The following appendices are supplemental to a Commonwealth Fund issue brief, R. Amarasingham, B. Xie, A. Karam et al., *Using Community Partnerships to Integrate Health and Social Services for High-Need, High-Cost Patients* (The Commonwealth Fund, Jan. 2018), available on the Fund's website at: http://www.commonwealthfund.org/publications/issue-briefs/2018/jan/integrating-health-social-services-high-need-high-cost-patients.

Appendix 1. Detailed Description of the Methods

DATA COLLECTION

A three-step mixed methods approach was employed in this study to collect a comprehensive list of innovation programs, to achieve in-depth understanding of these programs, and to provide a comprehensive map of these programs in geography and program characteristics. In step 1, an extensive literature search and a semistructured email survey of key informants (Appendix 2) led to identification of around 300 innovative programs across the country that met inclusion criteria. The programs must target socially vulnerable, high-utilizers, or medically complex populations, AND fulfill at least one of the following:

- program incorporates financial arrangement of two or more sectors (defined as distinct areas of health services that share similar funding streams and client delivery goals); a few of the health sectors we define include clinical services, behavioral services, and social, or human, services, OR
- program incorporates care coordination between the clinical sector and another sector, OR
- program involves risk-sharing among organizations (with involvement beyond the medical sector).

These programs often demonstrated novel care coordination mechanisms or community and partnership engagement that also serve to benefit our research. In step 2, a stratified purposive sample of 21 programs was chosen to conduct in-depth interviews. This sampling allowed some diversity in the sample and thus a broad range of programs was explored. Of the 16 programs invited to participate in the study, 14 agreed to be interviewed (Appendix 3). Semistructured, in-depth interviews based on a topic guide were used to allow for a detailed, flexible, and responsive exploration of programs' experiences. Interviews were recorded and transcribed verbatim with participant permission and lasted around 60 minutes. The topic guide included the following areas: organization and governance, including inception and timeline; measuring shared savings and/or description of the financial model; metrics, including assessment and accuracy; challenges, both past and future; technology, legal, privacy, and regulatory concerns; and other questions.

In step 3, based on the findings of the qualitative data, a quantitative survey was sent to all 301 programs identified to create a comprehensive picture of current innovations across the nation. In this survey, we adapted a framework developed by McGinnis and colleagues[a] and modified it using a Delphi method to develop a list of key domains to summarize the commonalities and differences among these diverse programs (Appendix 4).[b] A rubric with four dimensions was created based on the qualitative results, and was then refined and finalized through semistructured, in-depth interviews with domain experts. This finalized rubric was used in the survey questionnaire. Because of the difficulty of obtaining responses for a web survey, we scheduled structured phone interviews for a vast majority of the programs.

DATA ANALYSIS

We used a variation of content analysis to develop a coding scheme for performing a qualitative description of the themes discussed by interviewees. The final codebook included both inductive and deductive codes and was finalized after reaching consensus among the research team. We coded and analyzed the interview transcripts in NVivo software (NVivo qualitative data analysis software; QSR International Pty Ltd. Version 10, 2014), with analysis focusing on both overarching themes and specific areas for program innovations. The analysis focused on five key themes: payment reform arrangement, inclusion of community-based organizations, relationships among partner organizations, future plans and considerations, and challenges, but also allowed other themes to emerge from the data. Quantitative analysis of survey results was conducted using R 3.2.0.

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[a] T. McGinnis, M. Crawford, and S. A. Somers, *A State Policy Framework for Integrating Health and Social Services* (The Commonwealth Fund, July 2014).

[b] C. Okoli and S. D. Pawlowski, "The Delphi Method as a Research Tool: An Example, Design Considerations and Applications," *Information & Management,* Dec. 2004 42(1):15–29.

Appendix 2. Interview Questions and Key Informants

Questions asked:

- Are there any community-based organizations — defined as those that provide services to vulnerable populations, such as homeless shelters, food aid organizations, and community health centers — that are financially aligned, in any capacity, with a health care provider that you know of?
- Is there a group, that you are aware of, that is trying to incorporate community-based organizations into a health care financial arrangement? Or any project similar to ours?
- Is there anyone you know of that may have further insights into these questions?

CONTACT NAME	ORGANIZATION/HOSPITAL	TITLE (IF APPLICABLE/KNOWN)
Alan Baronoskie	PwC	
David Bates, M.D., M.Sc., Ph.D.	Brigham and Women's Hospital	Senior Vice President for Quality and Safety and Chief Quality Officer
Christina J. Bennett, J.D.	College of Public Health, University of Oklahoma	Assistant Professor
Sue Birch	Colorado Department of Health Care Policy and Financing	Executive Director
Hunt Blair	HHS Office of the National Coordinator for IT	
George Bo-Linn, M.D.	Alvarez & Marcel	
Amy Boutwell, M.D.	Collaborative Healthcare Strategies	Founder
Elizabeth Bradley	Yale University	
Rhonda Busek	Oregon Health Authority	Director of Medical Assistance Programs
Stephen Cha	CMS Center for Medicare and Medicaid Innovation	
Sandy Chang, M.D.	Yale University	
Glenn Cohen, J.D.	Harvard Law School	Assistant Professor of Law
Patrick Conway, M.D.	CMS Center for Medicare and Medicaid Innovation	
Anne De Biasi	Trust for America's Health	Director of Policy Development
Carolyn L. Engelhard, M.P.A.	University of Virginia School of Medicine	Assistant Professor
Martin Entwistle	Palo Alto Medical Foundation	
Gabriel Escobar, M.D.	Kaiser	
Lynn Etheredge	Independent Consultant	
Alexandra Gorman	North Texas Accountable Healthcare Partnership	
Laura Gottlieb	University of California, San Francisco	Assistant Professor
Robert Hanna	Nassau County Savings Initiative	Steering Committee Head
Brad Hirsch, M.D.	US Oncology	
Justin Hunt, M.D.	University of Arkansas	
Frederick Isasi	National Governors Association	
Laura Landy	Rippel Foundation	President, CEO
Brian Lee	Centers for Disease Control and Prevention	
Georgia Maheras	Vermont Health Care Innovation Project	Project Director
Rishi Manchanda, M.D., M.P.H.	University of California, San Francisco	Physician & Founder, HealthBegins
Deven McGraw	Manatt, Phelps, & Phillips, LLP	Partner in Healthcare Practice
Bobby Milstein	Rippel Foundation	Director, ReThink Health
Jennifer Nelson-Seals	Interfaith House, Chicago	Executive Director
Kathleen Nolan	National Association of Medcaid Directors	Director of State Policy & Programs
Ross Owen	Hennepin Health, MN	Deputy Director
Neil Powe, M.D.	University of California, San Francisco	
Rahul Rajkumar	CMS Center for Medicare and Medicaid Innovation	
Darshak Sanghavi	CMS Center for Medicare and Medicaid Innovation	
Jill Scigliano	United Way of Metropolitan Dallas	Chief Impact Officer
Martin J. Sepulveda	IBM Corporation	IBM Fellow and Vice President of Integrated Health Services
Bruce Siegel, M.D.	America's Essential Hospitals	
Prabhjot Singh	Columbia University	
Jeanene Smith	Oregon Office of Health Policy and Research	Director
Ron Stretcher	Criminal Justice (Dallas)	Director
Clare Tanner	Michigan Public Health Institute	Program Director
Paul Tarini	Robert Wood Johnson Foundation	

Appendix 3. List of Programs Interviewed

ORGANIZATION	NAME AND TITLE OF INTERVIEWEE	DATE INTERVIEWED
Camden Coalition of Healthcare Providers, NJ	Jared Susco, COO, & Matt Humowiecki, Legal Counsel	February 9, 2015
Colorado Department of Health Care Policy and Financing	Sue Birch, Executive Director	November 17, 2014
Hennepin Health, MN	Ross Own, Deputy Director	November 13, 2014
Interfaith House, Chicago, IL	Jennifer Nelson-Seals, Executive Director	November 17, 2014
Live Well San Diego, CA	Dale Fleming, Julianne Howell, Wilma Wooten, & Peter Shih	January 30, 2015
Medical Legal Partnerships	Ellen Lawton, Co-Principal Investigator	January 26, 2015
Michigan Public Health Institute	Clare Tanner, Program Director	November 20, 2014
Montefiore Medical Center, NY	Anne Meara, Associate VP, Network Management	March 20, 2015
Nassau County Savings Initiative, NY	Bob Hanna, Steering Committee Director	November 13, 2014
Oregon Health Authority	Rhonda Busek and Team, Director	November 14, 2014
Partnership for a Health Durham, NC	Mel Piper, Partnership Coordinator	January 27, 2015
Pueblo Triple Aim Coalition, CO	Matt Guy, Managing Director	February 2, 2015
Together 4 Health, Chicago, IL	Jill Misra, Interim CEO	March 17, 2015
Vermont Health Care Innovation Project	Georgia Maheras, Project Director	November 20, 2014

Appendix 4. Rubric for Mapping Cross-Sector Community Partnerships

The purpose of this rubric is to map the programs we identified across four different dimensions. We solicited input from several experts to internally validate the rubric, but it should not be used for other organizations or purposes.

The 1-to-5 scale is intended to signal degree of integration and alignment among participating organizations in a program's implementation. The scale is ordinal, not interval, and higher numbers in the scale do not imply or predict better performance or any outcomes measures and are not necessarily preferable to lower numbers.

For this purpose of this rubric we define sectors as distinct areas of health services that share similar funding streams and client delivery goals. A few of the health sectors we define include clinical services, behavioral services, and social, or human, services.

	COORDINATION	FINANCIAL ALIGNMENT	DATA- AND INFORMATION-SHARING	METRIC REPORTING
	Maps the degree to which a program includes various components in the health care and social services delivery systems, such as health care providers, public health agencies, and community-based organizations that provide social services such as food assistance and shelter, and the degree to which participating organizations coordinate care delivery to enrollees (examples of care coordination include referral tracking, transition coordination, and needs assessment)	*Maps the degree to which the financial payment incentives of the participating organizations are aligned to achieve the Institute for Healthcare Improvement's Triple Aim (i.e., improving patients' experience, improving population health, and reducing costs of care)*	*Maps the degree to which data- and information-sharing occurs among participating organizations*	*Maps the degree to which metrics are monitored and reported across participating organizations and their alignment toward the Triple Aim*
1	Program includes participating organizations in two sectors (including but not limited to clinical, behavioral, and social) but there is no integration and communication between participating organizations beyond simple referrals	No financial relationship among participating organizations beyond fee for services	No data or information-sharing between participating organizations	No metrics reported
2	Program includes participating organizations in two sectors, and are engaged in some early care coordination, which may include the use of case managers	The financial relationship among participating organizations is based on fee-for-services, but has an extra portion of payment based on the receiving organizations meeting some pre-defined quality measures (e.g., one-sided shared-savings model)	Data- and information-sharing within a single sector across multiple providers	Metric reporting based on utilization within a single sector
3	Program includes participating organizations in three or more sectors, which are engaged in some care coordination, and may include the use of case managers	The financial relationship between at least two participating organizations is based on some alternative payment arrangements, such as patient-centered medical homes or social impact bonds. (A social impact bond, also known as pay-for-success financing, pay-for-success bond, or a social-benefit bond is a contract with the public sector in which a commitment is made to pay for improved social outcomes that result in public sector savings.)	Sharing of data (such as monthly or quarterly discharge data) on a regular basis from multiple sectors	Regular report of metrics incorporating both utilization and quality measures within a single sector
4	Integrated health delivery through care coordination between participating organizations in three or more sectors that includes the use of referral tracking to coordinate and monitor patients as they move among organizations	The financial relationship among all participating organizations is some kind of population-based, risk-sharing payment system, such as partial capitation, or per-member per-month bundles	Data- and information-sharing with real-time updates that includes data from multiple sectors	Regular reporting of metrics incorporating both utilization and quality measures across multiple sectors
5	Integrated health delivery with participating organizations in three or more sectors and an increasing focus on long-term goals and creating a culture of health	Total financial alignment: all participating organizations under central budgetary control (although not single-payer)	Integrated data- and information-sharing across all providers with analytics and real-time data from multiple sectors	Regular reporting of metrics incorporating utilization and quality measures that includes a focus on prevention and wellness across multiple sectors

HOW WE CONDUCTED THIS STUDY

For this study, we used a mixed-methods approach. First, an extensive literature search, semistructured interviews, and email surveys of key informants (including community leaders, academic experts, national thought leaders, and policymakers) allowed us to identify a robust list of cross-sector community partnerships across the country. This also allowed us to produce a rubric, or framework, to assess the relative advances of a community effort, using four dimensions (available at: http://www.pccipieces.org/health-care-and-social-service-provider-partnerships-for-complex-patients/). After these steps, we focused on programs that target socially vulnerable, high-utilization, or medically complex populations, and which also demonstrate at least one of the following:

- formal financial arrangement between two or more distinct organizations or units within an organization in the health services sector that share similar funding streams and client delivery goals
- care coordination between the clinical sector and another sector
- risk-sharing among organizations outside the clinical sector.

We subsequently performed quantitative surveys of these programs and semistructured, in-depth interviews with key personnel from a stratified purposive sample of programs. After establishing the key challenges of these programs, we consulted with national experts and drew from our own local efforts to propose solutions to problems identified and to establish a playbook for communities to use going forward (available at: http://www.pccipieces.org/health-care-and-social-service-provider-partnerships-for-complex-patients/). For a more detailed description of the methods, see Appendix 1.