fun.*
- *The surgery, we looked at the different types of surgeries and can be done to deal with like a gallbladder problem, or appendix. That was interesting and fun to do.*
- *.... Also, the green screen. She did the appendectomy. We talked about how I had one when I was 8.5 months pregnant with her!*
- *My kids have actually not seen the exhibit but I have so I've told them about things I've learned, like...the surgery videos and how you can pretend to be a surgeon that was so interesting and fun so I shared that with them.*
- *Talked about appendectomy, when he (my son) was looking at the green screen the last time we were here*

1.4b Whether parents/guardians pointed out or talked about the *Faces of Healthcare* exhibit area

As shown in Figure 9, nearly half of the parents/guardians said they didn't notice an exhibit area with a health career focus, while two-fifths said they felt their child was too young for health career information. More than one-tenth of the parents/guardians did, however, confirm that they pointed out or talked with their child about some aspect of the *Faces of Healthcare* exhibit area shown in Image 11. Examples of their responses follow in Table 7.

Figure 9. Whether parents/guardians pointed out or talked about *Faces of Healthcare* exhibit area (n=42)

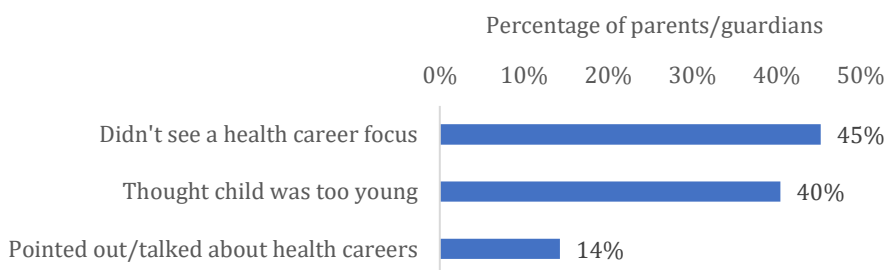


Image 11. *Faces of Healthcare* exhibit area

Table 7. Patrons' comments about whether they pointed out or talked to their children about the *Faces of Healthcare* exhibit area (n=42)

Didn't see health career focus (45%)

- *No - I haven't ever noticed it. Where is it located?*
- *No, I didn't see it. She is 12 but getting closer to that age so I should probably look.*
- *I didn't see it, sounds interesting.*
- *We didn't but that's a good idea. We talked more about healthy foods and recipes and we looked at a cookbook and made dinner.*
- *No, I usually just stay in this part of the library with the kids, so we haven't seen pieces that aren't here (in lobby and in kids' area)*

Child too young (40%)

- *Not yet, he's too young. My husband wants him to get into sports, but I would love if he did a science club or something, someday. It would keep him off the streets*
- *No, he's too young, and I'm not able to have that career. We were just in the shelter just trying to get back on track.*

Pointed out/talked about health careers (14%)

- *My daughter is 13 and she pointed it out to me as she knows I'm looking for jobs and they have different postings there sometimes and she keeps checking it thinking something might be an option I hadn't thought about.*
- *My dad is pushing him to be a doctor. I'm a nurse, and his uncle is an anesthesiologist, so we talk about health careers with him all the time, even before this exhibit.*
- *I did point out the jobs that one can go into in medicine and health, and what kind of education one would need to get. We talked about that with the surgery exhibit.*
- *I saw it but the clipboards are bare. I haven't seen much on these, but I did notice that part of the exhibit.*
- *Briefly yes, it showed you what you can do as a job if you worked in the health field. We didn't spend long on it but saw it.*

Part 2. Patrons' interest in the exhibit's health topics

2.1 Whether patrons were more interested in the exhibit health topics

To assess whether patrons felt more interested in the main *Discover Health* exhibit topics as a result of their experience with the exhibit, they were asked to rate their level of agreement with the two statements shown in Figure 10. As this was a limited two-item scale due to the necessity of using a one-page survey for the evaluation, the Spearman Brown Formula was used to estimate reliability. The total scale reliability coefficient was .80.

As shown by the overall mean rating ($M = 4.2$, $SD = .69$), patrons generally reported a higher level of interest with the exhibit topics.

Figure 10. Patrons' mean ratings of whether they felt more interested in the exhibit health topics (N=87)

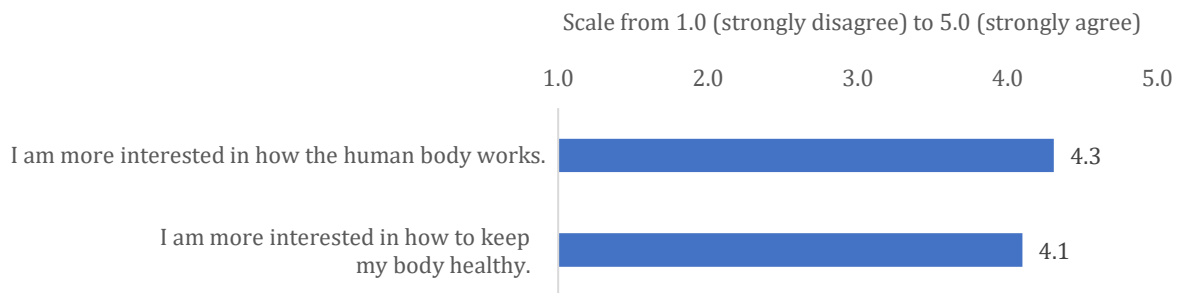


Figure 11 shows the frequency distribution for the two scale items in Figure 10. Overall, most patrons indicated the exhibit influenced them in the ways described in the *Discover Health* logic model. More than four-fifths indicated they were more interested in learning about how the human body works, while three-quarters said they were more interested in learning about how to keep their body healthy.

Figure 11. Frequency distribution of whether patrons felt more interested in the exhibit health topics (N=87)

As a result of seeing the exhibit ...	NA	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am more interested in how the human body works.	0%	0%	0%	14%	41%	45%
I am more interested in how to keep my body healthy.	0%	0%	1%	23%	40%	36%

Part 3. Patrons' learning from the exhibit

3.1 How much patrons felt they learned about the exhibit health topics

To assess how much patrons thought they learned about the main *Discover Health* exhibit topics as a result of their experience with the exhibit, they were asked to rate their level of agreement with the two statements shown in Figure 12. As this was a limited two-item scale due to the necessity of using a one-page survey for the evaluation, the Spearman Brown Formula was used to estimate reliability. The total scale reliability coefficient was .64.

As shown by the overall mean rating ($M = 4.1$, $SD = .72$), patrons generally reported that they learned a lot about the exhibit health topics.

Figure 12. Patrons' mean ratings of whether they thought they learned a lot about the exhibit health topics (N=87)

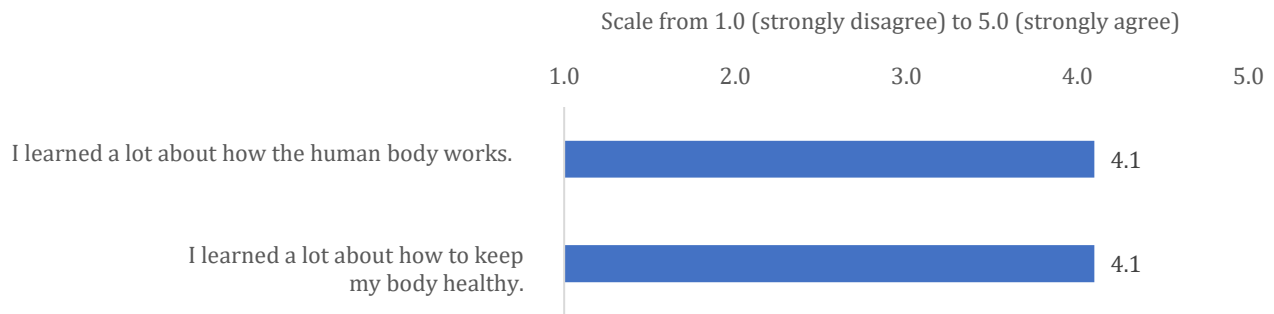


Figure 13 shows the frequency distribution for the two scale items in Figure 12. Overall, most patrons indicated the exhibit influenced them in the ways described in the *Discover Health* logic model. More than four-fifths each agreed or strongly agreed that they learned a lot about how the human body works and about how to keep their body healthy.

Figure 13. Frequency distribution of whether patrons thought they learned a lot about the exhibit health topics (N=87)

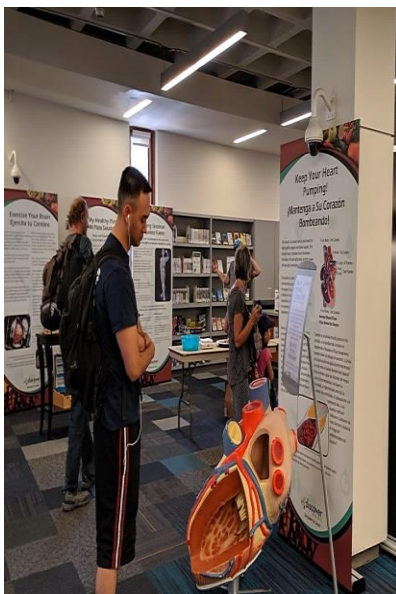
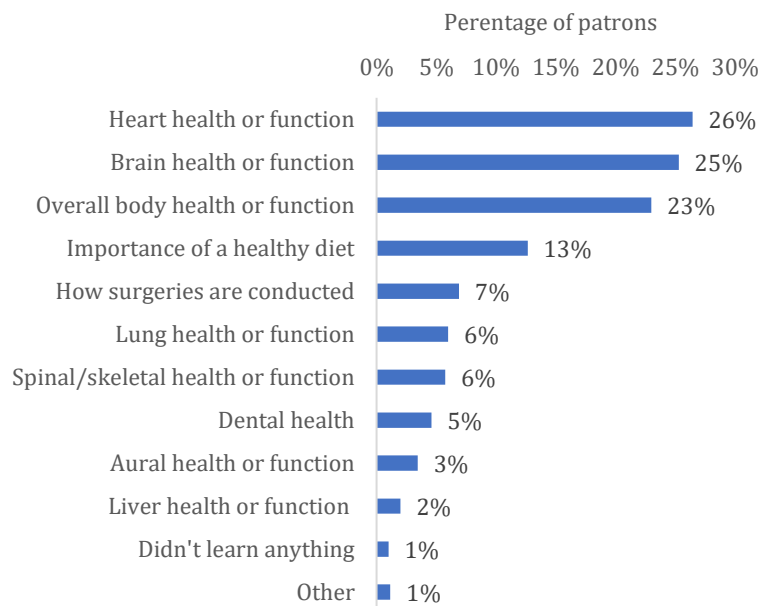
As a result of seeing the exhibit ...	NA	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I learned a lot about how the human body works.	0%	1%	6%	11%	47%	36%
I learned a lot about how to keep my body healthy.	0%	0%	2%	16%	45%	36%

3.2 Most interesting things patrons learned from the exhibit

Figure 14 shows what patrons identified as the most interesting things they learned from the exhibit. While no one theme stood out for the majority of patrons, three themes were each mentioned by about one-quarter of the group: heart health or function, brain health or function, and/or health or function of the body in general.

Just over one-tenth of the patrons pointed to learning about the importance of a healthy diet. Smaller groups pointed to how surgeries are conducted, lung health or function, spinal/skeletal health or function, dental health, aural health or function, liver health or function, other topics, or indicated they didn't learn anything new of interest.

Figure 14. Most interesting things patrons learned from the exhibit (N=87)



Images 12-14. Patrons interacting with exhibit areas

Table 8 presents a selection of patrons' comments about what they learned from the exhibit.

Table 8. Patrons' descriptions of the most interesting things they learned from the exhibit (N=87)

Heart health or function (26%)

- *How to keep the arteries clean. I had a heart attack and wonder what I could do to prevent another one.*
- *How the heart works and affects the body.*
- *I also learned about the human heart and how it all works and how plaque is very bad for your heart.*
- *The heart is a muscle.*
- *All of the information about the heart, there was a lot about how it works, prevention for health.*
- *How to keep the heart healthy, what to eat, what's good.*
- *What the inside of the heart looks like.*

Brain health or function (25%)

- *The brain. It does so much, it's amazing that something so small controls things you do automatically like breathing, and your personality and emotions.*
- *The human brain is a very vital organ and how head banging is actually very bad for your brain health.*
- *The brain information, I didn't know about the different parts.*
- *How the brain works + how to keep it healthy*
- *That our brain weighs only 3 pounds and seeing the brain map.*

Overall body health or function (23%)

- *Biology of the human body and how what we take in affects that biology.*
- *How the body parts are organized, where it is in the body.*
- *Health screen that shows the human body - tall person with the diagram, it shows how everything relates.*
- *I learned a lot, both about the different body parts through so many different stations.*

Importance of a healthy diet (13%)

- *How diet affects different organs.*
- *Just the general nutrition information that inspires me to look further into nutrition recommendations.*
- *I learned how to better shop for healthy foods.*

Liked in general (information, layout, interactivity, variety) (10%)

- *I liked just seeing the variety of information*
- *Just liked the variety of information the exhibit showed, it was fun and interactive.*
- *Very pleasing layout.*

How surgeries are conducted (7%)

- *About how to do a surgery. My son loves the dissection video and roleplaying*
- *The green screen was the coolest! Seeing the procedures was amazing.*

Lung health or function (6%)

- *The information on the dangers of smoking on lungs and heart.*
- *Lung and liver exhibit. I am a smoker and have to quit.*

Spinal/skeletal health or function (6%)

- *It's weird how it (spine) connects around your hips, how it supports your whole body*
- *Adult skeleton has 206 bones but how does that change from childhood*

Dental health (5%), Aural health or function (3%), Liver health or function (2%) or Other (1%)

- *My kids liked the toothbrush station and it reinforced good learning about brushing that I try to instill.*
- *How the ear is put together. I found that interesting as I am getting hard of hearing*
- *The healthy lung/liver stand*

3.3 Whether the exhibit influenced how patrons thought or felt about their health habits and the habit areas they thought were influenced

The 80 patrons who consented to an interview after completing the evaluation survey were asked to reflect on whether the exhibit influenced how they thought or felt about their health habits, and, if so, which areas were influenced. As detailed below, most patrons indicated that the exhibit positively influenced them as outlined in the *Discover Health* logic model in Image 6 (page 12).

3.3a Whether the exhibit influenced how patrons felt or thought about their health habits

Figure 15 shows that about four-fifths of the patrons reflected that the exhibit influenced the way they thought or felt about their own health habits. One-fifth reflected that it hadn't influenced them, most of whom explained that they already had good health habits or knew the information, as in *"I am pretty aware of my health in general. I deliver packages so I have to stay fit,"* and *"No, I already have really good health habits. For others, though, I think it's good to have this be information that they can seek out. For some people they don't respond when it's 'preachy.'" A few others said they thought habits are hard to change, as in "I know I should stop smoking, but it hasn't happened. I've been looking at the exhibit for a while now."*

3.3b Health habit areas that patrons thought the exhibit influenced

Figure 16 shows that while no one habit area stood out for the majority of patrons who felt influenced by the exhibit, more than nine habit areas were mentioned across this group. Not quite one-third of the patrons pointed to diet/nutrition, while about one-fifth each pointed to how the body/internal organs work and/or smoking/lung health. Smaller groups of one-sixth each pointed to kids' hygiene or health and/or heart health, followed by brain/mental health which was mentioned by one-seventh of the group. Less than one-tenth of patrons pointed to other areas such as exercise, spine or bone health, surgical procedures, or other topics.

Figure 15. Whether patrons reflected that the exhibit influenced how they felt or thought about their health habits (n=80)

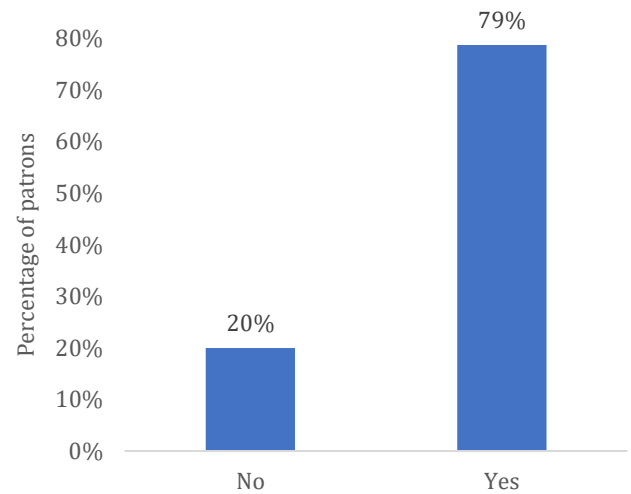


Figure 16. Health habit areas that patrons identified as influenced by the exhibit (n=63)

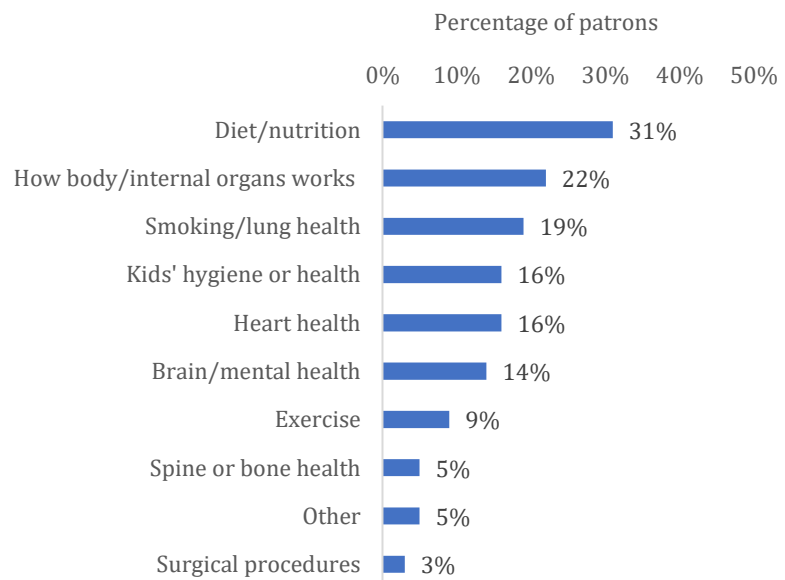


Table 9 provides a sampling of the comments by patrons who felt the exhibit influenced the way they felt or thought about their health habits.

Table 9. Patrons' descriptions of how the exhibit influenced how they thought or felt about their health habits (n=63)

Diet/nutrition (31%)

- *Yes I think the nutrition information is interesting and I've thought about how I like to bake and fry but it is not worth it, so I'm trying to do more baking and broiling as I have high blood pressure and cholesterol.*
- *The diet info is really helpful to me - like how much to eat, what to eat, and how we need different nutrients. I think it has given me more curiosity and courage to learn more and try more healthy options.*
- *We want to try to eat healthier. I would be sad to come here and not see this exhibit here. I feel like it has added a lot to my experience at the library and the same with my daughter and partner. I really appreciate that this is here. It is focused on stuff we need to deal with, how we eat, what we eat and how what we eat affects us. Seeing it over and over, different things at different times depending on what you feel like learning about, I really appreciate that, and the library staff here are so helpful to take time to talk about it with you. I think they've liked it too.*
- *The healthy plate got me to read a lot about what that really means and portion size and how to balance food groups. I have diabetes and need to stay clear of processed foods and sugars and I need to learn more about GMOs and other things that affect my health. So yeah, thinking about something as basic as the plate we eat off and what is healthy or not gave me greater appreciation for how important it is. I used to weigh 275 lbs. and through reading and taking classes and being proactive by learning from this exhibit and other things at the library and other places [now I weigh] about 215 lbs. I think the exhibit is an important part of the information that can lead to healthier habits as it is right here and is ... easy to follow and read without anyone lecturing you. You can take your time with it and read what you want to read and even play with some of it.*
- *Every time you pass through it you learn something new, you know? You can learn so much if you just take the time to sit with each piece and then the chance to share it and talk with someone else is also something I appreciate about it. I pick up something I pass it on to my family, they may follow-up on it and then we talk about it later. The knowledge passes on. I think I found the healthy plate idea interesting and that got me to suggest to my daughter to look into recipes, so we looked at a cookbook and made a healthy dinner. We also looked at a book about healing the body. When I'm here at the library though I like to do the pieces you can touch and play with and then maybe read later.*
- *Well I have Lyme disease and I'm always looking for information about how to be healthier and have less inflammation. I found the nutrition information really interesting and probably will consider some of it. The healthy plate information makes sense and seems easy enough to do. So for me it would be the healthy plate but for the kids I think it would be heart and the brain.*
- *Yes, about what I eat as we eat way too many processed foods, it is really bad for you and we need to eat more plant-based foods, like more beans and more greens. I have heat allergies, so I need to watch the overall balance of everything that comes in. I not only need to learn about how to eat but also how it affects my brain as diet affects that as well. The exhibit gave info on all of this, or enough to get me interested to check out more later.*
- *I began seeing a nutritionist and the most interesting thing I learned was that carbs are not nearly as bad as mainstream diet fads will have you believe. My nutritionist wants me to eat 40 grams of carbs a meal.*

How body/internal organs works (22%)

- *Yes, because I learn visually. Give me a physical aspect of something, a real-life way of looking at it and I will learn it. Some people like to talk about it, I need to see it. With the exhibit you can see a lot of things. I learned about the parts of the body and how a surgery works and I saw about the heart and brain, all of these things gave me a greater appreciation of the parts of me and how important it is to take of these parts, and the whole person.*
- *The green screen was awesome, and I pretended to be a doctor, that was cool and gave me an appreciation for the sheer aliveness of the internal body. So much going on in there when you see them removing an appendix that it is like another vibrant world inside. I appreciate my insides more.*

- *I enjoyed the science of the exhibit. I was looking at it from that standpoint, how it breaks things down from the eye level to the cellular level. Like the balanced system exhibit, you have more inside of you than you realize, you see it at one level, but it functions at a much more microscopic level.*
- *Not so much my habits as I already know about eating healthy in general. I would say I'm more influenced by how the body works and is put together based on what I see here. I picked up a lot about that and I hadn't really thought about it so much before.*
- *Not so much my own health but my understanding how the organs work. Seeing the different slices of the brain, the science part of it was interesting to me. I liked looking at the different body parts and seeing how they are put together where they are and how they work.*

Smoking/lung health (19%)

- *Yes, the models on the effects of smoking on the lungs and heart were good, I kept seeing that and it bothered me, that dirty lung just sort of haunts you. I wish there was more on vaping though, on the facts of vaping, like an actual image of a smoker's lungs vs a vapor's lungs. An actual diagram or picture to show which is worse. There is this guy on YouTube who demonstrated the difference between 100 cigarettes and 100 vapings to show the different effects of tobacco and I really liked how he did that and wanted to learn more about the body absorbs the chemicals. Vaping is a big thing among my friends but I just wonder about as I thought it was a safer alternative for the body with the oils because you aren't inhaling smoke but I'm not sure and I'm kind of feeling nervous to know .*
- *It educated me - I'm more aware of my health now I'd say, and awareness is the first step. Some of the information is sobering, like about smoking, as the model is visual, and you can see the problems it is causing in the lungs. I'm not sure the information will affect my routine, but it does grab your attention. I want to adopt a healthier lifestyle but for me I'm not sure it is information that will do it, or negative information, I think I'm more motivated to do something because it will help me.*
- *Yes - smoking - the lung and heart exhibits. My husband and I are both thinking about smoking and I have made it a new year's resolution to stop. We have a couple of months to gear up and get motivated and this exhibit has helped us toward that goal, I'd say it played a real role. We see the exhibit a lot and look at each other like, ok...pretty soon! I also learned a lot about different parts of the heart and though it may not change my health in many ways I'm more aware of the different parts and that is pretty awesome.*
- *A little, I kind of know I need to stop smoking, and I have seen the lung and liver and those were well, so far I haven't stopped but I would say it sticks with me, each time I am here it sort of nags at me.*

Kids' hygiene or health (16%)

- *I think this has been really interesting information, especially the teeth if you ask my kids. My kids like to brush the teeth so perhaps that has affected them most as we come here a lot and they do it over and over.*
- *...But yeah it just made me think about health in general. And my daughter liked the tooth display, it was the first time she could see what is in the back of her mouth and practice brushing. Her cousin saw the exhibit with us and now brushes every time she eats anything.*
- *Yes, my kid's habits, I did the portion size quiz and I did pretty well and I used that to talk to my kids about what they eat and how much we put on our plates. At home now they like comparing what they do.*

Heart health (16%)

- *Heart problems run in my family, both my dad and brother so I found the exhibit on the heart give me a lot of information about the parts and how they work together. Knowledge is power and the way the exhibit is put together it is easy to learn from it. it has pictures, and diagrams, videos, and hands on activities, all different.*
- *Yes, heart problems are an issue in my family, so I wanted to keep healthy. The diagram of the body gave me perspective on the various systems and how they work together and how it looks inside the human body. It gives me a great appreciation for how my heart connects to all of it.*
- *My mom died of a stroke and the causes of that has stuck with me and influenced me to think about that and the exhibit has affected me to consider that again. She was overweight and my daughter is, and I need to watch it as well. I think the exhibit shows good options of what to eat every day, what to focus on, how the body digests foods. It's good for her and me to see this. The heart part. My grandfather had a heart attack in his 50s and I'm overeating and know I need to lose some pounds to be healthy. The heart health exhibit gave me good info to go on. Now I just have to do it.*

- *Yes, I've learned a lot, and have had to as I had a stroke and it terrified me. Medication is one thing I do to help but the exhibit shows other things I can do and how different parts of the body work and together give a healthy body. I know I can do more to be healthy and need to commit to rather than use energy to worry so much about it. My goal is to find ways to not rely on medication so much so healthy food and exercise options are key for me.*
- *The heart and blood vessel information for sure because I am an oral IV user so I've got to try to figure out why some will come back and others will not. The way I see it I'm complicated because I'm a health freak from way back and I'm really careful about what I eat but I use drugs so I know I'm hurting myself at the same time. It stresses me out to know that but learning about the body can help me work through it I think.*

Brain/mental health (14%)

- *The brain one made me take out a book about brain health and heart health. The brain book is by a sister's scientist whose mom had Alzheimer's, and they found that her diet made it progress more slowly, so they thought "we should share this with others!"*
- *...I also thought how the brain works was cool, how the front lobe works and the importance of keeping it safe. After seeing the exhibit, I watched a video on the frontal lobe, and it was fascinating to see how important it is for higher thinking. I also saw the lung samples and it told me I should stop smoking.*
- *I have a narcissism disorder which releases a toxic mix of chemicals in my brain and I sometimes get a PTSD type of response. It affects me and I need to be very careful about how I live., what I put into my body, and everything. The way I eat is not good enough and I need to learn more about the toxic mix of chemicals that affect my brain and understand what I can do to help prevent it or lessen it somehow. The exhibit shows the power of food and healthy eating, so I'm encouraged to learn more.*
- *I was intrigued by the brain exhibit as were my kids, and their questions got me to thinking about it as a living organ and how small and fragile it appears to be. My kids asked me a lot of questions about it and I didn't know most of the answers so I got an appreciation for the brain even though I felt mine might be a little short on knowledge about itself!*
- *I also learned a lot of new things about the brain, I was so interested to learn that the brain weights like 3 lbs., that blew me away and how small it actually is. I had learned about the different parts years ago, but seeing the specimen made it seem more real...*

Exercise (9%)

- *It made me think about getting exercise DVDs from the library - that's what I did today.*
- *I think I've taken to heart the suggestion on exercise, I will do more walking, things that are good for the heart.... I'd say the exhibit is motivating. I'm a bagger and checker at Safeway so I'm on my feet all day but not really moving. I need to move more and eat the right things from the store.*
- *I got a planet fitness membership*

Spine or bone health (5%)

- *...I also liked the spine diagram as I have bulging discs so it was interesting to see how the spine is constructed and where my problem discs are, and I thought the body parts were interesting, the model helped me to see where the different parts are.*
- *Yes, there is something I read about the skeleton. It talked about bones and the number of bones and it made me wonder if a child has fewer bones and we develop more over time. It just made me have more questions which is good, and I want to look it up.*

Surgical procedures (3%)

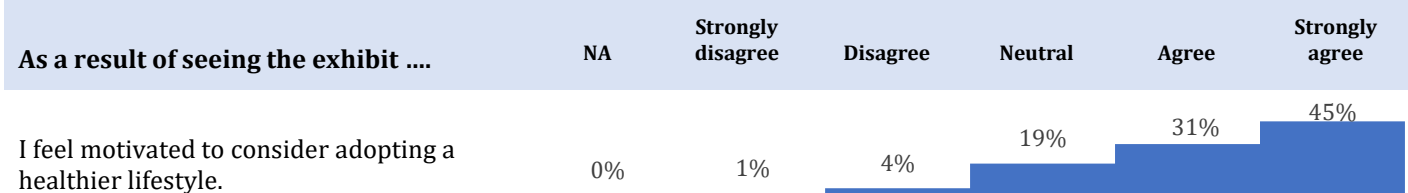
- *I saw the video of the doctor who works in rural Colorado. It made me want to donate to a non-profit like that or something*

Part 4. Patrons' health-related motivation and intentions following their exhibit experience and their closing thoughts about the exhibit

4.1 Whether patrons felt motivated to consider adopting a healthier lifestyle

Figure 17 shows that three-quarters of the patrons indicated they felt motivated to consider adopting a healthier lifestyle as a result of seeing the exhibit.

Figure 17. Frequency distribution of patrons' ratings of the influence of the exhibit on their health-related motivation (N=87)



When invited to explain their ratings several patrons elaborated as follows:

- *I feel motivated to keep bones strong through exercise and food.*
- *I work for the city (of Colorado Springs) and they're doing a health incentive now. I don't have time to exercise because I take the bus to work, but then I remembered that I can get exercise DVDs from the library. That's what I did today, of course I'll probably buy an Xbox with the money from the health incentive.*
- *I said neutral because my son is so picky about his eating, I'm not sure what will work.*
- *I suppose it could [motivate] our kids, it's hard to say but they learn some of this at school and then they come here and they play and play and they spend a lot of time at the exhibits, playing with the tooth brush putting together the body pieces, so it is possible. We have had our kids climbing all over the pieces here and though they aren't going to read the panels like I would something in the interactivity might have an impression on them.*
- *I'm not sure an exhibit can motivate that deeply on its own or affect our use of resources, but I hadn't thought about that before. We also have really good health habits so the exhibit I think is mainly reinforcing what we know and not giving us brand new information to think about, which might in turn change how we think about health. Does that make sense?*

4.2 Whether patrons intended to follow up on the exhibit topics

To assess whether patrons had intentions of following up on the main *Discover Health* exhibit topics, they were asked to rate their level of agreement with three statements shown in Figure 18. As shown by the overall mean rating ($M = 4.2$, $SD = .67$), patrons generally indicated they intended to follow-up. The total scale reliability coefficient was $.80$ $\omega = .78$, 95% CI [.70, .86].¹⁴

Figure 18. Mean ratings of patrons' intentions to follow up on the exhibit topics (N=87)

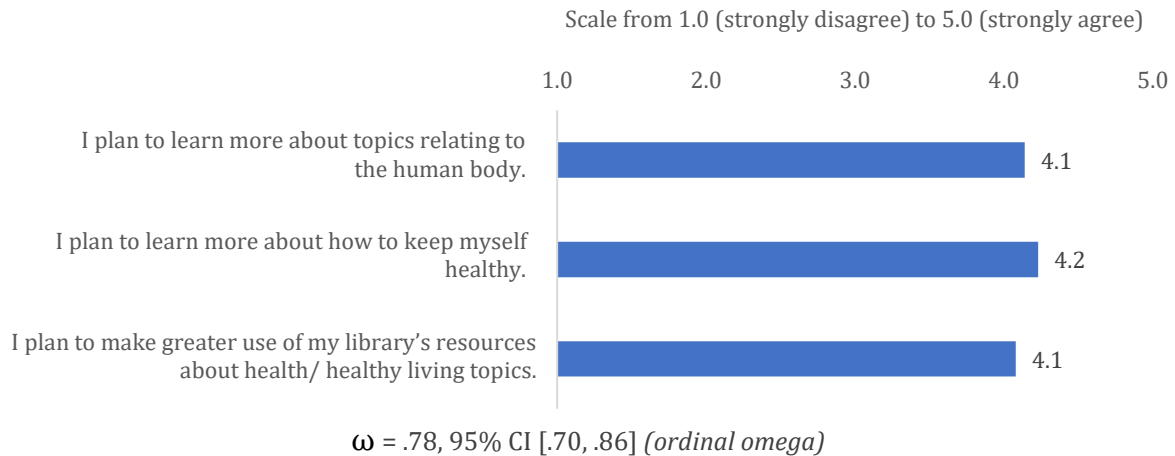
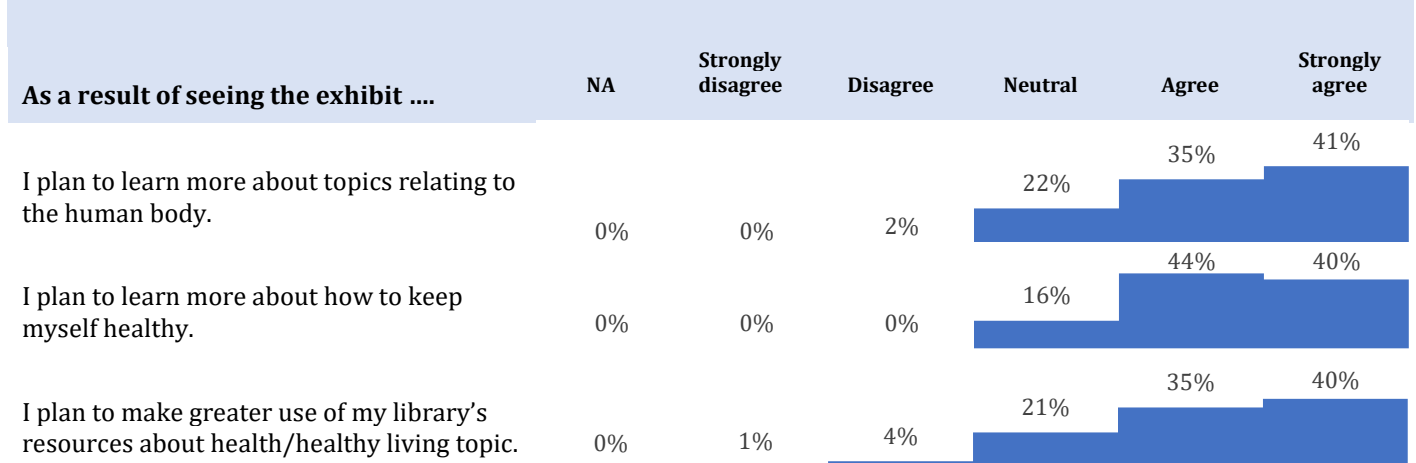


Figure 19 shows the frequency distribution for the three scale items in Figure 18. More than four-fifths indicated they planned to learn more about how to keep themselves healthy, while three-quarters each indicated they planned to learn more about topics relating to their body and planned to make greater use of their library's resources about health/healthy living topics.

Figure 19. Frequency distribution of patrons' intentions to follow up on the exhibit topics (N=87)



¹⁴ Given the reliability and single factor results of the analysis, a composite score of the scale was appropriate for use in the evaluation.

When invited to explain their ratings several patrons elaborated as follows:

- *If I stumble on it while I'm here that is the way I learn, stumbling on it. I'm not going to go out of my way to read more books. I come to the library before I go to work as a way to relax because my brain is all on all the time at work, I'm a gamer so I have to use many parts of my brain. I've read that gamers actually use more of their brain than other people. Sometimes it feels like that and I can't sleep because I'm thinking of so many things. So, for me the library is relaxing. I like the exhibits in some ways more than books because I will just wander around and stumble on something while I'm chilling out.*
- *I'm just too old to want to go back and research topics about the human body or to read more or go to programs. But it's great that it's here for other people.*
- *Neutral because I use the internet for searching about health and I can do it in the privacy of my home.*
- *For neutral, it isn't new knowledge out there, I wouldn't say I got exposed to something brand new I didn't know but it does remind me of what I do know. But there are a lot of reminders out there, you just have to pay attention, and I haven't done that quite yet.*

4.3 Patrons' closing thoughts about the exhibit

At the close of the interview, patrons were asked if they had additional thoughts they would like to share about the exhibit. About one-fifth offered general praise about the exhibit, pointing to an aspect related to the layout, interesting information, presentation, and/or interactivity. About one-fifth suggested ideas for other topics for future health exhibits, particularly relating to, for example, the effects of vaping and other drug use, diet and fitness resources, information on mental health, personal hygiene, immunity building, soulful aspects of wellness, and sleep. Finally, several patrons observed that the exhibit was a helpful resource and source of information for the library's homeless patrons.

Examples of patrons' comments on each theme follow in Table 10.

Table 10. Patrons' closing thoughts about the exhibit (n=80)

Offered praise for layout, interesting information, presentation, interactivity (21%)

- *Really good. Glad this is here*
- *Overall, it was a great exhibit to encounter and I think the value that real life anatomical models bring is immeasurable.*
- *Just that I think this is great that it's here, it's interesting!*
- *I really liked the brain. And just that this was great for [our daughter]. We were just talking about how important health is for our kids and will be for their kids. We can't send unhealthy people who eat McDonalds to Mars!*
- *I'm into outdoor sports with the kids and the exhibit had some stuff on staying fit and being busy. I like messages that show them how to be active and keep moving. I think we picked this up in general, can't remember specific piece. A lot of parents are afraid to talk to their kids about what is going on in their bodies and how to stay healthy through exercise, so the exhibits are a good way to share that information in a fun way. They don't know a lot about cholesterol and other health issues but with obesity being such a problem with kids now, they need to learn. I like the way the exhibit just gives the facts like about the liver; it shows things doesn't talk at them. Kids won't listen if you tell them, but they might just look at something that catches their eyes and is said clearly and*

in a fun way without me or a teacher lecturing at them. So I like to show them things and let them discover what they think they need to know, not push them. It's like that with health and pretty much everything with communicating with kids, I guess.

- *Hope they keep doing exhibits like this at the library*
- *I think it's great! I really like the parts that are hands on, it's like self-directed learning. I'm a 5th/6th teacher, general education. I'll look into bringing students from our charter school here. I'll ask at the desk, maybe we can do that before the exhibit leaves. We don't have museums in Colorado Springs. So, for something like this, we have to take the kids to Denver. And at least with my school busing is an issue because we rent the school buses and they have to be back by 3 for the public-school end-of-day use.*
- *I think it's great for everyone, it's all really interesting.*
- *I've been interested in health science for a long time, I like learning on my own so I like exhibits like this where I can stop and look and learn on my own.*
- *Some of the videos were graphic! It was really in there. I feel like I could do a gall bladder surgery myself now.*
- *I liked the layout. It's great to be able to come to the library and see something like this. We try to talk to our daughter about health anyway. I was just teaching her about cochlear implants. It's great to have kind of stumbled upon this health exhibit*
- *I like that it is both languages. And it was well-translated. I teach French and Spanish and I get really annoyed by bad translations.*
- *Yes, I point out all the pieces to my younger cousins. Some of my family thinks the live specimens like the brain are gross but I tell them you have to get used to it that it is normal and part of YOU!*
- *We travel a lot and see a lot of museums like I think we were at the children's' museum of Philadelphia and they had a 2-story heart. I appreciate that you have one here as well, but we do see lots of exhibits. Maybe it was the Franklin.... But this is a library and it is wonderful you have this type of exhibit here, it isn't a museum, it's a local library so I was impressed to see it here. It is so accessible, and free, and it is part of the library space.*

Had idea for other topics or activities (19%)

- *I would like to suggest a future topic, if you could look at the effects of vaping. Like a comparison of tobacco taken by vaping or cigarettes, what are the health differences?*
- *I would be interested to see an exhibit on vaping, you have the lung example with smoking but how does vaping affect it. I'm a visual learner and I'm really struck by such clear examples like that and that are hands on so you can pick it up and turn it around and see all the effects of something like that.*
- *I found a lot of information reinforcing what I know or know on some level. I would be interested to see something featured that would really surprised me, and be brand new like WOW I didn't know that knowledge that might motivate me. That could be interesting.*
- *I would like to see more information on diet and fitness resources, maybe like examples of what we should look into if we want more information. Like I started looking at books like Fit for Life and I found a book about foods that are acidic and alkaline for digestion and it got me wondering about food pairing for directions. But I don't know if that is the latest research or whatever. I would like to know where to go for that information. Maybe they could have some online searches or lists of what to search here to help figure out the best source of more information.*
- *I can tell you the food pyramid is interesting but it has been around a while ... so I wouldn't say that is new, so I was looking for something more sophisticated about nutrition like why is garlic good for your immunity or what can I do to prevent breast cancer and other diseases that kill you or make it tough to survive on the streets. For homeless people who have to live outside in the cold we need to know how to protect the lungs as lungs can freeze in low temperatures especially if people are drinking and you can't feel it happening. We also need to know how to eat things like peanuts which have protein and fat but working around not having your teeth to be able to chew it. Something happens and you are out in the cold and everything you do matters.*
- *Bodily cleanliness missing. Mental health missing. These are two things that are really important to the homeless population. The exhibit made me think about how these topics were missing. [Also], we are covered in germs, and ... homeless people need to wash their hands or bathe.*
- *More interested in learning how to see the heart, as how this is done medically.*
- *Exhibit could use more about vaccines and drug use. Drugs are a huge problem in Colorado! Also, different groups have different diseases, there could be more about things like certain fats that white people eat, and sickle cell in black people.*

- *The exhibit gave info on health in terms of nutrition how that and exercise affects the body, brain, and so forth. The info is great, but I think it's also important to show the other things that keep us going, like I have my music, my piano, guitar, they keep me going. I'd like to see some exhibits on these less practical but maybe more soulful aspects of health and wellness. I have been on both sides of life and near death, so I see all of this as important, but the food of the soul is just as important to wellness, the what keeps you ticking source of health. I think it is greener on this side so would like to know more about the less practical, maybe more profound if you know what I mean ways to health. Do you think you could do that? I would also like to see an exhibit about sleeping, why we sleep, why it is important. I'd also be interested in more about drugs and their effects, the effects of addition on the brain. And, how bad something like coca cola is on the body, it is still everywhere, sports stars still present them.*
- *I think it's really well put together. I had a question about vitamin D, if I'm getting too much of it. I'm outside a lot.*
- *My grandson just loves the diagram of the balanced system. He looked at that each time we came in and he showed me with his hand the different parts of the body. It fascinated me that he would look at that as he is 8 and not some of the other pieces like the big heart. I wondered if you have a smaller version of the diagram, something we could take home and he could draw on. It might be helpful if you had a place at the bottom that shows where you could get something like this online.*
- *It's...missing information about amino acids. That was what I would always start my classes off with, it's the basis of everything else you'll want to talk about.*
- *I also liked how we learned about how to take out an appendix with the surgery one. I had a friend who had that happen so I could watch the video and see how they opened it all up. I learned a lot about what all is involved.*
- *I really like playing with the exhibits and was wondering if you could do more pieces that are puzzle like, that make you have to stick with it, like the body organs where you have to try to put them where they belong. Some more things like that, where you get to tinker and think.*
- *The torso piece. I used to be a teacher + it was fun to put together although I would have like to know what the pieces are and what they do to be able to explain it. I took biology a long time ago so I felt wanting to have more information about it as I couldn't remember about the different parts!*

Thought the exhibit was helpful resource for homeless patrons (7%)

- *I'm glad you're doing this. I think it will be really great for the homeless in this community*
- *It's great to have this exhibit at this library. Because of the different demographics that use it like the homeless. For some people there may not be a lot of choice about something like diet.*
- *.... I also like that it's at this branch. It's a very thoughtful exhibit, hopefully some of the homeless people who use the library will read some of these displays too.*
- *Just that it's a great exhibit. I would like to see this happen again, to see other exhibits come through the library and especially the health exhibit, especially for the homeless population that spends so much time here. It's something I hope some of our homeless people are spending some time looking at, as it may help them.*
- *I think it's great for everyone, it's all really interesting. The library has changed a lot in the last few years. It wasn't always like this. There were some unintended consequences of CO legalizing marijuana. It's not just here but all over the state. I'm from Breckenridge and I just went back there last weekend and noticed the same thing there in CO springs, it's a safe space for a lot of people who are homeless. I wonder what they think of the exhibit?*

Part 5. Association of patrons' exhibit outcomes and background variables

Correlations were measured to explore possible relationships between the Learning, Interest, and Intentions scales. Correlations were also measured to explore possible relationships between these three scales and background variables of age, gender, and self-assessed health status, as well as questions regarding patrons' engagement with the exhibit with respect to the number of exhibit pieces they had seen and the last time they saw the exhibit, and their perceived motivation to adopt a healthier lifestyle as a result of seeing the exhibit.

Bootstrap bias-corrected and accelerated (BCa) adjusted 95% confidence intervals are reported in square brackets. Results indicated the following moderate-to-strong positive correlations:

- Patrons' exhibit learning was significantly related to their level of increased interest in the exhibit topics, $r_s = .45$ [.24, .62], and their level of intention to follow-up, $r_s = .54$ [.36, .68] (all $ps < .001$).
- Patrons' level of increased interest in the exhibit topics was significantly related to their level of intention to follow-up, $r_s = .71$ [.57, .80], $p < .001$.
- Patrons' motivation to consider adopting a healthier lifestyle was significantly related to their exhibit learning, $r_s = .40$ [.18, .56], their level of increased interest in the exhibit topics, $r_s = .54$ [.35, .67], and their level of intention to follow up, $r_s = .63$ [.44, .75] (all $ps < .001$).

No significant relationships were found between the three Learning, Interest, and Intention scales and the background variables of age, gender, self-assessed health status, and patrons' engagement with the exhibit with respect to the number of exhibit pieces they had seen and the last time they saw the exhibit.

Part 6. Patrons' subsequent reflections on and engagement in exhibit-related activities

A total of 24 patrons participated in the follow-up survey or interview within the one month follow-up timeframe allotted for the evaluation, representing a response rate of two-fifths (40%) of those who provided contact information (n=60). Two-thirds (67%) of this follow-up patron group were female.

6.1 Whether patrons reflected that the exhibit covered important health topics

Figure 20 shows the extent to which patrons in the follow-up group agreed or disagreed with two statements about whether the exhibit covered health topics important to them and to their family or others in their lives. More than nine-tenths each indicated the exhibit covered health topics that were important to them and indicated that the exhibit covered health topics important to their family or others in their life.

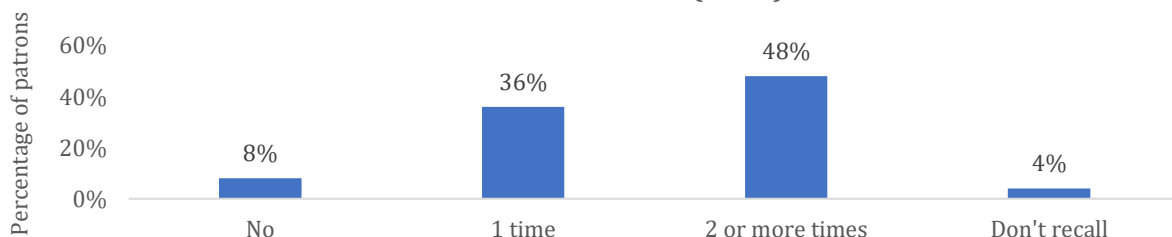
Figure 20. Frequency distribution of patrons' ratings of whether the exhibit covered important health topics (n=24)

	NA	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The exhibit covered health topics that are important to me.	0%	8%	0%	0%	46%	46%
The exhibit covered health topics that are important to my family or others in my life.	0%	8%	0%	0%	42%	50%

6.2 Number of times patrons subsequently visited the exhibit

Patrons were asked whether they had visited the *Discover Health* exhibit at the Penrose library since they had completed the exhibit survey at the library, approximately one month earlier. Figure 21 shows that more than four-fifths of the follow-up group indicated they had visited at least once, with the majority of these patrons saying they visited two or more times.

Figure 21. How many times patrons subsequently visited the exhibit (n=24)

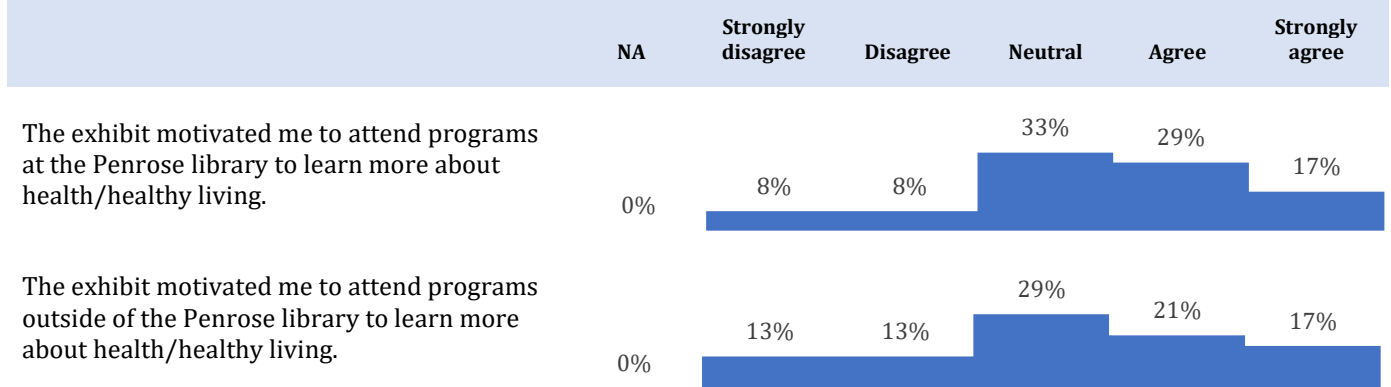


6.3 Patrons' reflections on and subsequent engagement in exhibit-related programming

6.3a Whether patrons felt motivated to attend programs to learn more about health/healthy living

Figure 22 shows that less than half of the patrons in the follow-up group thought the exhibit motivated them to attend programs at Penrose to learn more about health/healthy living, while less than two-fifths thought it motivated them to attend similar programs outside of the library.

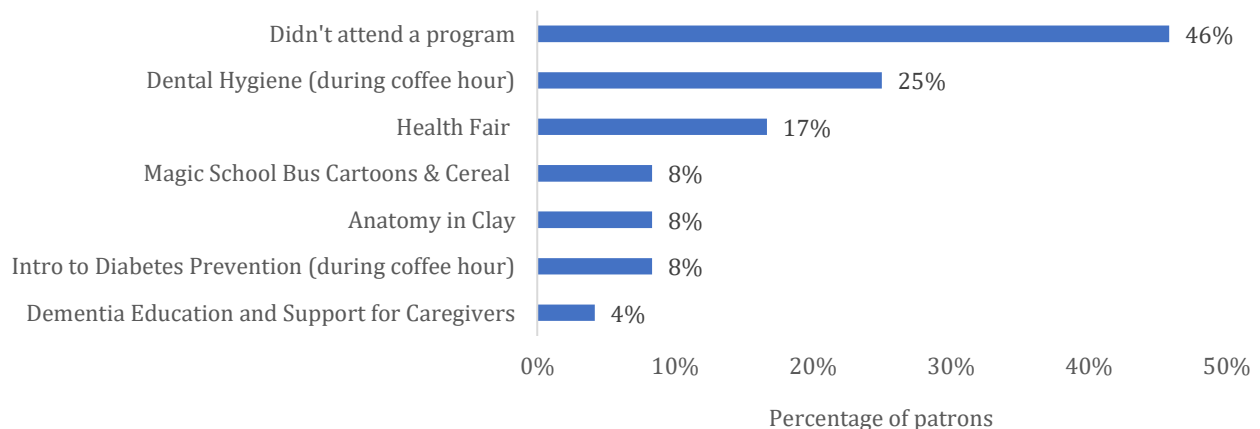
Figure 22. Frequency distribution of patrons' ratings of whether they felt motivated to attend programs to learn more about health/healthy living (n=24)



6.3b Whether patrons attended a program during the final month of the exhibit tour

Figure 23 shows which programs or events related to health/healthy living patrons in the follow-up group said they attended at Penrose during the final month of the exhibit tour, sometime after they completed the exhibit survey at the library. More than half (54%) of the

Figure 23. Whether patrons attended a *Discover Health* program at Penrose during final month of the exhibit tour, and which they attended (n=24)



patrons indicated they attended at least one of the six programs offered. Specifically, one-quarter of the patrons attended the *Dental Hygiene* program that was presented during a weekly coffee hour program, and one-sixth attended the *Health Fair*. One tenth or less attended the following programs: *Magic School Bus Cartoons & Cereal*, *Anatomy in Clay*, *Intro to Diabetes Prevention* held during a weekly coffee hour, and *Connecting the Dots: Dementia Education and Support for Caregivers*. A couple of patrons elaborated on their experience with the programming in general, as follows:

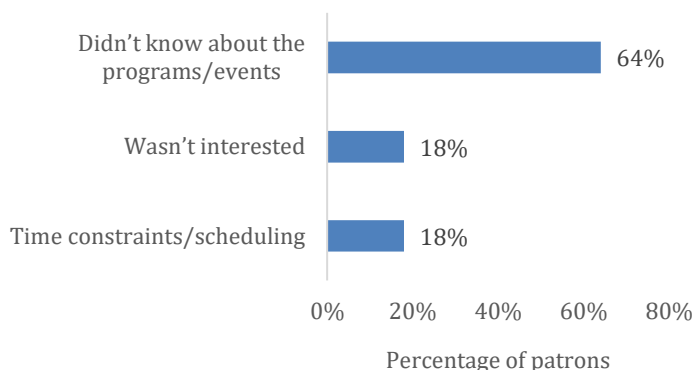
- *The layout of the exhibit and the different things you can learn are interesting but I myself will go more into looking at the flyers and what it shows about different programs and things out there in the community.*
- *I don't think I will adopt a healthier lifestyle per se, but it did get my attention and I did grab a flyer for the anatomy in clay class because it is hands-on and it is interactive. I'm curious, and it sounds fun and I'll learn.*

The 11 patrons who didn't attend a program were asked to explain why not. As shown in Figure 24, two-thirds of this group said they didn't know about the programs, while one-fifth each said they weren't interested or didn't have time.

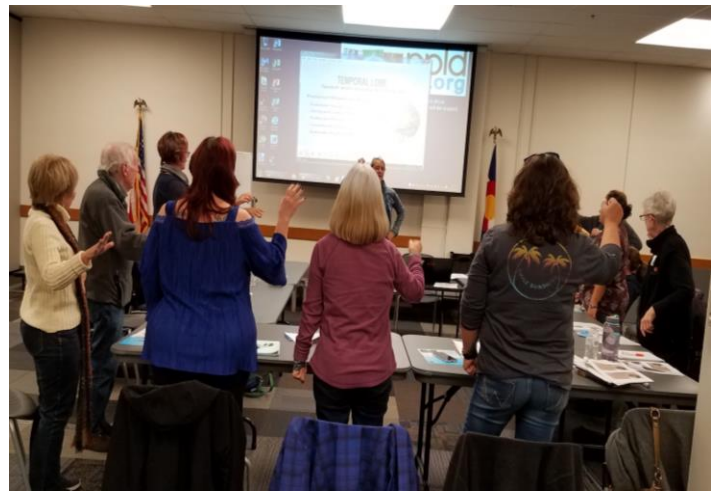
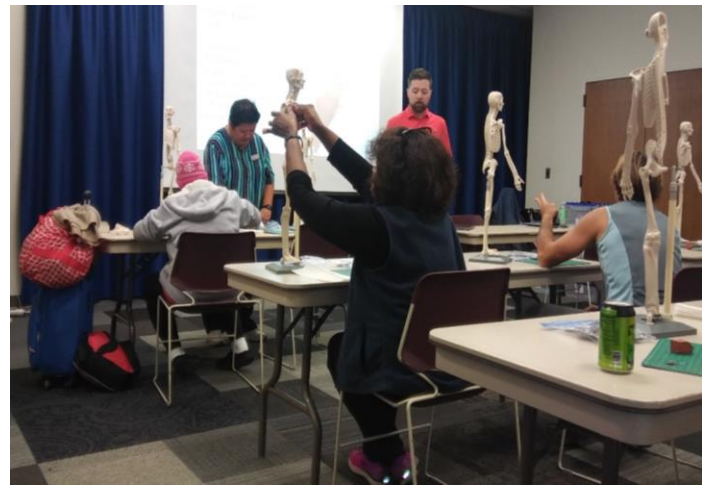
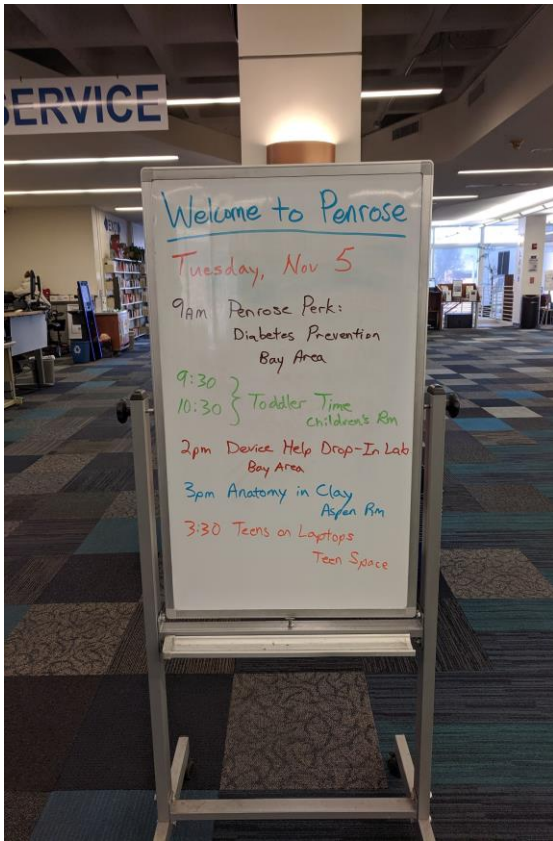
A few patrons elaborated as follows:

- *Conflicted with my schedule. 😊*
- *I live in a homeless shelter and hold a part time job. I had to be back at the shelter to check in for the night. By the time I get off work I don't have much time to do other stuff*
- *I'm already a healthy individual that takes her life seriously. So seriously that people, more popular people perhaps, think there is something wrong with me. But they didn't really know my family either (stepmother is an RN).*
- *I'm not sure about programs at the library, I didn't actually know the library had any programs about these topics, it's a good idea though I guess to complement what is here.*
- *I have 4 kids, so I want to do things that are kid friendly. Seems like the programs are for adults.*
- *I'm more interested in the study of self. You can never stop learning about who you are, and about your responsibility in being a human being. I don't know if the library does those kinds of programs, or what kind of program that might be/what it would look like.*

Figure 24. Reasons patrons gave for not attending programs/events (n=11)



Images 15-19 (page 42) show a selection of the programs the Penrose library implemented during the month of November 2019, all of which were observed by the evaluation team.



Images 15-19. Examples of *Discover Health* programs implemented at Penrose, including: *Diabetes Prevention*, *Anatomy in Clay*, *Connecting the Dots: Dementia Education and Support for Caregivers* and the *Health Fair*, which included free health screenings by the Central Colorado AHEC

6.3c Whether patrons saw a relationship between the exhibit and programming

To explore how patrons thought about the relationship between the exhibit and programming, patrons in the follow-up group were asked: *Whether or not you attended any programs or events related to health/healthy living at the Penrose Community Library or elsewhere, what do you see as the relationship between the Discover Health exhibit and the programs at the library? How do you think they relate, or could relate, if at all? As Figure 25 shows, while about one-third of the patrons either said they weren't sure about or didn't see a relationship, two-thirds indicated they did see a relationship. Those who saw a relationship typically described the exhibit and programming as "enriching" one another through topic areas or providing an opportunity for patrons to "connect" facts or ideas they learned from each. Examples of how patrons described the relationship follow in Table 11.*

Figure 25. Whether patrons saw a relationship between the exhibit and programming (n=23)

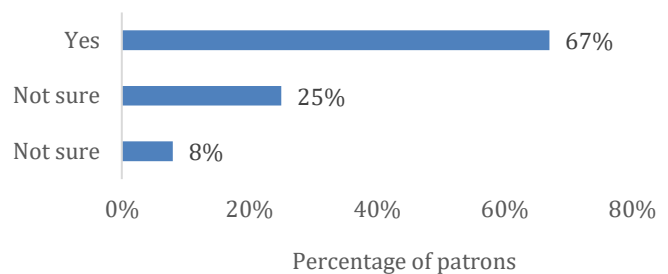


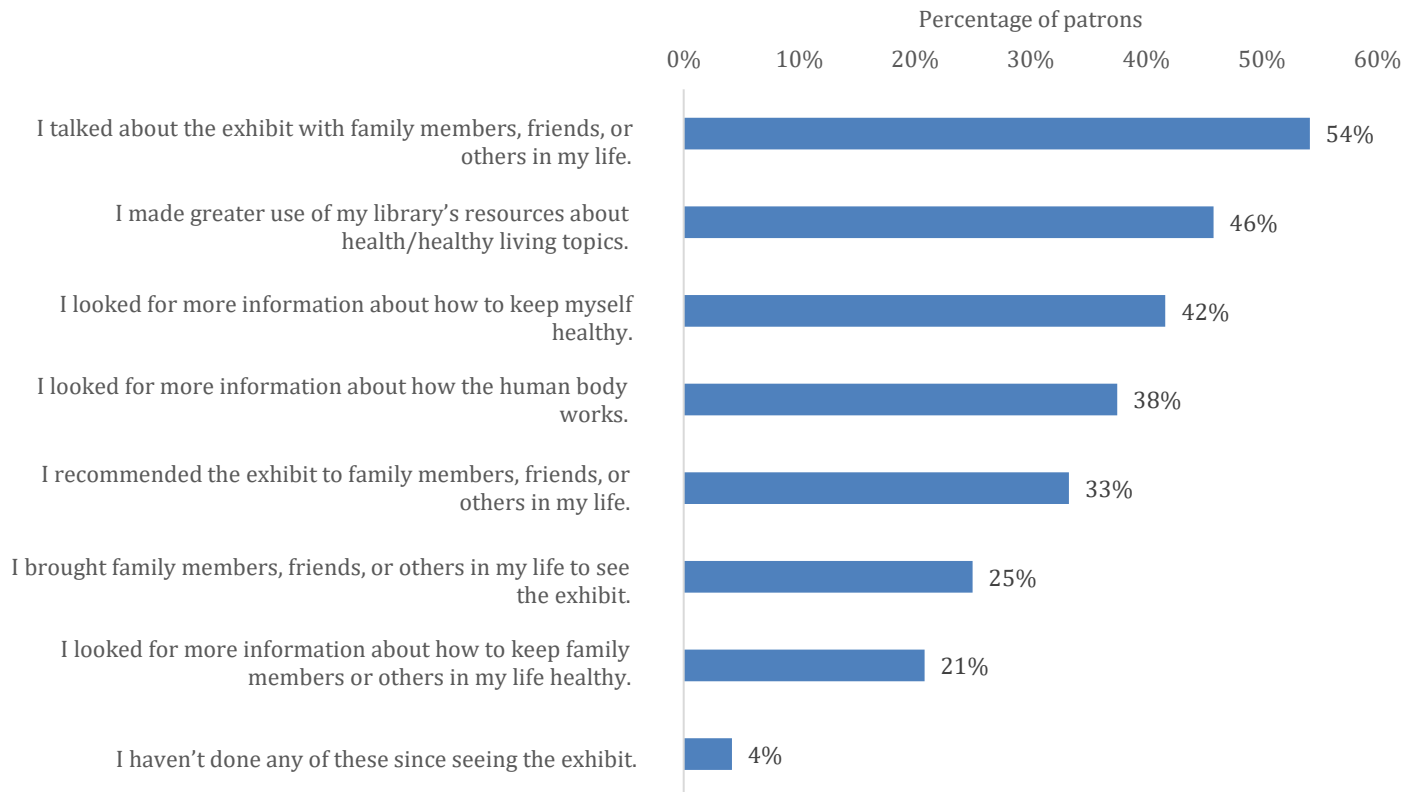
Table 11. Patrons' comments about the relationship between the exhibit and programming (n=23)

- *I see the relationship between the Discover Health exhibit and the programs at the library as enriching one another. The exhibit presents the information to people and sparks their curiosity. The library provides follow-up enrichment opportunities and print*
- *I believe some connection is there if you can make it easy for people to get to. Some complement each other some were different. I wouldn't have known the dementia one for example was related to the exhibit. So maybe tying them together through how they promote it so you catch it and see it coincides with the exhibit. If you aren't paying attention to what is going on with your body you might blow over it. I have people in my family who know what is wrong but they refuse to correct the issue or pay attention. It is a big question. You have to start looking at yourself before you can be open to the information. I think they could definitely have programs that help children connect to the ideas and help everyone make healthier food choices.*
- *Yes. I feel that the overall goal of both the library and the exhibits was to educate people and provide resources that people may not have known was available*
- *I think they are directly related as a library not only supports mental health through reading/learning something new/ expanding your horizons but it can also support physical health through exhibits such as they. Overall, they relate as they both seek to add positively to an individual's overall health be it mental, physical, emotional, and/or spiritual, etc.*
- *The exhibits help people realize what their bodies are capable of. Therefore, making them more aware of what they are doing to and for their bodies to make them better or worse in the long run. Also, how to correct damage or keep it from happening to them or loved ones.*
- *There is an important link between free, quality education on health, and outcomes. But until every person has all the care, they require available, we will still have folks dying prematurely. Perhaps we should also educate folks on how to lobby their politicians on this matter?*
- *Yes, it all dose due to the way people in general tend to place their activities in positive ways that affect their brain waves and the long term to short term memories. For example, the remembrance of fun and life changes. This even helps with getting back on track with the way things that people love to do and being able to do them with positive social networking.*
- *Resources for those wishing to further their knowledge.*
- *Yes. Libraries are resource centers, and this was a form of sharing resources.*
- *The library is about leaning and so was the exhibit! It encouraged my daughter with how easy it was to navigate.*
- *Helps to educate the community. Sparked an interest in my children to learn more about the body.*

6.4 Exhibit-related activities patrons engaged in since visiting the exhibit

Figure 26 shows the percentage of patrons in the follow-up group who indicated they did various health-related follow-up activities since visiting the exhibit. More than nine-tenths indicated they did at least one of the seven activities they were asked about.

Figure 26. Activities patrons engaged in since visiting the exhibit (n=24)



More than half said they talked about the exhibit with family members, friends, or others in their life and just under half reported they made greater use of the library's resources about health/healthy living topics (such as looking for books or videos). About two-fifths each indicated they looked for more information about how to keep themselves healthy and looked for more information about how the human body works. One-third recommended the exhibit to family members, friends, or others in their life, and one-quarter brought family members, friends, or others to see the exhibit. Finally, one-fifth said they looked for more information about how to keep family members or others in their life healthy.

6.5 Whether and how patrons and their family members/others took steps toward a healthier lifestyle

Patrons in the follow-up group were asked if they had taken any steps toward considering or adopting a healthier lifestyle since experiencing the *Discover Health* exhibit and/or programs, and also if they were aware of whether their family members or others in their life had done the same.

Figure 27 shows that, when asked to reflect on their own steps, more than half said yes, and one-third said no but that they planned to soon.

Figure 28 shows that, when asked about their family members or others in their life, two-fifths said yes, two-fifths said not that they were aware of, and just over one-tenth reported that they hadn't experienced the *Discover Health* exhibit or programs. Examples of patrons' comments in each case follow in Table 12.

Figure 27. Whether patrons took steps toward a healthier lifestyle (n=23)

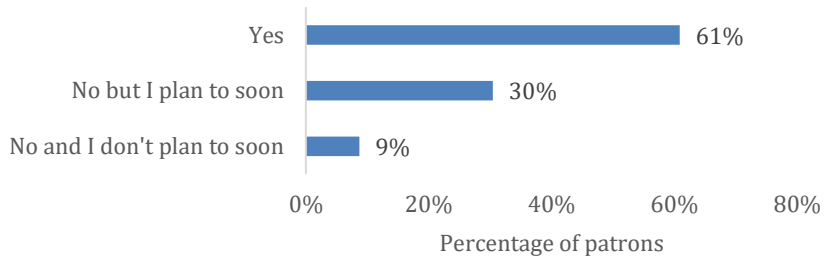


Figure 28. Whether patrons' family members/others took steps toward a healthier lifestyle (n=23)

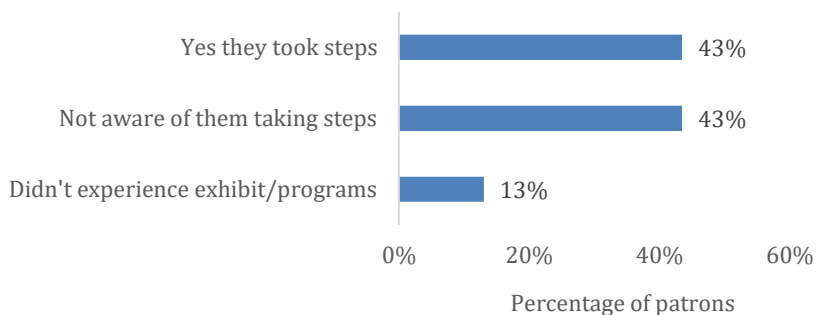


Table 12. Patrons' comments about the steps they and their family members/others had taken toward a healthier lifestyle since visiting the exhibit (n=23)

How exhibit affected personal health habits

- *Eating and trying to simply go w/o certain meds at all.*
- *Exercise more and walk everywhere*
- *More attention to diet and more exercise.*
- *I have been trying to get more sleep and drink 8 glasses of water a day. Although the exhibit did not cover these things specifically, I realize how interrelated all of the body systems are. Sleep and water consumption directly relate to your overall health.*
- *Recently what I have done is: 1) Corresponded with DHS via Colorado Peak regarding the lack of options to satisfy my needs for back strengthening (YMCA membership for pool access, Physical Therapy with at least one visit per week depending on the pain, instead of drug therapy); 2) Documented my personal patient file...and my patient portal; 3) Consulted with Instacart, a 3rd party vendor of the Safeway stores, to see if they will accept my Food Stamp SNAP benefit card to deliver my groceries so I don't negate the work my Physical Therapy is doing. They don't so far.*
- *Going to try to lose weight*
- *I have a healthy lifestyle. I will be spending more time pushing my political leaders to make healthcare available to all.*

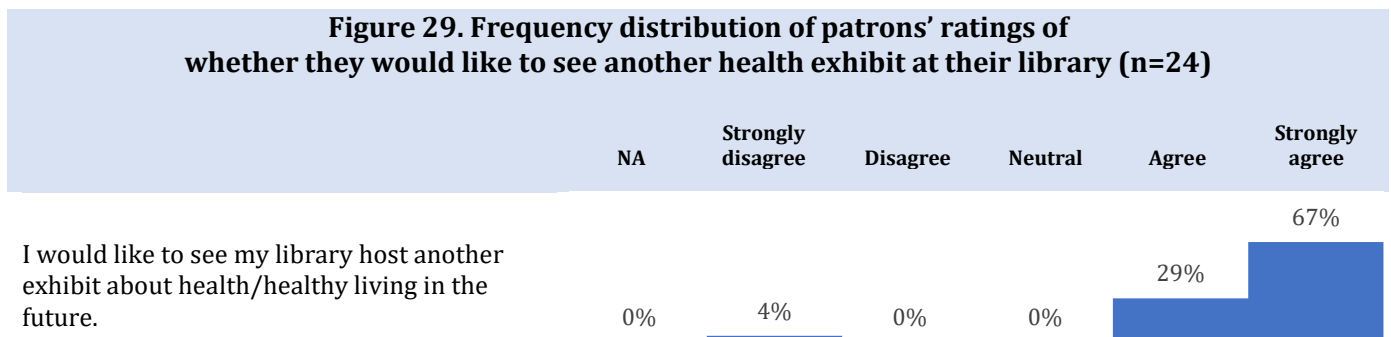
How the exhibit affected health habits of family members or others in patron's life

- *I use the new Planet Fitness gym membership to get family members involved.*
- *My daughter is much more intentional about brushing her teeth every morning and every night.*
- *Some people I saw showed some initiative about their health. I don't know if it was temporary because it was there. Maybe it sparked something there. No one part in particular just in general.*

6.6 Patrons' interest in future health exhibits and suggestions for topics

6.6a Patrons' interest in future health exhibits

Figure 29 shows that more than nine-tenths of the patrons in the follow-up group indicated they would like to see the Penrose library host another exhibit about health/healthy living in the future. One patron elaborated on their rating as follows: *"I really appreciate the fact that this exhibit was brought to Colorado Springs. There are not very many hands-on learning opportunities such as this in our area for children. The majority of the time we have to drive to Denver, which is an hour away, to experience exhibits such as this. Please return!"*



6.6b Patrons' suggestions for topics in future exhibits

Finally, patrons in the follow-up group were asked: *Reflecting on your experience with the Discover Health exhibit, is there a health topic that you would like to see included that wasn't? Please offer any and all suggestions so that future exhibits may consider your ideas.* Three-quarters of the patrons who participated in the follow-up had a suggestion, most often relating to brain or mental health topics, followed by sexual health and other topics. Examples of their suggestion follow in Table 13.

Table 13. Patrons' suggestions for health topics in future exhibits (n=18)

Mental health

- *Like I said the mind, the brain, so maybe more in depth. the mind you can't see but you can see the brain. What role does the mind play? The mind doesn't discriminate.....whatever reality you put in there, it will distribute, whether it is heaven or hell or whatever. That is our identity, the essence of everything. When you talk about the mind, it is basically spirit.*
- *I would like to see more about the effects of stress on an individual's health. I would also like to see even more hands-on activities for children that support the information provided in the exhibit. My daughter loved the clay anatomy [program], but it was geared towards an adult audience and she was the only child there.*
- *More on the way different things affect the brain and a physical appearance of it. For example, recreational drugs, and then the way the positive brain waves and negative with the way it helps control everyday life more in depth. This would help me on putting more education for my TBI and to improve my weak spots and to make my strengths stronger*

- *I would have liked to learn about the Dementia/Alzheimer's part of the exhibit, I didn't see it, but my mom is experiencing signs of memory loss and it runs in the family.*
- *Meningitis*
- *Pituitary gland 😊*

Sexual health

- *They should do a class on puberty and STDs*
- *I would have liked to see more on sexual health.*

Other

- *It would be fun to have a healthy cooking class or meditation class.*
- *Effects of sugar on the body at a kid's level*
- *A medical industry supervisor admitted there is no profit in curing anything. I doubt anyone can fix medicine.*
- *Heart stuff but also lungs I have slight IDHL*
- *The inner ear.*
- *More activities for kids*
- *How the pieces fit together in my body. Where my heart is. I looked and played with the human body puzzle with my six-year-old. We loved it. But it would have been helpful to have a key to show us where the pieces go. Also, a brief way to explain what each part does. It would have helped me teach more to my daughter. High school biology was a long time ago for me.*
- *A class that helps voters push our elected officials to make healthcare available to all.*

Discussion

This report presented a case study of the impact of the *Discover Health* exhibit on patrons at the Penrose library in Colorado Springs, Colorado. The exhibit toured a total of 10 library sites throughout Colorado over a 35-month period from January 2017 to November 2019, with Penrose being the last library to host the exhibit, from September to November 2019. A total of 87 patrons participated in the evaluation and completed the Patron Exhibit Survey at the library, 80 of whom went on to complete the Patron Exhibit Interview immediately following the survey. Additionally, a total of 24 patrons participated in the Patron Follow-up Survey (or telephone interview) one month later.

Based on the survey and interview measures used in the evaluation, the results showed that, within the public library setting of Penrose, the exhibit was well-received and had a positive impact on the adult patrons who participated in the evaluation. As detailed in the report, patrons reported positive impacts with respect to their exhibit-related engagement, learning, interest, motivation, and intentions to follow up. Moreover, the correlational analysis showed that while no significant relationships were found between the three measured scales of Learning, Interest, and Intentions and patrons' background or exhibit engagement, patrons who indicated they learned a lot about the exhibit topics were more likely to indicate a higher level of interest in the exhibit topics, and those who indicated a higher level of interest in the exhibit topics indicated they were more likely to follow up. Additionally, patrons who indicated they were motivated to consider adopting a healthier lifestyle were more likely to indicate they learned a lot from the exhibit, that they were more interested in the exhibit topics, and were more likely to follow-up.

This Discussion highlights findings that emerged with respect to patrons' exhibit-related engagement, learning, interest, motivation, and intentions, and then closes with a few recommendations and final remarks that may help inform future library-based health exhibits. Where applicable, the Discussion also incorporates findings from the cross-site analysis of the implementation of the *Discover Health* project across all 10 library sites, drawing on the reporting information and reflections of the library and Area Health Education Center (AHEC) partners who collaborated to host the exhibit and coordinate programming (Knight Williams Inc., 2020).

Patrons' engagement with the exhibit

How patrons heard about the exhibit. Nine-tenths of the patrons surveyed at the library said they first heard about the exhibit when they saw it at Penrose. While a few patrons pointed to family members or a librarian, none pointed to hearing about the exhibit from any of the print, website, social media, or broadcast media promotions the library shared about the exhibit.

Exhibit areas patrons visited, and whether patrons visited the exhibit again within a month. Nearly four-fifths of the patrons surveyed at the library indicated they visited at least four of the 15 possible exhibit areas, with the areas located near the library entrance being visited by higher percentages of patrons than those located in other parts of the library. For example, two-thirds of the patrons reported visiting *Brain Health* and/or *Heart Health*, both of which were located near the entrance, and half each reported visiting *Healthy Plate* (also near the entrance) and/or

the *Human Torso Model* (in the children's area), with the remaining 11 areas being visited by smaller groups of patrons.

Regarding patrons' longer-term engagement with the exhibit, more than four-fifths of those surveyed/interviewed one month later said they visited the exhibit at least once after completing the initial evaluation survey, with the majority of these patrons saying they visited two or more times.

Exhibit areas that stood out for patrons and why. When patrons surveyed at the library were asked to identify the exhibit area that most stood out to them, no one area stood out for a majority of the group, although three of the four most-visited exhibit areas listed above were also mentioned more frequently in response to this question. Two of these were exhibit areas located in the library entrance area, specifically *Heart Health*, mentioned by one-third of the patrons, and *Brain Health*, mentioned by one-quarter. The third area, the *Human Torso Model*, located in the children's area, stood out to one-tenth of the patrons.¹⁵

When invited to explain why the exhibit area they selected stood out to them, one-quarter indicated that the area they pointed to gave them an opportunity to see a "model or real specimen" that showed them how parts of the body look or relate, while another quarter explained that the exhibit area addressed a health topic that was "personally relevant." About one-fifth appreciated that the exhibit area they specified was "interactive or hands-on," and one-tenth enjoyed that the area was "attention grabbing."

Whether patrons pointed out or discussed the exhibit with their children. Most of the patrons interviewed at the library who had elementary school or older children confirmed that they had pointed out or talked with their child(ren) about at least one exhibit area. Nearly two-fifths of these patrons specifically mentioned the *Heart Health* exhibit area, while around one-quarter each mentioned *Healthy Mouth*, *Brain Health*, the *Human Torso Model*, and the *Green Screen Surgery*. When asked specifically about the career-focused exhibit area, *Faces of Healthcare*, just over a tenth said they had pointed out or talked about this exhibit area with their child, while about half said they didn't notice an exhibit area with a health career focus and two-fifths said they felt their child was too young for this information.

Patrons' learning from the exhibit

Patrons' learning about exhibit health topics. In each case more than four-fifths of those surveyed at the library indicated that they learned a lot about how the human body works and how to keep their body healthy as a result of their experience with the exhibit.

Most interesting things patrons learned from the exhibit. While no one theme stood out among the majority of patrons surveyed at the library, three themes were mentioned by about one-quarter each: heart health or function, brain health or function, and/or the health or function of the body in general.

¹⁵ Note that the *Human Torso Model* area also included a model of the ear. A few patrons pointed specifically to the ear model, and their responses are included as part of the *Human Torso Model* area.

Whether the exhibit influenced how patrons thought or felt about their health habits. About four-fifths of patrons interviewed at the library reflected that the exhibit influenced the way they thought or felt about their own health habits. One-fifth said it hadn't influenced them, most of whom explained that they already had good health habits or knew the information. While no one habit area stood out for the majority of patrons who felt influenced by the exhibit, nearly one-third pointed to diet/nutrition, while about one-fifth each pointed to how the body/internal organs work and/or smoking/lung health, among other responses.

Patrons' interest in the exhibit topics

Patrons' interest in the exhibit health topics. More than four-fifths of the patrons surveyed at the library indicated that, as a result of their experience with the exhibit, they were more interested in learning about how the human body works, while three-quarters said they were more interested in learning about how to keep their body healthy.

Patrons' interest in future health exhibits and suggestions for topics. About one-fifth of those who completed an interview at the library suggested topics for future health exhibits, such as the effects of vaping and other drug use, diet and fitness resources, information on mental health, personal hygiene, immunity building, soulful aspects of wellness, and sleep. Reflecting on their exhibit experience one month later, more than nine-tenths of those surveyed/interviewed indicated they would like to see Penrose host another exhibit about health/healthy living in the future. Most in this group also went on suggest topics for future health exhibits, such as mental health and sexual health.

Patrons' follow-up motivations related to their exhibit experience

Patrons' motivation to attend health/healthy living programs at the library. More than half of those who completed the follow-up survey/interview indicated they attended a program or event related to health/healthy living at Penrose during the final month of the exhibit tour, sometime after they completed the initial evaluation survey. Nearly half of the patrons in this follow-up group indicated that the exhibit in particular had motivated them to attend programs at Penrose to learn more about health/healthy living. In general, those who didn't attend a program said they hadn't known about them, that they weren't interested, or that they didn't have time.

Whether patrons experienced a relationship between the exhibit and programming. Two-thirds of those who completed the follow-up survey/interview indicated that they saw a relationship between the *Discover Health* exhibit and programming, while one-third either said they weren't sure or didn't see a relationship. Those who saw a relationship typically described the exhibit and programming as "*enriching*" one another through topic areas or providing an opportunity for patrons to "*connect*" facts or ideas they learned from each.

Patrons' motivation to consider adopting a healthier lifestyle. Three-quarters of patrons surveyed at the library indicated that they felt motivated to consider adopting a healthier lifestyle as a result of seeing the exhibit. Those who completed the follow-up survey/interview were asked if they had taken any steps toward considering or adopting a healthier lifestyle since experiencing the *Discover Health*

exhibit and/or programs one month earlier, to which three-fifths of the follow-up group said yes (for example, “*Exercise more and walk everywhere*” and “*I have been trying to get more sleep and drink 8 glasses of water a day. Although the exhibit did not cover these things specifically, I realize how interrelated all of the body systems are. Sleep and water consumption directly relate to your overall health*”).

Patrons’ follow-up intentions and activities related to their exhibit experience

Patrons’ intent to follow-up on exhibit topics. More than four-fifths of patrons surveyed at the library indicated that they planned to learn more about how to keep themselves healthy, while three-quarters each indicated they planned to learn more about topics relating to their body and planned to make greater use of their library’s resources about health/healthy living topics.

Whether patrons talked about, recommended, or shared the exhibit within one month.

When asked whether they had talked about, recommended, or shared the exhibit with their family members, friends, or others in their life since completing the initial evaluation survey, more than half of the patrons who completed the follow-up survey/interview said they talked about the exhibit, one-third recommended it, and one-quarter shared it with other(s).

Patrons’ follow-up activities within one month. Among those who completed the follow-up survey/interview, about two-fifths each reported that they had looked for more information about how to keep themselves healthy and looked for more information about how the human body works. Additionally, just under half of this group indicated that they had made greater use of the library’s resources about health/healthy living topics, such as looking for books or videos.

Recommendations

Looking across the findings, some final recommendations are provided below, which may help inform the planning, implementation, and evaluation of future library-based health exhibits with associated programming.

- ***Host front-end Community Dialogues to identify potential exhibit topics.*** In planning future health exhibits, it may be useful to hold front-end Community Dialogues at a few representative sites early in the project, to help identify exhibit topics patrons find particularly relevant to their communities. As noted earlier in this Discussion, personal relevance was one of the main reasons why certain exhibit areas stood out to the patrons; thus, developing exhibit pieces with community input at an early stage might help further increase patrons’ engagement with, learning from, and interest in future health exhibits, as well as their motivation and intentions to follow-up.
 - One community of patrons whose needs and interests might be incorporated more fully into future exhibit offerings are those experiencing homelessness. As noted by Penrose library staff in their follow-up evaluation interview completed as part of the exhibit cross-site evaluation (Knight Williams Inc., 2020), “*A lot of our patrons are dealing with homelessness or other financial factors that really are barriers to*

them accessing health care, accessing healthy foods. They can learn what's nutritionally valuable, but if they don't have the time, money, access to cook or get vegetables or all these things, then they're kind of stuck at that intro stage." The need and opportunities for health-related resources and programming for homeless patrons within the library setting has been well documented in recent years (Morgan et al., 2016; Skinner, 2016; Williams, 2016; Giesler, 2019; Wahler, 2020). Within the context of the Penrose evaluation, many homeless patrons suggested topics they would find personally relevant such as vaping and other drug use, mental health, personal hygiene, immunity building, and living in the cold. As one homeless patron observed, *"For homeless people who have to live outside in the cold we need to know how to protect the lungs as lungs can freeze in low temperatures especially if people are drinking and you can't feel it happening. We also need to know how to eat things like peanuts which have protein and fat but working around not having your teeth to be able to chew it. Something happens and you are out in the cold and everything you do matters."* A front-end Community Dialogue with homeless patrons could help identify exhibit and programming-related interests and potential barriers, as well as ways that the project team, local libraries, and other partners can further support their health-related needs.

➔ ***Develop customized mini exhibits with a suite of potential supplemental exhibit areas.***

As noted above, nine-tenths of the patrons who completed the follow-up survey/interview indicated they would like to see the Penrose library host another exhibit about health/healthy living in the future, and most also indicated that they had returned to the *Discover Health* exhibit at least once during the follow-up period. Given the Penrose patrons' apparent enthusiasm and sustained interest, as well as the positive feedback all 10 *Discover Health* library partners who hosted the exhibit shared on their patrons' experience with the exhibit (Knight Williams, 2020), it is likely that future health-related exhibit offerings would also be well-received by library patrons in other parts of Colorado.

Although, as recommended above, a front-end Community Dialogue might be used to help identify potential exhibit topics, it is likely that different communities would come to the project with somewhat different interests and priorities. For example, although Penrose patrons shared a number of additional suggestions for future health exhibits beyond those mentioned in the previous bullet, including diet, fitness, and sleep, some other topics might be more personally relevant to library patrons in other communities.

To meet different communities' needs, it may be worth considering the pros and cons of designing a project that can be simultaneously implemented at multiple sites, as was also recommended in the cross-site analysis (Knight Williams, 2020). To realistically implement this synchronous approach would likely require the project to prioritize smaller exhibit pieces and customizable educational materials and programs that could be tailored to the needs and interests of each local library. Drawing on front-end Community Dialogue feedback, the project team could develop a mockup of possible supplemental exhibit elements, and then work with each library to select those best suited to their community's needs and interests – for example, allowing one library to incorporate

supplemental elements related to vaping and mental health, whereas another site's mini exhibit might include exhibit areas related to exercise and diabetes.

- ***Prioritize exhibit elements that engage patrons by showing them about health and healthy living.*** When asked which areas of the exhibit stood out for them and why, patrons most often pointed to areas that gave them an opportunity to see a model or specimen that showed them how parts of the body look or relate. Similarly, those exhibit areas that showed patrons how the body works – for example, areas with models, puzzles, games, and specimens – tended to be visited by the largest groups of patrons. In comparison, the exhibit areas that did not include these kinds of elements (such as *Faces of Healthcare* and *Hiking in Colorado*) tended to be visited by smaller groups of patrons and generally were not identified as exhibit areas that stood out to the patrons.
- ***Develop additional approaches to engage youth in health careers.*** Relatively few parents/guardians with children in elementary school or older said they pointed out or talked with their children about the *Faces of Healthcare* exhibit area. By contrast, two-fifths of these parents/guardians said they pointed out or talked about the *Heart Health* exhibit area, while around one-quarter each mentioned *Healthy Mouth*, *Brain Health*, the *Human Torso Model*, and the *Green Screen Surgery*, all of which were hands-on or interactive and likely more “kid-friendly” than *Faces of Healthcare*.

If a future health exhibit prioritizes a similar focus on healthcare careers for younger audiences, the project team will likely want to make this aspect of the exhibit more appealing to children and their parents/guardians, for example through the inclusion of the following types of resources:

- interactive/hands-on games, board books, or toy props simulating the tools and dress often seen in health-related fields, such as stethoscopes, blood pressure cuffs, scales, and scrubs;
 - accompanying displays of children's books and videos showing children age-appropriate, culturally responsive, and personally relevant and relatable storylines about the opportunities, challenges, benefits, and education involved in having a job or career in a health-related field; and
 - programming for children/families that draws on the above resources and/or features diverse in-person health professionals who can provide information and perhaps role modelling about being a health professional.
- ***Make more explicit connections between the exhibit and programming.*** Although two-thirds of those who completed the follow-up survey/interview indicated that they saw a relationship between the *Discover Health* exhibit and programming – typically describing the exhibit and programming as “enriching” one another through topic areas or providing an opportunity to “connect” facts or ideas they learned from each – it was only after their involvement in the evaluation that any patrons went on to experience the *Discover Health* programming. Specifically, none of the patrons initially surveyed at the library indicated they had experienced the programming, while one month later more than half of those who completed the follow-up survey/interview indicated they had since attended a program or event related to health/healthy living at Penrose, and nearly half of this group indicated that the exhibit in particular had motivated them to attend programs to learn

more about health/healthy living. In general, those who didn't attend a program said they hadn't known about them, that they weren't interested, or that they didn't have time. Although the Penrose patrons' experiences may not have been representative of patrons who experienced the *Discover Health* exhibit and programming at the other nine partner sites, their feedback indicates that the connection between the *Discover Health* exhibit and programming could have been stronger, at least in some patrons' minds.

Future exhibits might also proactively highlight such exhibit-programming connections. For example, building specific areas into future exhibits for library and community partners to embed programming promotions may further draw patrons' attention to the relationship, in comparison with promoting these programs elsewhere in the library, such as by the circulation desk or on bulletin boards, where patrons may be less likely to make the connection between the two aspects of the project.

- ***Inform project and evaluation planning with current informal STEM and health and learning theory and research, Participatory Action Research and Participatory Evaluation, and STEM Learning Ecosystems frameworks.*** As noted in the introduction to this report, the *Discover Health* logic model and outcomes were rooted in the team's focus on similar outcomes in prior library exhibit *STAR Net* projects, which generally drew on the "strands of science learning" framework proposed in the National Research Council (2010) [Learning Science in Informal Environments](#), particularly strand 1, wherein learners who engage with science in informal environments experience "excitement, interest, and motivation to learn about phenomena in the natural and physical world" (page 43).

In the case of *Discover Health* and the earlier *STAR Net* exhibit projects such as *Discover Earth*, *Discover Tech*, and *Discover Space*, the informal environments were all public libraries, a venue that has become increasingly popular for hosting exhibits. As noted in a recent review of exhibits in public library spaces (Ng-He, 2019):

As the public library shifts from its traditional role of book repository to a dynamic community hub, learning happens more kinetically and interactively. Exhibits have become increasingly popular among many public libraries as a way to engage visitors of all ages and backgrounds. More libraries are embracing exhibits as a conduit to facilitate dialogue and raising awareness of various topics. Exhibits can be small in scale, low budget, made in-house; they can also be library-wide, of museum quality, or be rented or borrowed from other institutions. Some of them are as simple as information panels while others are hands-on and immersive. Regardless of the size and form, developing and hosting exhibits in a public library is exciting and at times challenging due to the numerous practical and logistical considerations. Nonetheless, the value of presenting exhibits for the community far outweighs those concerns.

In the case of the *Discover Health* project specifically, the STEM content involved health focused topics (how the body works and how to keep it healthy) and the funding source was the SEPA program of the National Institutes of Health, whereas the earlier *STAR Net* exhibit projects were funded by the National Science Foundation or NASA. As such, the health focus represented a new direction. Although little has been reported about the impacts of health-related exhibits on patrons in the library setting, in the years since

Discover Health launched in 2014 and concluded in 2020, the need and opportunities for health-focused resources and programming in the library setting have been increasingly well documented, recognizing both the role public libraries can play in becoming partners for improving patron health and why they are well-positioned in this regard (Morgan et al., 2016; Morgan et al., 2017; Morgan et al., 2018; Rubenstein, 2018; Luo, 2018; Dupuis et al., 2018; Whiteman et al., 2018; Carnes, 2019; Vega, 2019; Lowenstein et al., 2019; Hines-Martin et al., 2020). As a recent scoping study by Philin et al. (2019)¹⁶ concluded:

Libraries' extensive population reach, their access to diverse sectors of the U.S. population, the public trust they command, and their diverse geographic coverage favorably position them as part of a multi-sectoral strategy to advance population health. There are unrealized opportunities for public health researchers, healthcare workers, and policy makers to leverage this potential as part of a coordinated effort to mitigate place-based health disparities.

In light of the exhibit's health focus, recent shifts towards libraries becoming a dynamic community hub, and the opportunities for libraries to help improve patron health, future evaluations of library-based health-focused exhibits might draw more extensively on current theory and research relating not only to informal STEM engagement, learning, interest, motivation and intentions – as outlined in the informal science learning strands and logic model that influenced the project planning – but also the personal health dimensions of these outcomes.

While there may be little precedent for the use of health-related exhibits in the library setting, the Penrose evaluation findings suggest this is a promising approach. Patrons generally reported they experienced the exhibit as outlined in the *Discover Health* logic model, and while the model incorporated the exhibit's health and healthy living content as the form of STEM content, further consideration of theory and research in the health promotion and disease prevention fields, for example, would likely strengthen future project teams' efforts to develop and evaluate patrons' health-related outcomes. Additionally, given the *Discover Health* project's consistent focus on library and AHEC partnerships, and its' increased focus on the use of Community Dialogues during the grant period, future project and evaluation designs might also draw on more current work in Participatory Action Research, Participatory Evaluation, and STEM Learning Ecosystems to further inform refinements to these approaches.

Final remarks

The *Discover Health* results add to the findings from previous evaluations of library-based exhibit impacts on patrons' STEM engagement, learning, and interest (Fitzhugh et al., 2013; Fitzhugh et al., 2019; Coulon, 2018; Dusenbery et. al., 2020). The case study evaluation extends this prior work through its in-depth evaluation of patrons' experience with the exhibit at one site; its focus on STEM-related outcomes that involve personal health topics; and its exploratory correlational

¹⁶ The scoping study used an approach the authors described as one that is used for research areas that are new or only poorly delineated in existing literature.

analysis to further understand the relationship of the patrons' exhibit-related learning, interest, and intentions and the relationship between these outcomes, patrons' backgrounds, and their engagement with the exhibit. At the same time, caution should be taken in interpreting the findings given some of the limitations of the evaluation, including that it was not designed to explore differential impacts of the exhibit on subgroups of patrons, nor was it an experimental design with the goal of contributing to generalizable knowledge. As noted previously in the report, the evaluation was also limited in the number of questions that could reasonably be asked of patrons given the evaluation design and procedure.

In closing, the findings from this evaluation of the *Discover Health* library-based exhibit and related programming, along with the findings from the cross-site evaluation of library and AHEC partners' experience with and perspectives on these strategies (Knight Williams, 2020), offer some support for the range and types of impacts a coordinated effort can have on impacting patrons' personal health engagement, learning, interest, motivation, and intentions. The findings also suggest the need for future studies to understand how these outcomes operate as a part of the exhibit experience for different types of patrons.

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Appendix 1. Patron Recruiting Script

Recruit patrons at the exhibit entrance, focusing on adults and adults with children that are upper elementary and older. Approach and introduce yourself, saying the parts in **bold: I'm working with the *Discover Health* exhibit project, some of which you see here** (point to closest exhibit piece). **We are interested in learning about patrons' experiences with the exhibit in Penrose. Have you had a chance to look at the *Discover Health* exhibit on any of your prior visits to the library?**

○ If YES (*have seen the exhibit*): **Have you attended any programs about health or healthy living here at the library since September 1?**

○ If YES (*Group 4: Prior Exhibit + Program Experience*): → **Would you be willing to answer a few questions about your overall experience of the program and exhibit?**

→ If NO, say: **Thank you. Enjoy your visit to the library today.**

→ If YES, ask:

1. How many programs do you recall attending at the library since September 1?

1 2 3 or more Don't know

2. When did you last: Attend a program ? _____ See the exhibit? _____

3. Reflecting on your experience of the program and your experience of the exhibit, how do you feel the two relate to each other, if at all?

3a. Did you see the exhibit before or after the program?

If before:

- i. **Did seeing the exhibit motivate you to attend a health program?**
- ii. **Did seeing the exhibit before the program add value to your experience of the program and if so, in what ways?**

If after:

- i. **Did experiencing the program motivate you to view the exhibit?**
- ii. **Did experiencing the program add value to your experience of the exhibit and if so, in what ways?**

○ If NO (*Group 3: Prior Exhibit Experience Only*): **Would you be willing to complete a short survey about your experience with the exhibit?**

→ If NO, say: **Thank you. Enjoy your visit to the library today.**

→ If YES, ask:

1. When did you last see the exhibit? _____

2. How many times have you seen the exhibit?

- 1 time 2 times 3 or more times Don't know

Next hand them the map and exhibit survey to answer based on their prior experience **Here is a map of the exhibit. Please check off areas of the exhibit you recall looking at during your visit. Then answer the survey questions and return to me when you are done.**

If NO (*have not seen the exhibit*): **Have you attended any programs about health or healthy living here at the library since September 1?**

→ If YES (*Group 2. Prior Program Experience Only*), ask:

1. How many programs do you recall attending at the library since September 1? 1 2 3 or more Don't know

2. When did you last attend a program?

3. Would you be willing to take a look at the exhibit and then answer a few questions about your overall experience?

→ If NO, say: **Thank you. Enjoy your visit to the library today.**

→ If YES, give them the map and introduce the experience: **Here is a map of the exhibit which shows where different pieces are located in the library. Please look at anything in the exhibit that you want to and check it off on this map. [Modify for adults with kids: There are also exhibit pieces appropriate for your children. Please feel free to visit the exhibit pieces together, as you naturally would.]**

When you feel that you have looked at all that you want to see, please return to me and I'll give you a short feedback survey to complete.

→ If NO (*Group 1: No Prior Exhibit or Program Experience*), ask: **Would you be willing to take a look at the exhibit and then answer a few questions about your overall experience?**

- ➔ If NO, say: **Thank you. Enjoy your visit to the library today.**

- ➔ If YES, give them the map and introduce the experience: **Here is a map of the exhibit which shows where different pieces are located in the library. Please look at anything in the exhibit that you want to and check it off on this map. [Modify for adults with kids: There are also exhibit pieces appropriate for your children. Please feel free to visit the exhibit pieces together, as you naturally would.] When you feel that you have looked at all that you want to see, please return to me and I'll give you a short feedback survey to complete.**

Appendix 2. Patron Exhibit Survey

This short survey asks for your feedback on the *Discover Health* exhibit. Thanks for taking the time to let us know what you think! Remember that your participation is voluntary and all responses are private.

1) What were the most interesting things you learned from the *Discover Health* exhibit?

2) How much do you agree or disagree with each of the following statements about the exhibit?
Please circle one number from 1 (strongly disagree) to 5 (strongly agree), with 3 being neutral. If a statement doesn't apply to you or the exhibit pieces you saw, you can circle (NA), not applicable.

As a result of seeing the exhibit	NA	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
a. I learned a lot about how the human body works.	NA	1	2	3	4	5
b. I learned a lot about how to keep my body healthy.	NA	1	2	3	4	5
c. I am more interested in how the human body works.	NA	1	2	3	4	5
d. I am more interested in how to keep my body healthy.	NA	1	2	3	4	5
e. I feel motivated to consider adopting a healthier lifestyle.	NA	1	2	3	4	5
f. I plan to learn more about topics relating to the human body.	NA	1	2	3	4	5
g. I plan to learn more about how to keep myself healthy.	NA	1	2	3	4	5
h. I plan to make greater use of my library's resources about health/healthy living topics (such as looking for books or videos).	NA	1	2	3	4	5

3) Which exhibit piece(s) stood out for you, and why?

4) How old are you? _____

5) What is your gender? _____

6) Please check one or more boxes to describe your major racial/ethnic background:

African-American/Black

Native Hawaiian or Pacific Islander

Asian (e.g., Asian Indian, Chinese, Japanese)

White

Hispanic, Latino, or Spanish origin

Other: Please describe: _____

Native American Indian or Alaskan Native

7) In general, would you say your health is excellent, very good, good, fair, or poor?

Excellent Very good Good Fair Poor Prefer not to answer

Please share any other feedback on the back and hand to the person who gave you this survey. Thank you!

Appendix 3. Patron Exhibit Interview (following completion of Patron Exhibit Survey)

Part 1. About the exhibit (for Groups 1, 2, and 3)

1) **How did you hear about the *Discover Health* exhibit?** Interviewer checks those that are listed.

- | | |
|-------------------------------------------------------------------|---------------------------------------------|
| <input type="checkbox"/> Just seeing it today/not aware of before | <input type="checkbox"/> Friend/family |
| <input type="checkbox"/> <i>Discover health</i> related program | <input type="checkbox"/> Social media |
| <input type="checkbox"/> Mailing | <input type="checkbox"/> TV |
| <input type="checkbox"/> Newsletter | <input type="checkbox"/> Radio |
| <input type="checkbox"/> Librarian | <input type="checkbox"/> Newspaper/magazine |
| <input type="checkbox"/> Library print flyer/poster | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Library website | |
| <input type="checkbox"/> Local health organization | |

2) **Has looking at the exhibit influenced the way you think or feel about your own health habits in any way?**

3) **Would you like to explain any of these ratings?**

If no, check to see if any disagreements and if willing to explain?

4) For those with children in upper elementary school and older:

a. **Did you point out anything or talk about any of exhibit pieces with your child (or teen?)**

b. **Did you point out anything or talk about anything related to health careers?**
If don't note exhibit area on health careers, point to exhibit area.

Part 2: About the program (for Group #2 only)

5) Reflecting on your experience of the program(s) and your experience of the exhibit, how do you feel the two relate to each other, if at all?

Probes:

Since they are seeing the exhibit after having been exposed to a program:

Did experiencing the program motivate you to view the exhibit?

Did experiencing the program add value to your experience of the exhibit and if so, in what ways?

Closing

Is there anything else you'd like to share about your experience with the exhibit?

Finally, we'll be following up with exhibit visitors in about a month to see if they would be interested in completing a short online survey, or telephone interview if preferred, about their longer-term reflections on the exhibit. If you are interested in participating, please provide your email address on this separate form (detached from interview responses), which we will only use to contact you about the follow-up survey. We'll be providing a \$10 gift certificate as a thank you for participating.

Provide form for email address

Thank you again for taking the time to me today, and for providing feedback on the exhibit!

Attach map with interview responses.

Check all that apply. Adult respondent was:

- Alone
- With children
- Other: _____

Thank you for your feedback. We appreciate it!

Appendix 4. Patron Follow-up Survey

(Paper version of online/phone survey)

Thank you for taking the time to complete a few additional questions about the *Discover Health* exhibit at the Penrose Community Library. We appreciated the feedback you provided about the exhibit in November and thank you in advance for answering these additional follow-up questions!

We hope you will take the time to complete these questions because your feedback is important and will be used to help the exhibit team to better understand patrons' experience with the exhibit. Please remember that your participation is voluntary and the information you provide will be kept confidential and combined with that of other patrons. For fully completing this survey we will send you a \$10 gift certificate to amazon.com, Target, or Walmart within 2-3 days of completing the survey.

1) Since completing the exhibit survey in November, did you have a chance to visit the *Discover Health* exhibit at the Penrose Community Library again?

- No 1 time 2 or more times Don't recall

2) How has your experience with the *Discover Health* exhibit affected you, if at all?

3) How much do you agree or disagree with each of the following statements about the *Discover Health* exhibit? Please click on one number from 1 (strongly disagree) to 5 (strongly agree), with 3 being neutral. If a statement doesn't apply to you or the exhibit pieces you saw, you can circle (NA), not applicable.

	NA	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
The exhibit covered health topics that are important to me.	NA	1	2	3	4	5
The exhibit covered health topics that are important to my family or others in my life.	NA	1	2	3	4	5
I felt motivated to consider adopting a healthier lifestyle as a result of my experience with the exhibit.	NA	1	2	3	4	5
I would like to see my library host another exhibit about health/healthy living in the future.	NA	1	2	3	4	5
The exhibit motivated me to attend programs at the Penrose Community Library to learn more about health/healthy living.	NA	1	2	3	4	5
The exhibit motivated me to attend programs <u>outside</u> of the Penrose Community Library to learn more about health/healthy living.	NA	1	2	3	4	5
<i>Please feel free to explain your ratings.</i>						

- 4) Have you done any of the following activities related to your experience with the exhibit?
- I looked for more information about how the human body works
 - I looked for more information about how to keep myself healthy
 - I looked for more information about how to keep family members or others in my life healthy
 - I made greater use of my library's resources about health/healthy living topics (such as looking for books or videos)
 - I talked about the exhibit with family members, friends, or others in my life
 - I recommended the exhibit to family members, friends, or others in my life
 - I brought family members, friends, or others in my life to see the exhibit
 - Other: Please explain: _____
 - I haven't done any of these since seeing the exhibit

→ *If you selected any of the above activities, please feel free to share more about what you followed up on or how you followed up.*

5) Which, if any, of the following **programs or events** related to health/healthy living did you have a chance to attend at the Penrose Community Library since September? Please check any that apply.

- Exhibit Reception (September 15)
- Health Film Screening (October 22)
- Stress-Relief Crafts (October 24)
- Not Prescribed (October 29)
- Intro to Diabetes Prevention (during coffee hour, November 5)
- Anatomy in Clay (November 5)
- Magic School Bus Cartoons & Cereal (November 9)
- Dental Hygiene (during coffee hour, November 12)
- Connecting the Dots: Dementia Education and Support for Caregivers (November 14)
- Health Fair (November 16)
- None of the above

→ ***If patron attended 1 or more programs:***

What was the most interesting thing you learned or took away from the program(s) or events(s) you attended?

→ ***If patron attended no programs at Penrose:***

Which of the following reasons best describes why you didn't attend any of the health/healthy living programs or events listed above? Please check any that apply.

- Didn't have time
- Wasn't interested
- Didn't know about the programs/events
- Other: Please explain: _____

6) Since September, did you attend any programs or events related to health/healthy living outside of the Penrose Community Library (e.g., at other libraries, health centers, or community organizations)?

- Yes ***If patron says yes.*** Please briefly describe the health/healthy living program(s) or event(s) and the most interesting thing you learned or took away from the experience.
- No
- Don't recall

7) Whether or not you attended any programs or events related to health/healthy living at the Penrose Community Library or elsewhere, what do you see as **the relationship** between the *Discover Health* exhibit and the programs at the library? How do you think they relate, or could relate, if at all?

8) Have you taken any steps toward considering or adopting a healthier lifestyle since experiencing the *Discover Health* exhibit and/or programs?

- Yes
- No but I plan to soon
- No and I don't plan to soon

→ **For all choices:** Please feel free to explain your choice and the role the exhibit or programs played in your taking these steps.

9) Have your family members or others in your life taken any steps toward considering or adopting a healthier lifestyle since experiencing the *Discover Health* exhibit and/or programs?

- Yes
- Not that I'm aware of
- My family members and others in my life didn't experience the exhibit or programs

→ **For all choices:** Please feel free to explain your choice and the role the exhibit or programs played in their taking these steps.

10) Finally, reflecting on your experience with the *Discover Health* exhibit, is there a health topic that you would have like to see included that wasn't? Please offer any and all suggestions so that future exhibits may consider your ideas.

11) Is there anything else you would like to share about your experience with the *Discover Health* exhibit or programs?

So that we can credit you with receipt of the survey and process your gift certificate, please provide the following information below.

First Name

Last name

Would you prefer a gift card from Amazon.com, Target, or Walmart?

- Amazon.com
- Target
- Walmart
- I don't want a gift certificate

Please provide the email address or mailing address you would like us to send the gift card.

Email address

Mailing address

12) Please check one or more boxes to describe your major racial/ethnic background:

- | | |
|------------------------------------------------------------------------|--------------------------------------------------------------|
| <input type="checkbox"/> African-American/Black | <input type="checkbox"/> Native Hawaiian or Pacific Islander |
| <input type="checkbox"/> Asian (e.g., Asian Indian, Chinese, Japanese) | <input type="checkbox"/> White |
| <input type="checkbox"/> Hispanic, Latino, or Spanish origin | <input type="checkbox"/> Other: Please describe: _____ |
| <input type="checkbox"/> Native American Indian or Alaskan Native | |

13) How old are you? _____

12) What is your gender? _____

Thank you for your feedback. We appreciate it!