Caring For Members Where They Live
A GIS Opportunity for Kaiser Permanente Home Care

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Outline

• Kaiser Permanente Southern California (KPSC) Home Care Services: **Current State** and **Challenges On The Horizon**

• Vision for Home Care: **Services Reimagined** and **Delivered At Scale**

• **GIS’s Role** In Executing On This Vision: Combining Highly Efficient Service Delivery with Data About “Place”
199,320 Employees
38 Hospitals
661 Medical Offices

11.3 Million Health Plan Members
Across 8 States + D.C.
Kaiser Permanente Southern California (KPSC) Today

Service area spans over **17,000 square miles**, from San Diego to Bakersfield

In 2016, generated **120,000+ referrals** for home care services in KPSC alone

7 licensed Home Health Agencies (HHAs) owned and operated by KPSC

KPSC Home Care Services Today

- Typically delivered by a skilled clinician (RN, PT) – hands-on, face-to-face, in member’s place of residence
- Specific qualification criteria (homebound, needs specific skilled nursing)
- Most often for post-operative care, wound care, chronic disease management, and infusion
- Most users covered via KP Medicare plan
The Big Challenges on the Horizon

Demand Increasing Exponentially

Population Demographics & The Aging Population
37 million baby boomers turn 65 in the next decade – and already, 70% of KPSC’s home care volume are members age 65 and older

Intentional Shifting of Services
Expensive, intensive inpatient hospital setting shifting to outpatient clinics and home

We Already See Demand Booming
From 2014 to 2016, while membership increased 11%, home health referrals in KPSC increased 27%

The Evolving Consumer

Healthcare industry shifting from provider-centric to person-centered care – recognizing the importance of social/nonmedical determinants of health

Expectations of technology-enabled, personalized, 24/7, convenient access

People Want Us To Be More Like...

And Less Like...

[Icons of Amazon, Lyft, Netflix, and Blockbuster]
Vision For Our Future: **Better Outcomes, Lower Cost**

**Demand Increasing Exponentially**

Highly efficient, centralized operations

- Launch centralized **Integrated Care Center** to develop capacity to handle volume (coordination, triage, dispatch) and high-quality case management
- Allocate face-to-face resources most efficiently
- Manage care virtually where possible

**The Evolving Consumer**

Expand *who* gets home care and *what* those services look like

- Better address **needs of existing users**: coordinated care teams, individually-tailored care plans
- Broader **service options**: clinical care, personal care, health education and coaching, caregiver support, and/or social nonmedical resources
- **New segments** of people who could benefit from care in the home: medically fragile, chronic disease, healthy millenials with an acute need
GIS’s Role in Executing On This Vision

Demand Increasing Exponentially
Highly efficient, centralized operations

The Evolving Consumer
Expand who gets home care and what those services look like

We need platforms, systems, and data to do this at KPSC’s scale.
Today we’ll share three areas of opportunity we see through using our enterprise ArcGIS and other ESRI products.

Optimal Personnel Dispatching
Geographic Data for Strategy Development
Geographic Data for Personalizing Care
Enterprise-Wide Access to Geographic Data at KP

Electronic Medical Record: KP HealthConnect (Epic)
Member address is captured during health plan enrollment and confirmed at the point-of-care, and is stored in an Oracle database (11 million+ members!)

ArcGIS Enterprise Portal: KP Maps (Intranet)
Users can extract raw data and geocode addresses using our ArcGIS Enterprise Portal Website’s premium geolocator

> Access through a browser (no desktop program needed)
> Fast, easy learning curve for casual users like me!

Geocodes can be enriched with ESRI data layers (Tapestry, Business Analyst) and spatially analyzed using ArcGIS analysis and travel time modeling functions
Example 1: Optimal Dispatching

We are inspired by other industries...

visualizing common routes

instacart

optimal order combinations

proximity-based notification

DOMINO'S TRACKER

YOUR ORDER IS IN THE OVEN!

Our Expert Pizza Makers put your order in the oven at 5:17PM

progress transparency
Example 1: Optimal Dispatching

We are beginning to use GIS to solve classic logistics issues (Traveling Salesman Problem)...

How might we improve the efficiency of what we’re currently doing manually?

Given a list of member locations to split between providers, what’s the optimal allocation and optimal sequence of visits?
Example 1: Optimal Dispatching

...But are also using it to explore new service delivery concepts.

Cluster of ~60 Home Care Users, All In The Same 0.5 Square Miles, All Age 65 and Older...

15 at the same address (an assisted living facility)

12 at the same address (a mobile home park)

...which turns out to be a gated retirement community

How might we better forecast and anticipate where the need will be?

How might we capitalize on proximity to proactively schedule visits?

Could we improve outcomes and address social isolation through connecting nearby members?

Note: The data mapped here is from a synthetic dataset that mimics the same aggregate properties of KP’s actual data but does not reveal Protected Health Information (PHI) about our members’ addresses.
Example 2: Geographic Data for Strategy & Planning

We mapped all the members who are referred to our field office in Antelope Valley, and explored trends in their ESRI Tapestry Segment.

Seeing the distribution across the service area helped us build “system intuition”

“How might we customize Antelope Valley’s service offerings by combining medical record data and consumer data insights?”

ESRI Tapestry Segment data enables person-centered paradigm shift

Note: The data mapped here is from a synthetic dataset that mimics the same aggregate properties of KPs actual data but does not reveal Protected Health Information (PHI) about our members’ addresses.
Example 3: Geographic Data for Personalized Care

**Long-Term Technology Strategy:** Fully integrating GIS tools for our home care providers, at the point-of-care, can enrich medical information with practical logistics, locations of nearby resources, and relevant neighborhood-level trends.

<table>
<thead>
<tr>
<th>Medical Record</th>
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<tbody>
<tr>
<td>Name, age</td>
</tr>
<tr>
<td>Vital signs</td>
</tr>
<tr>
<td>Family history</td>
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<tr>
<td>Current medications</td>
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<tr>
<td>Reason for home care referral</td>
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<tr>
<td>Social needs screening</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Travel Notes</th>
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<tbody>
<tr>
<td>Directions, parking, gate information</td>
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<table>
<thead>
<tr>
<th>Nearby Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance to closest...</td>
</tr>
<tr>
<td>&gt; Food stamp office</td>
</tr>
<tr>
<td>&gt; Supermarket</td>
</tr>
<tr>
<td>&gt; Walking group</td>
</tr>
<tr>
<td>&gt; Health ed. class</td>
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<tr>
<td>&gt; Legal help</td>
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<table>
<thead>
<tr>
<th>Neighborhood</th>
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<tbody>
<tr>
<td>&gt; History of exposures and environmental quality/risks?</td>
</tr>
<tr>
<td>&gt; Walkability? Safety?</td>
</tr>
<tr>
<td>&gt; Likely to own car or use public transit?</td>
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<tr>
<td>&gt; Familiarity and comfort with tech?</td>
</tr>
<tr>
<td>&gt; Physical activity preferences?</td>
</tr>
<tr>
<td>&gt; Motivated by faith? Social causes? Family?</td>
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We’re Early In This Journey

Our goal with home care is to not simply adjust to growth – but to execute on a whole new innovative way of doing business. Because of the geographically distributed nature of home care, GIS and place-based data are helping us chart the path forward.

We are excited to share these early ideas and to learn from others who are also on this path.

Thank you!

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