Broadband Feasibility Study: Phase 1

for

The City of Banks, Oregon

January 2023

Uptown Services, LLC
Dave Stockton & Neil Shaw, Principals

STUDY OBJECTIVE & SCOPE

OBJECTIVE: *Identify and evaluate the financial feasibility of a range of options for the City to enhance the availability, affordability, reliability, and capacity of broadband infrastructure for residents and businesses…*

PHASE 1 SCOPE:

1. Assess Current Infrastructure Landscape
2. Local Market Assessment and Product Strategy
3. Conduct Market Research

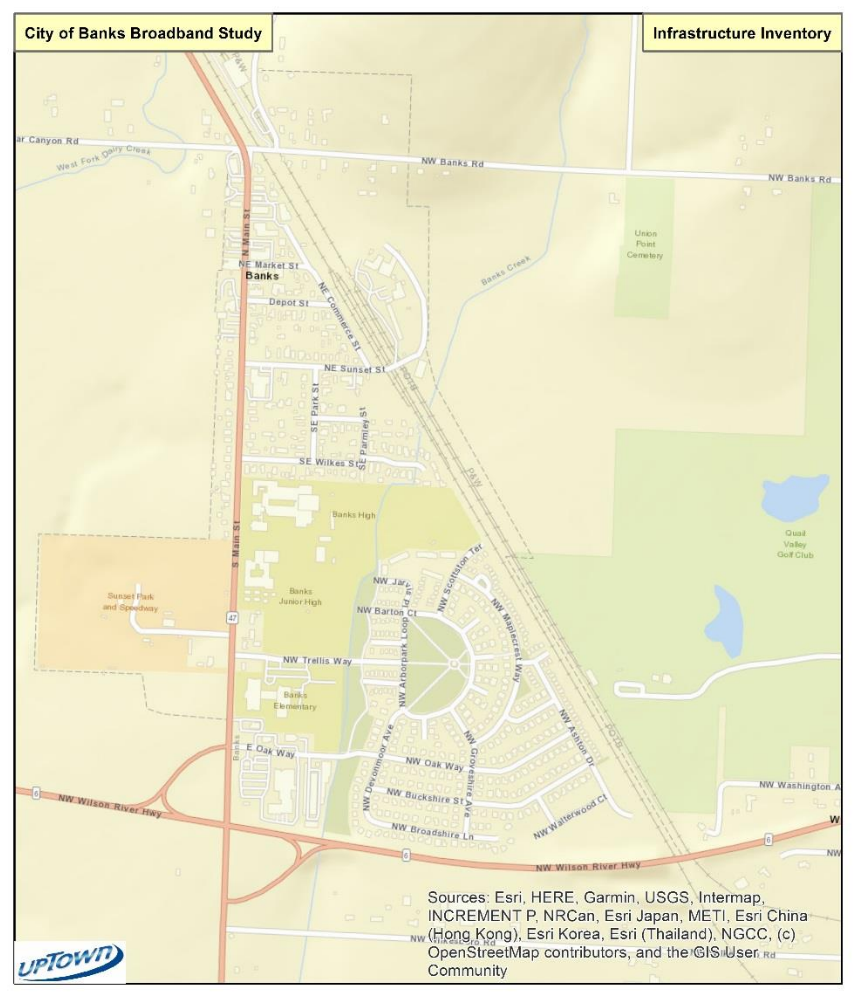
PHASE 2 SCOPE:

1. Analysis of Business Models
2. Develop Network Conceptual Design and Capital Budget
3. Pro Forma Financial Analysis

Assess Current Infrastructure Landscape

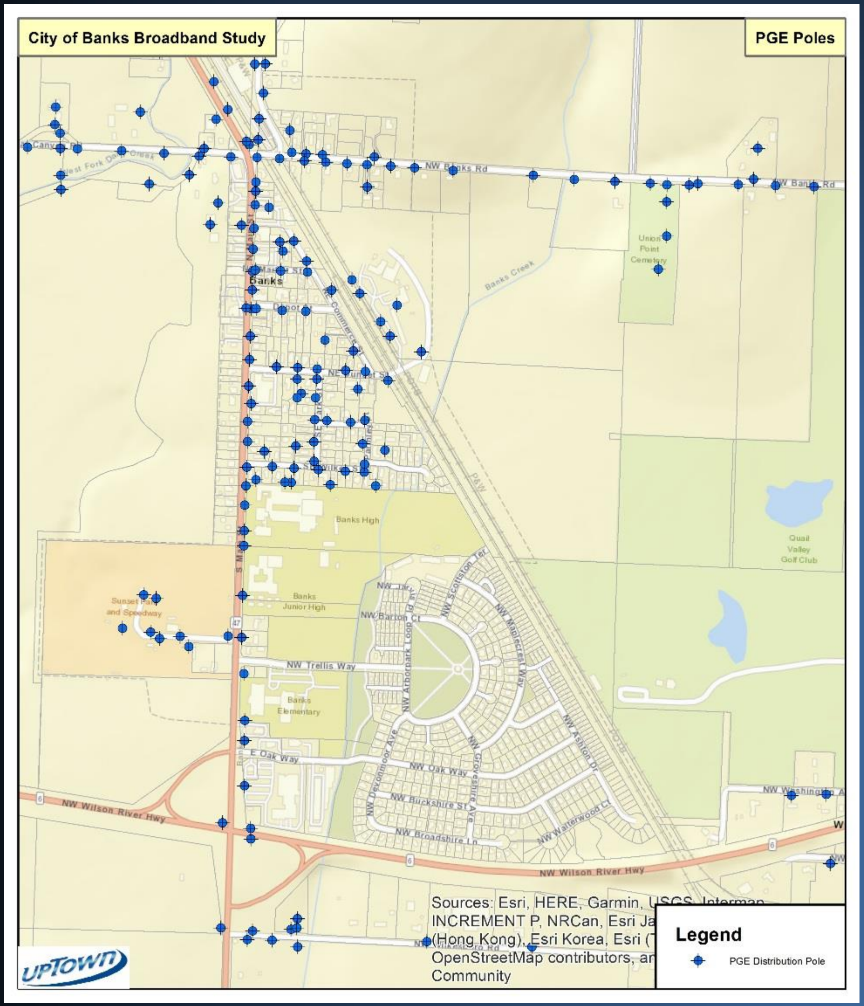
Inventory of Available Outside Plant Assets

INFRASTRUCTURE ASSESSMENT



- Asset inventory
  - ✓ Fiber optic cable
  - ✓ Utility poles
  - ✓ Conduits
- Network type
  - ✓ Middle mile
  - ✓ Last mile
- Ownership
  - ✓ City of Banks
  - ✓ PGE
  - ✓ Private broadband provider
- Applicability
  - ✓ Proximity
  - ✓ Cost
  - ✓ Ease of access

PORTLAND GENERAL ELECTRIC (PGE)



- Banks construction profile
  - 235 parcels served via poles
  - 429 parcels served via underground
- Asset inventory
  - 99 electric poles within City limits
  - All 35 feet or taller
- Potential advantages for broadband
  - Traditionally low cost to construct
  - Faster construction
  - Simpler drop installation
- Potential issues for broadband
  - Pole attachment process with PGE
  - High cost of pole make ready
  - Extended time to construct
- Next steps
  - Discuss pole permitting with PGE
  - Complete pole survey
  - Evaluate total cost vs. underground

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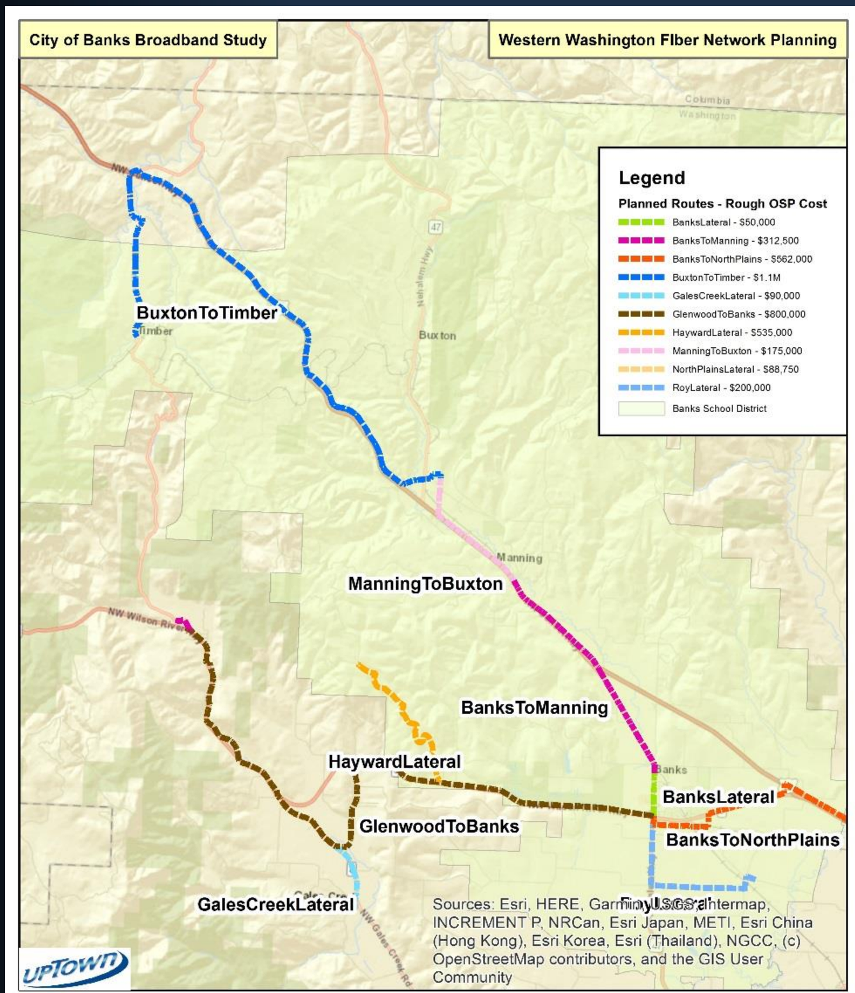
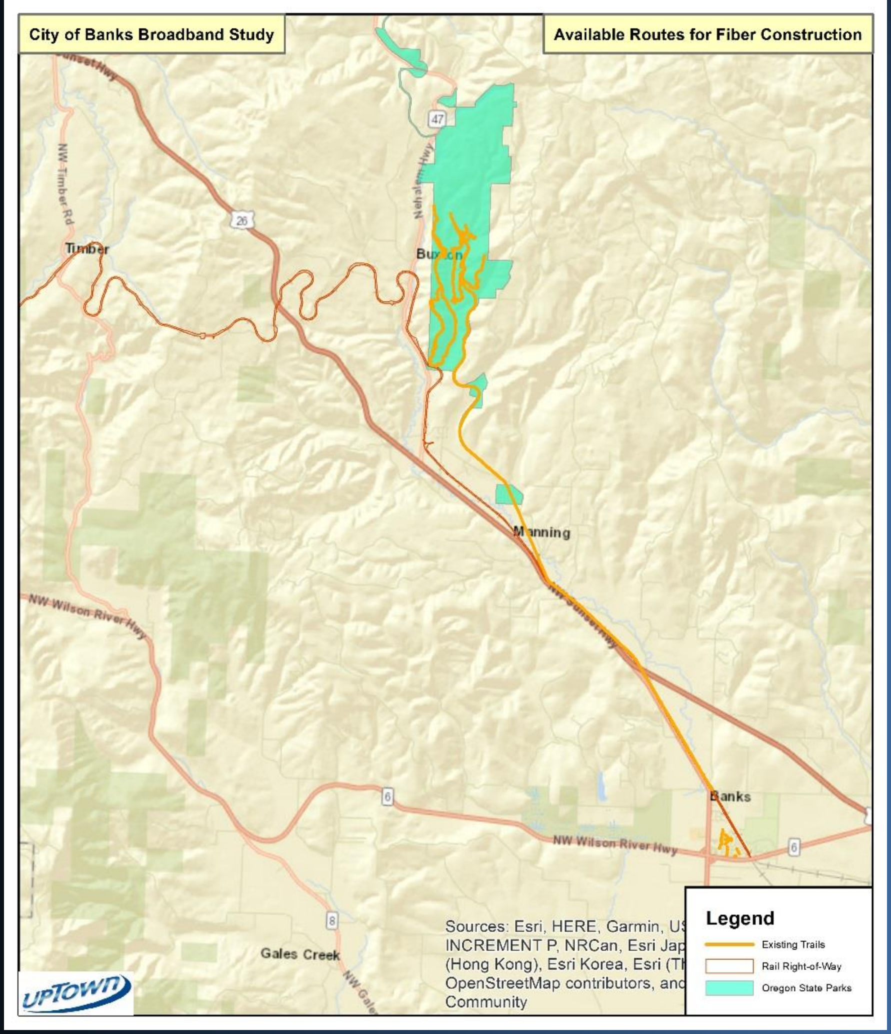
MIDDLE MILE FIBER NETWORKS



- Fiber networks
  - ✓ Fire Department – Banks to Manning
  - ✓ Col-Pac driven project (TBD)
- Fire Department
  - ✓ Leased line from Banks to Manning
  - ✓ Owned by private provider
- Col-Pac driven project (TBD)
  - ✓ Multi-jurisdictional effort
  - ✓ In business development phase
  - ✓ No firm plans yet

AVAILABLE FIBER ROUTES



- Potential routes available
  - ✓ Existing recreation trails
  - ✓ Oregon State Parks land
  - ✓ Retired rail lines
- History of use for fiber
  - ✓ Primarily used by Verizon
  - ✓ Construction north to Vernonia
  - ✓ Construction west to Tillamook
- Related opportunities
  - ✓ Precedent set for fiber use
  - ✓ Trenching / plowing capability
- Related issues
  - ✓ Rugged environment
  - ✓ History of landslides and washouts
  - ✓ Complicated administration

INFRASTRUCTURE INVENTORY SUMMARY

- Available assets
  - ✓ 99 PGE poles within Banks City limits
  - ✓ No known spare conduits
  - ✓ Limited access to dark fiber in proximity to Banks
- Applicability to potential broadband deployment
  - ✓ Potentially lower cost in neighborhoods served by aerial systems (99 PGE poles)
  - ✓ Col-Pac middle mile system could significantly lower Internet connectivity cost
- Next steps
  - ✓ Pursue discussions with PGE regarding the costs of attaching to their poles
  - ✓ Model the cost of existing middle mile (lit fiber) connections
  - ✓ Complete last mile capital budgeting as part of Phase 2

Local Market Assessment & Product Strategy

Internet and Data Services

INCUMBENT RESIDENTIAL INTERNET

- CenturyLink presents different DSL plans depending upon the proximity of the service address to their Central Office. In conducting availability searched on their website, many Banks addresses returned as not serviceable.
- Comcast appears to have fully upgraded its HFC plant to DOCSIS3.1 and can offer gig service. However, pricing is steep and a $30 premium is required to remove the standard data cap.
- Ziply Fiber serves Banks through resold CenturyLink DSL lines.

	Download	Upload	Price	Data Cap?	ACP?	Technology
CenturyLink*	6M 10M 40M	500K 750K 3M	$50.00 $50.00 $50.00	No Cap	Yes	DSL
Comcast	75M 200M 300M 600M 900M 1.2G	2M 5M 25M 25M 30M 35M	<u>Promotion / Month-Month / No Data Cap</u> $24.99 / $50.00 / $80.00 $39.99 / $60.00 / $90.00 $50.00 / $80.00 / $110.00 $60.00 / $90.00 / $120.00 $70.00 / $100.00 / $130.00 $80.00 / $110.00 / $140.00	Yes. Unlimited data is $30 extra	Yes	Cable Modem (DOCSIS 3.1)
Ziply Fiber*	9M 12M 25M 70M 90M	?	$50.00 / $56.00 / NA	?	Yes	DSL (resale)
T-Mobile	Up to 182M	?	$50.00 (*with cellphone plan*)	No cap.	?	Cellular 5G

CenturyLink pricing per centurylink.com, Comcast pricing from xfinity.com, Ziply pricing from ziplyfiber.com, all as of Sept. 2022.
*Not available in all areas. For CenturyLink and Ziply, DSL download speed is dependent upon distance from the serving central office.

ALTERNATIVE RESIDENTIAL INTERNET

- Both Whiz to Coho and Hunter have partially deployed fiber in some communities. But availability searches on their websites indicate that only fixed wireless service is available in Banks.

	Download*	Upload	Price	Data Cap?	Technology
Whiz To Coho (Coho.net)	1M 3M 5M 3M 5M 10M 15M 25M	.768M 1M 2M 1.5M 3M 4.5M 6M 10M	$24.95 (dynamic IP address) $49.95 (dynamic IP address) $74.95 (dynamic IP address) $64.95 (static IP address) $84.95 (static IP address) $104.95 (static IP address) $149.95 (static IP address) $249.95 (static IP address)	No (assuming ‘normal’ usage)	Fixed Wireless
	100M – 1G	100M – 1G	$59.95 - $269.95	-	Fiber**
Hunter Communications (was Online NW)	10M 20M 30M	5M 5M 5M	$79.99 $99.99 $119.99	?	Fixed Wireless
	500M – 1G	100M – 1G	$59.99 - $99.99	-	Fiber**
Upward Access	2M 6M 8M 10M 12M 14M 16M	1M 1M 2M 2M 3M 3M 4M	$35 $50 $65 $80 $95 $110 $125	100GB 150GB 200GB 250GB 300GB 350GB 400GB	Fixed Wireless

Whiz To Coho pricing per coho.net, Hunter Communications pricing from hunterfiber.com, and Upward Access from upwardaccess.com, all as of Sept. 2022.

*Download speeds are sustained speeds and not burst speeds. **Fiber plans are not available within Banks at the time of the Study.

INCUMBENT COMMERCIAL INTERNET

- CenturyLink has DSL plans available with varying speeds (determined by distance from their Central Office). All 3 speeds are priced at $50/month.
- Comcast has standard business Internet plans up to 1.25Gbps, but fees are high and initial promotional discounts taper off during the contract term. They do not use data caps for their commercial service, but equipment fees are expensive.

	Download	Upload	Price	Contract	Equipment Fee	Data Cap?	ACP?	Technology
Century Link	6M 10M* 15M*	500K 750K 750K	$50.00 $50.00 $50.00	No	?	No Cap	N/A	DSL
Comcast	50M 100M 250M 500M 750M 1.25G	15M 25M 25M 30M 35M 35M	Auto Pay / Standard $39.00 / $49.00 $109.99 / $119.99** $134.99 / $144.99** $164.99 / $174.99** $234.99 / $244.99** $334.99 / $344.99**	No Yes, 3 years Yes, 3 years Yes, 3 years Yes, 3 years Yes, 3 years	$19.95 /month $19.95 /month $29.95 /month $29.95 /month $29.95 /month $29.95 /month	No	N/A	Cable Modem (DOCSIS 3.1)

CenturyLink pricing per centurylink.com as of Sept. 2022. Comcast pricing from xfinity.com as of Sept. 2022.
*Not available in all areas. **Comcast commercial tiers increase in price by $30 during the contract term.

Proposed Services Strategy

Internet and Data Services

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RESIDENTIAL INTERNET PRICING & TERMS

- Municipals tend to price 1Gbps Internet at $60-70 per month. Both price points were tested in the survey.
- Service pricing should provide greater value as determined in the research survey findings. The proposed rates provide both lower ongoing monthly fees and no promotional gimmicks.
- The City's Internet service would not have data caps, nor early termination fees and would embrace net neutrality. Comcast does not offer these important benefits, or requires additional fees to get them.

<table>
<tr><th>Internet Tier Download / Upload</th><th>Monthly Price: ACP Eligible</th><th>Monthly Price: Standard</th><th>Proposed Service Terms</th><th>Comcast Service Terms</th></tr>
<tr><td>1G / 1G</td><td>$30</td><td>$60</td><td rowspan="4">Data Cap: No
Term Agreement: No
Termination Fee: No</td><td rowspan="4">Data Cap: Yes
Term Agreement: Yes
Termination Fee: Yes</td></tr>
<tr><td>2G / 2G</td><td>$70</td><td>$100</td></tr>
<tr><td>4G / 4G</td><td>$120</td><td>$150</td></tr>
<tr><td>Wireless Gateway Upgrade</td><td colspan="2">Add $10</td></tr>
</table>

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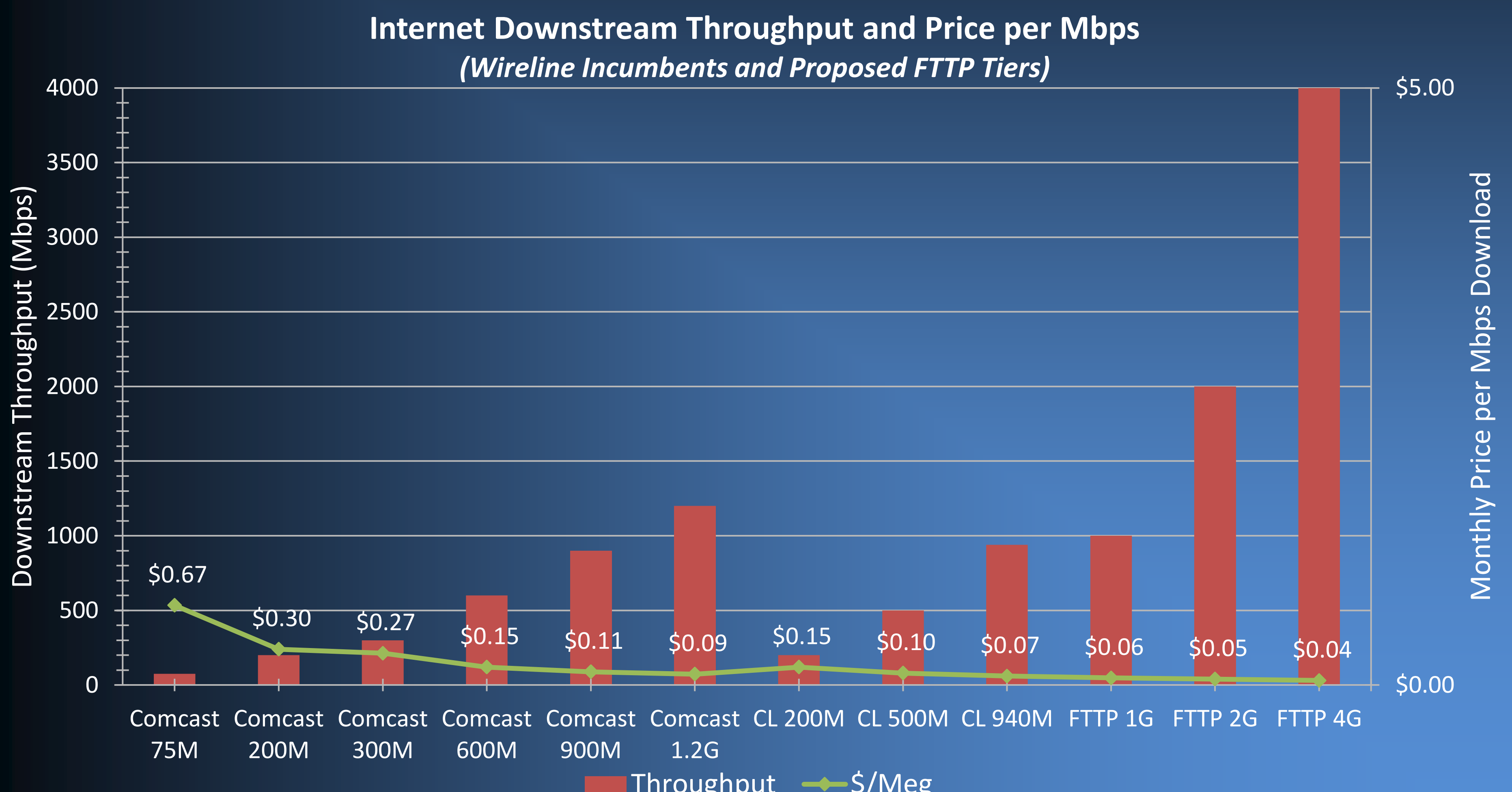
ONT MODELS BY TIER

- Commonly referred to as ONTs, these are fiber modems that are installed at the customer premises. Specific ONT models need to be identified and budgeted for to achieve multi-gig services.

Internet Tier	Wireless?	Voice?	ONT Model	Ports	Cost/ Unit*	Other CPE
Affordable Internet & 1G / 1G	No	Yes	GP1100X	1 RJ11 1 2.5 GigE Port	$130	W/O Voice: Power Cord ($12) W/ Voice: UPS ($50)
1G / 1G	Yes	Yes	GP1100X + GigaSpire U4	1 RJ11 2 GigE LAN Ports 802.11ax	$234	
2.5G / 2.5G	Yes	Yes	GP1100X + GigaSpire U6.2	2 RJ11 1 2.5 GigE Port 4 GigE LAN Ports 802.11ax	$310	
Multi- Tenant Commercial	No	Yes	716GE (outdoor)	2 RJ11 4 x 10/100/1000 GigE interface	$265	
	No	Yes	762GX (outdoor)	8 RJ11 8 x 10/100/1000 GigE interface	$1,180	
Wireless Extender	Yes		GigaSpire U4	802.11ax	$104	

RESIDENTIAL INTERNET VALUE

- We measure value as the price per Mbps provided. Comcast gets as low as 9 cents/Mbps and the proposed FTTP offering gets as low as 4 cents/Mbps.



FTTP COMMERCIAL DATA SERVICES

- Commercial services reflect a pricing premium to residential services. This reflects market conditions and traffic volume/users per connection. Multiple service options are available for complex accounts.

1. Standard Internet Access
   - Shared capacity connection over GPON
   - No contract requirement and no SLA guarantees
   - Can upgrade to symmetrical bandwidth and add BGP Routing (some tiers)
2. Dedicated Internet Access
   - 'Dedicated' capacity via ActiveE connection (same ONT)
   - Requires dedicated fiber strand. Practical option for pure commercial service areas
   - Protected connection is optional
   - Contract agreement with SLA and term requirement
   - Resale rights may be included
3. Point-to-Point (Transport Circuit): Dedicated pathway of defined capacity without access*
4. MAN: Customized access and transport solution for multi-site business or institution*

*Typically not included in the FTTP business case as revenues.

Proposed Standard Tiers Download / Upload	**Monthly Price**
50M / 5M *Add Symmetrical*	\$70.00 *+ \$10*
100M / 20M *Add Symmetrical*	\$100.00 *+ \$50*
250M / 50M *Add Symmetrical*	\$150.00 *+ \$100*
500M / 250M *Add Symmetrical*	\$200.00 *+ \$150*
1G / 500M *Add Symmetrical*	\$300.00 *+ \$200*

VOICE PROVIDER ROLE

- Voice service is typically offered on municipal FTTP systems via an incumbent Competitive Local Exchange Carrier (CLEC) that provides wholesale voice service to the city. In this model, the city is a reseller of voice service.

Function	Operational Responsibility	FTTP System	CLEC
Capital	Local Loop and Premises NIU	✓	
	Fiber MUX, Transport, and Switch		✓
Interconnect	LNP, Operator Services, PSAP, IC Agreements		✓
Marketing & Sales	Advertising, Sales	✓	
	Brand, Pricing	✓	✓
Provisioning	Work Order Creation	✓	
	Bell Processes		✓
	Switch Provisioning		✓
	Customer Install	✓	
Billing	Bill Fulfillment	✓	
	Call Detail Record (LD), Taxes & Fees		✓
Internet	Backbone Interconnection		✓

VOICE SERVICES

With the below retail voice pricing, net revenue per line (retail less wholesale voice fees) will be the following at current CLEC wholesale market rates:

- Residential: $28 per month
- Commercial: $16 per month

Segment	Service	With Internet Rates	Without Internet Rates
Residential	Access Line, Features, & Unlimited LD	• Monthly: $35	Not Offered
Commercial	Access Line, Features, & Unlimited LD	• Monthly: $30 • 2 Year: $26 • 3 Year: $24	• Monthly: $40 • 2 Year: $36 • 3 Year: $34
	Digital SIP Trunk (per channel)	• 2 Year: $25 • 3 Year: $23	• 2 Year: $30 • 3 Year: $28
	Hosted PBX (per seat)	Requires Internet and minimum 3 year term: • 1-5 Seats: $25 • 6-24 Seats: $23 • 25-49 Seats: $22 • 50+ Seats: $21	

Residential Quantitative Survey

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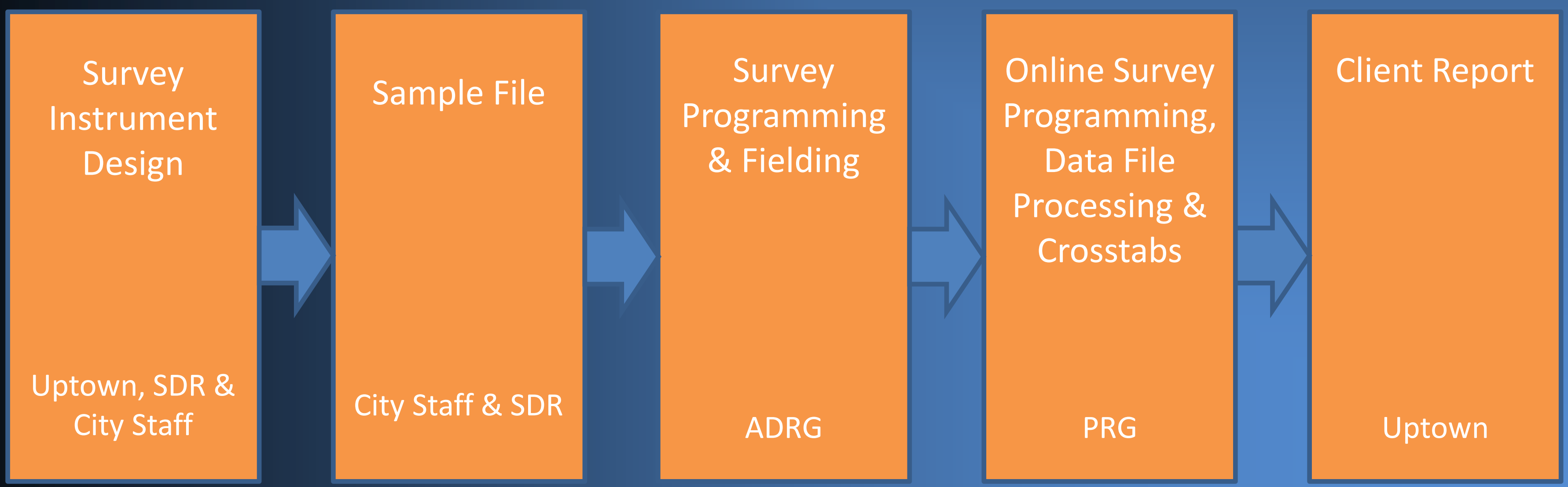
RESEARCH TEAM

- The quantitative research process utilized both subject matter and functional expertise across multiple contractors by specialty:
  - **Uptown Services**: Subject expertise and study data needs
  - **SDR Consulting (Rick Hunter)**: Research expert overseeing design and execution (23 years experience with 200k completed research projects)
  - **American Directions Research Group**: Survey fielding and data collection (7 US-based call centers with capacity to complete 85k person-hours of call interviews per month)
  - **Prairie Research Group (James Wolken)**: Online survey programming, crosstab analysis and production of output banners (25 years experience)

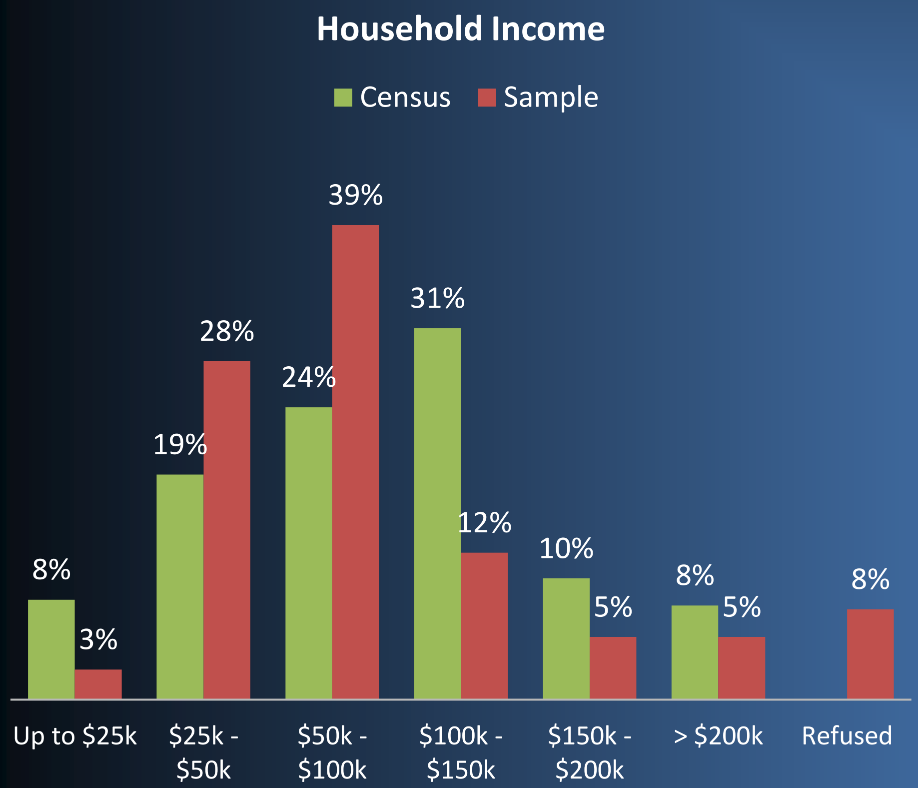


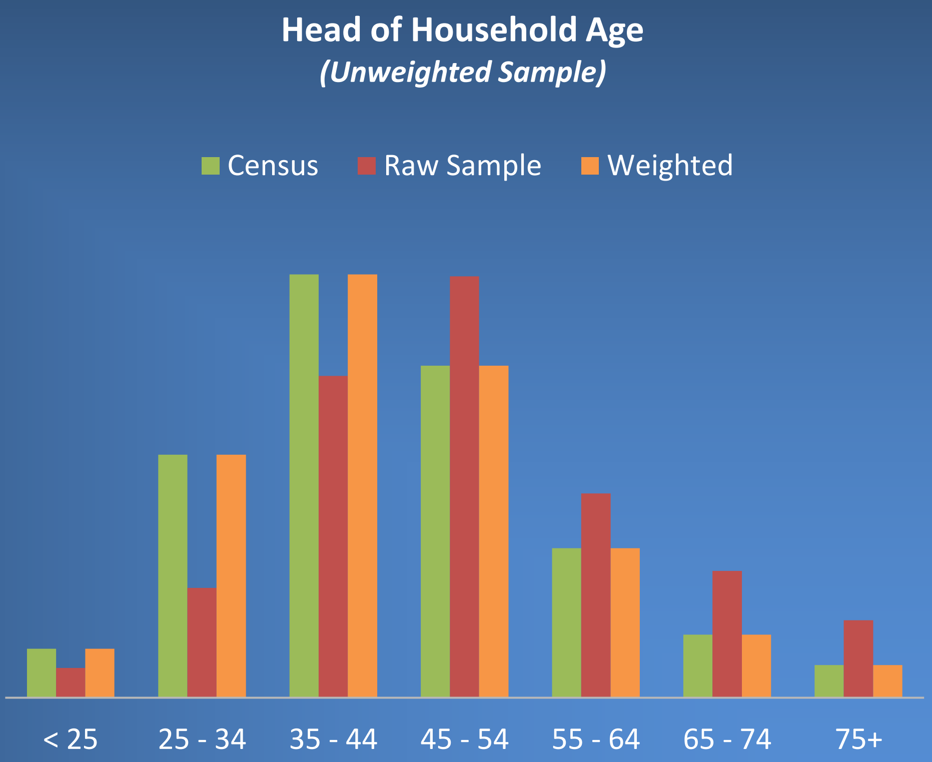
DESIGN FRAMEWORK

- Phone and online surveys
  - Total sample of 386 respondents
    - Two Geographies: Banks and Banks School District (identified as “Surrounding” in this report)
    - 259 via phone survey (list included wireline and wireless numbers)
    - 127 via online email invitation (email addresses from client and 3rd party list provider)
  - ± 4.2% sample error at 95% confidence interval
- Age quotas used to ensure robust sample across all age groups. Results weighted to reflect actual age distribution from US Census Bureau data
- Respondents screened to ensure
  - Decision-maker for telecommunications and entertainment services in the home
  - Reside within city limits
  - Respondents with immediate family members employed by any of the following were excluded:
    - The City of Banks
    - Comcast
    - CenturyLink
    - Coho.Net
    - OnlineNorthwest (or Hunter Communications)

SAMPLE DEMOGRAPHICS

- Survey results are weighted to reflect the actual age distribution (by age decile) per the 2020 census update. Raw sample size is less than 30 for age brackets 20-24 and 75+
- The income profile of the sample is not dissimilar to the universe of residents, but skews slightly to lower income



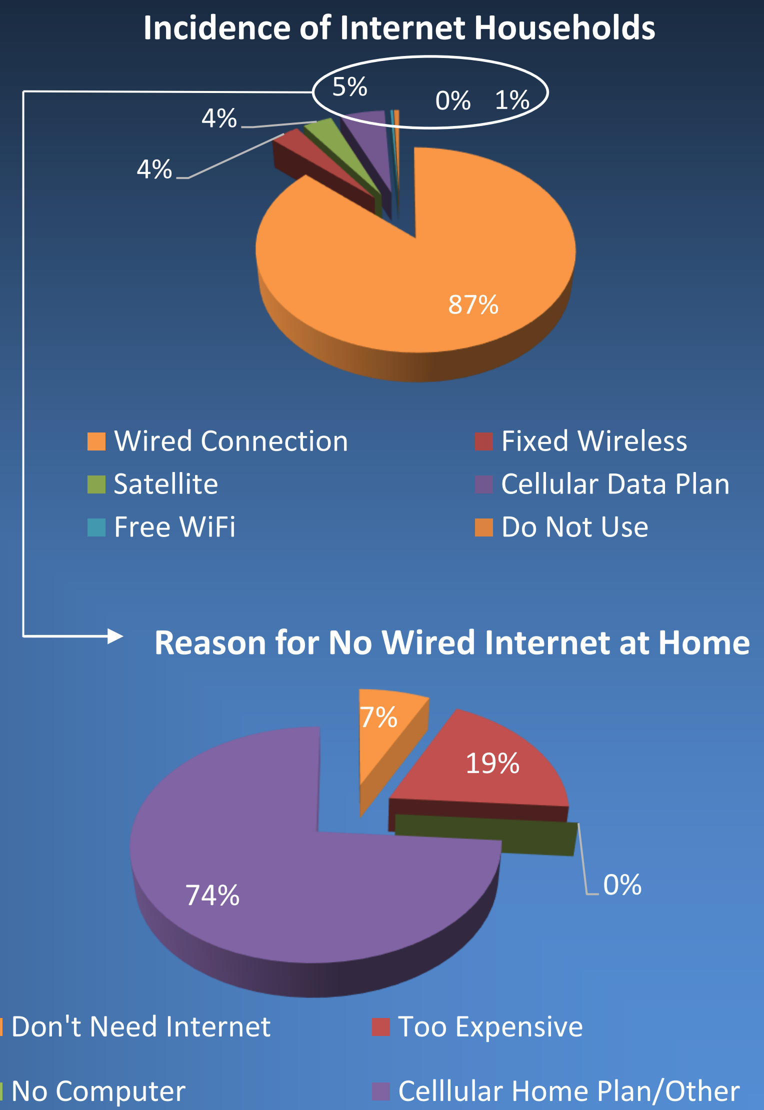


FTTP Residential Quantitative Survey

Current Broadband Services Usage

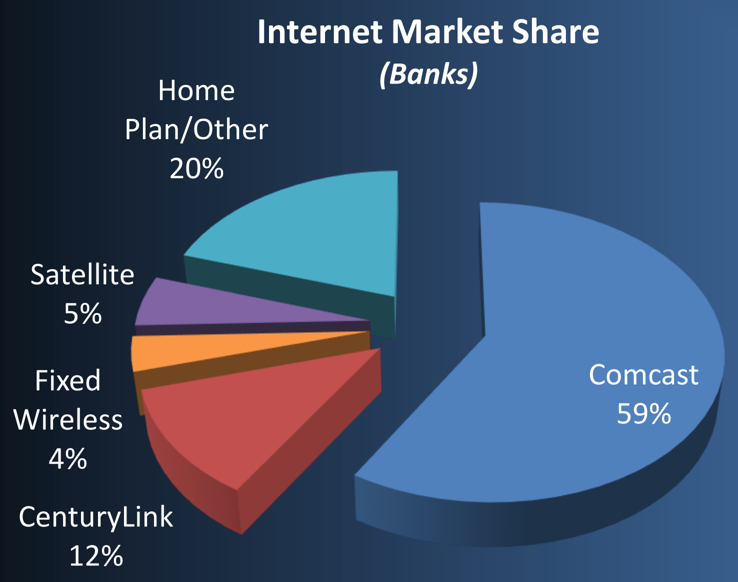
INTERNET SERVICE PURCHASING BEHAVIOR

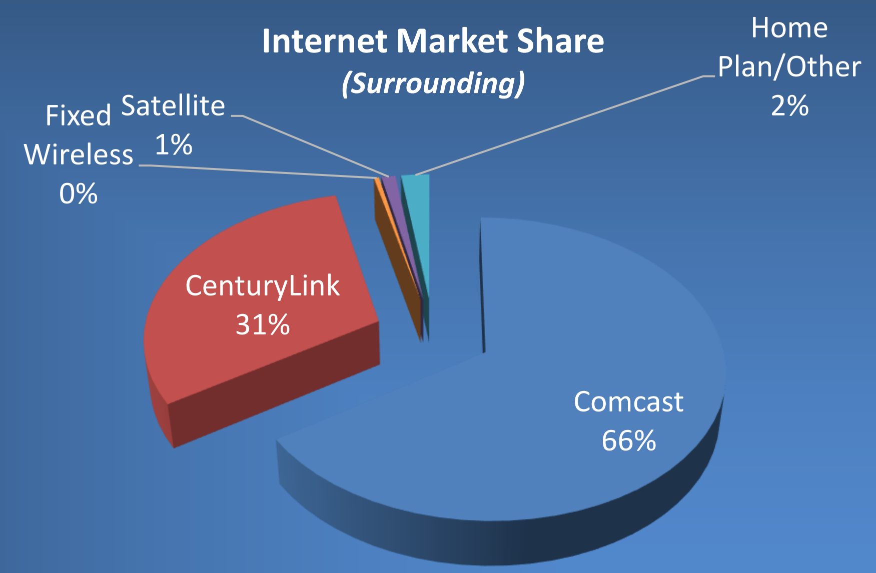
- 94% of surveyed households subscribe to Internet service at home, with 87% via a wired connection
- Among households without a wired connection, “Too Expensive” and “Cellular Home Plan” are the primary reasons for lacking a wired Internet subscription



INTERNET TYPE: BANKS VS SURROUNDING

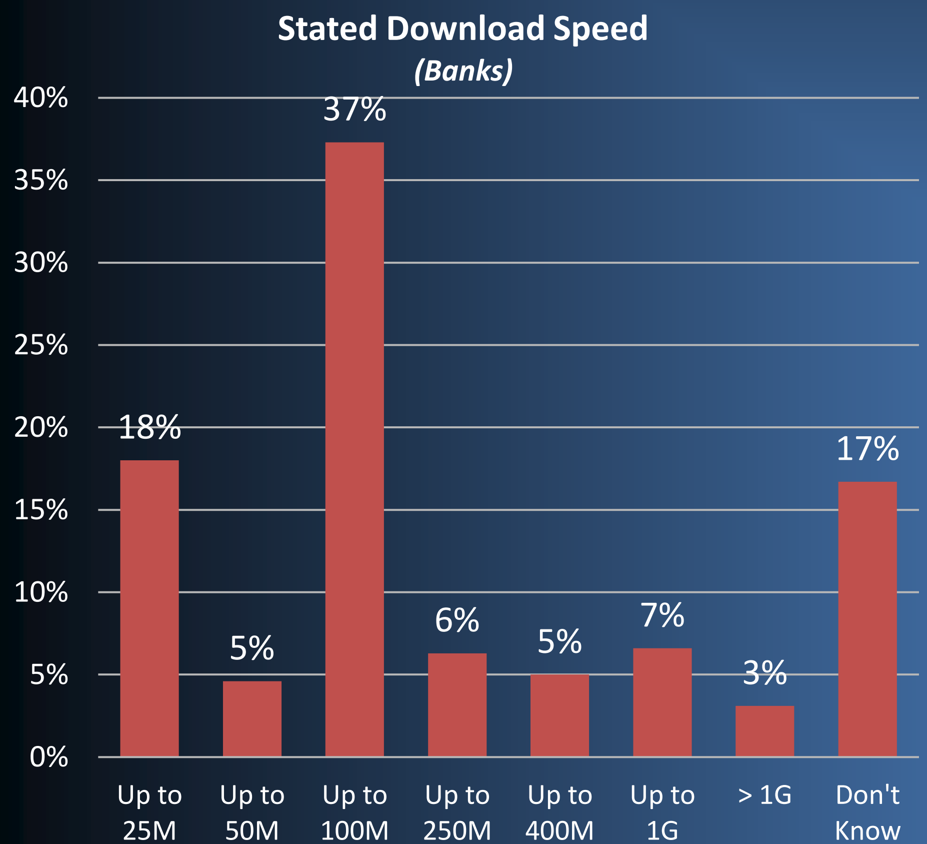
- Within Banks, Comcast has 59% market share of the residential broadband market. There is also increasing use of cellular 'Home Internet' plans that add a WiFi-compatible whole home Internet connection onto an existing cellular plan
- Outside of Banks, the market share of CenturyLink is markedly higher than within city limits, likely due to lower availability of Comcast

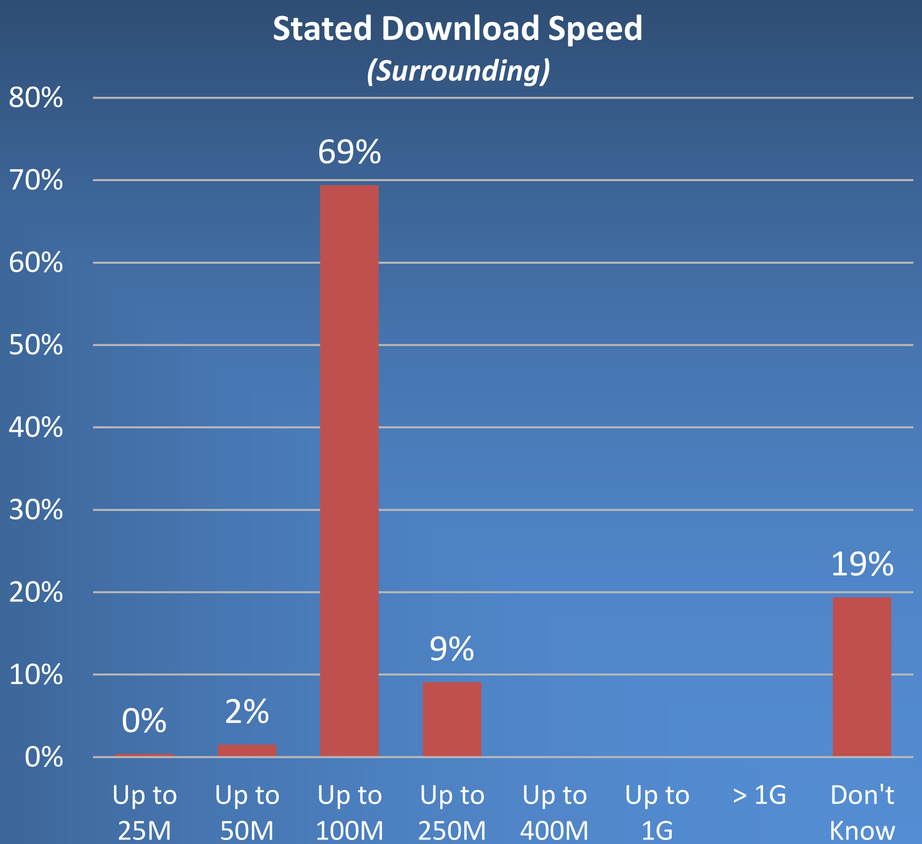




STATED DOWNLOAD SPEED

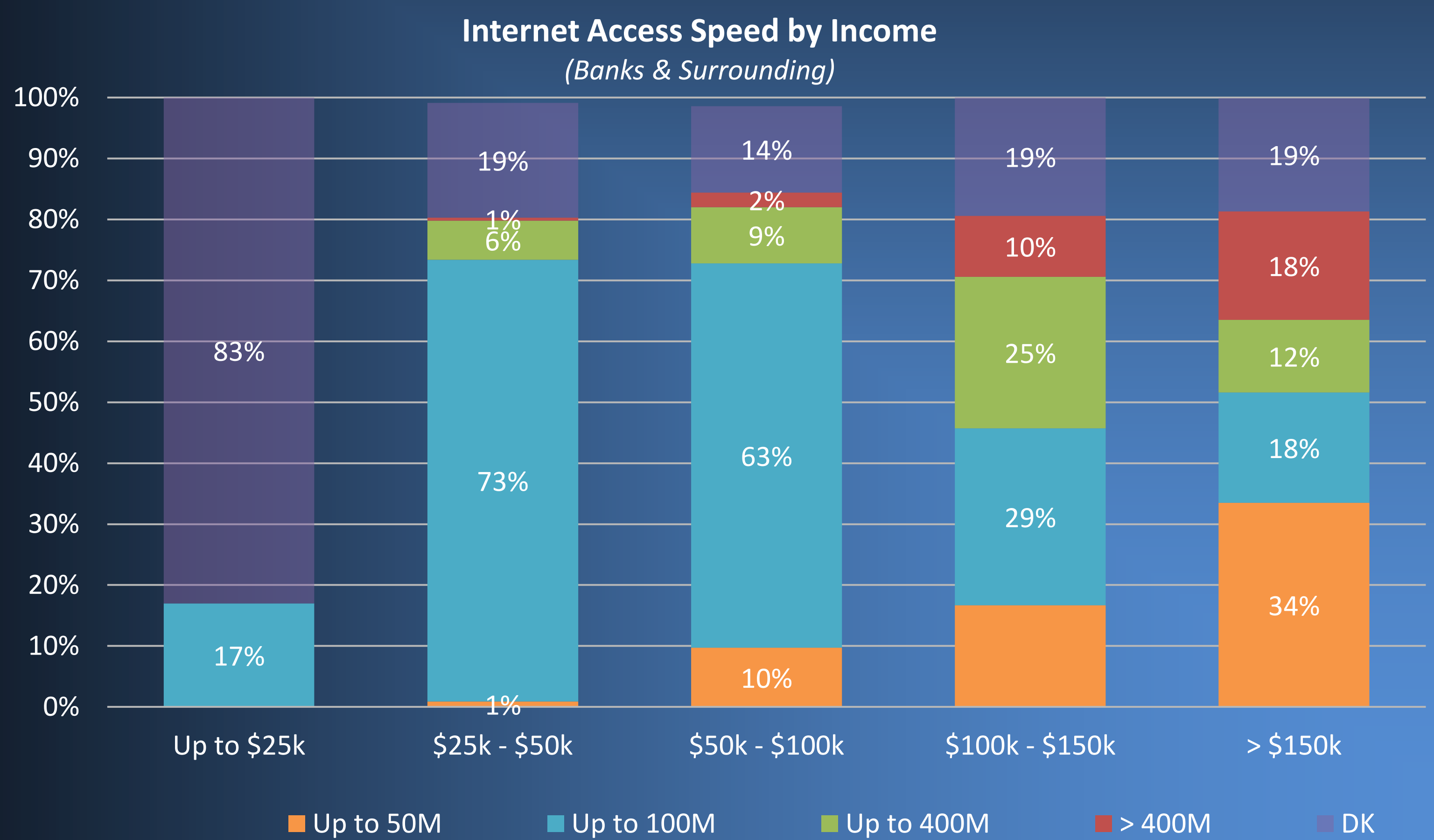
- Within Banks, 21% of households *state* they subscribe to > 100M. This percentage drops down to 9% outside of Banks
- Among both areas, about 1 in 5 households do not know what speed they subscribe to





STATED DOWNLOAD SPEED BY INCOME

- Like other markets we have studied, lower income households are more likely to subscribe to lower capacity Internet tiers when compared to higher income households.
- We also note that some higher income households ($100k and above) are subscribing at the 50Mbps level. This may be due to lack of higher speed options available to them (e.g. CenturyLink DSL).



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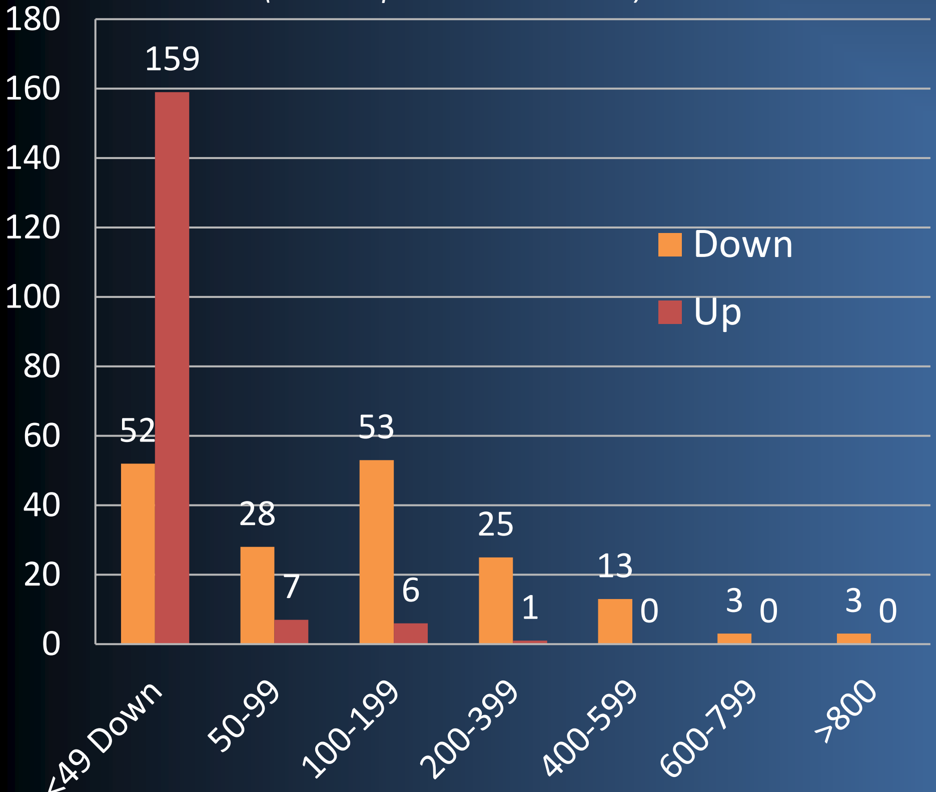
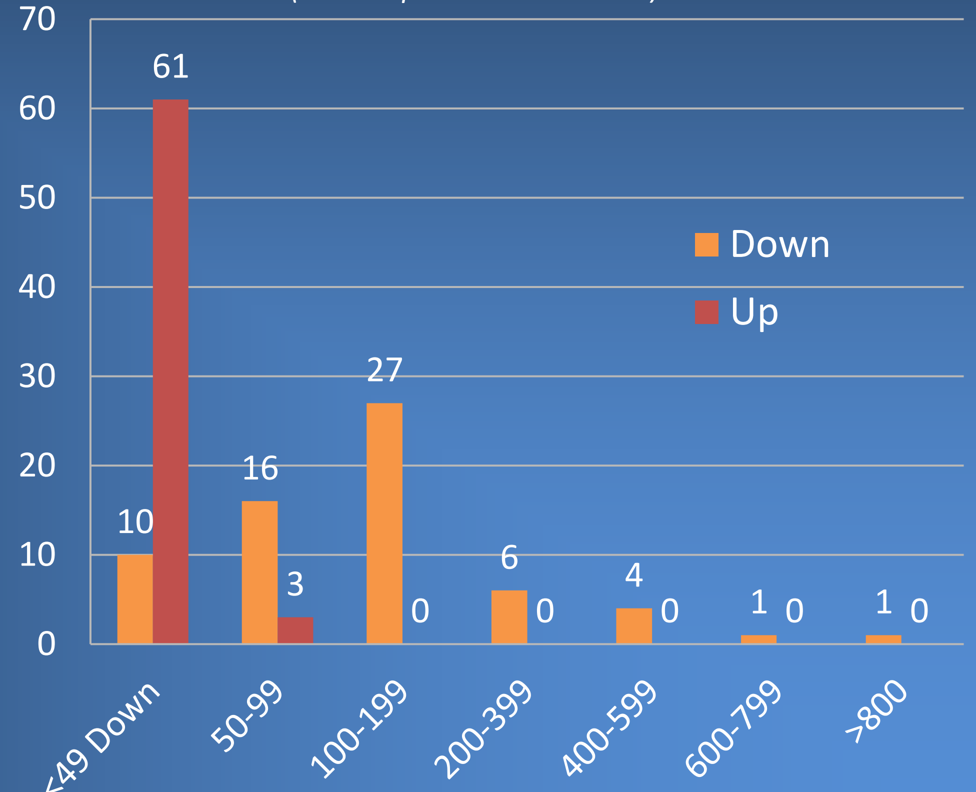
OBSERVED INTERNET SPEED

- Speed test results are reportable at the zip code level given the data collection process
- Results for zip code 97106 versus the other 4 are:
  - 97106: Median download speed is 105 Mbps and the median upload speed is 13 Mbps
  - 97109/16/25/44: Median download speed is 109 Mbps and the median upload speed is 13 Mbps

Speed Test Observed
Download & Upload Speeds
(97106 zip code with n = 177)

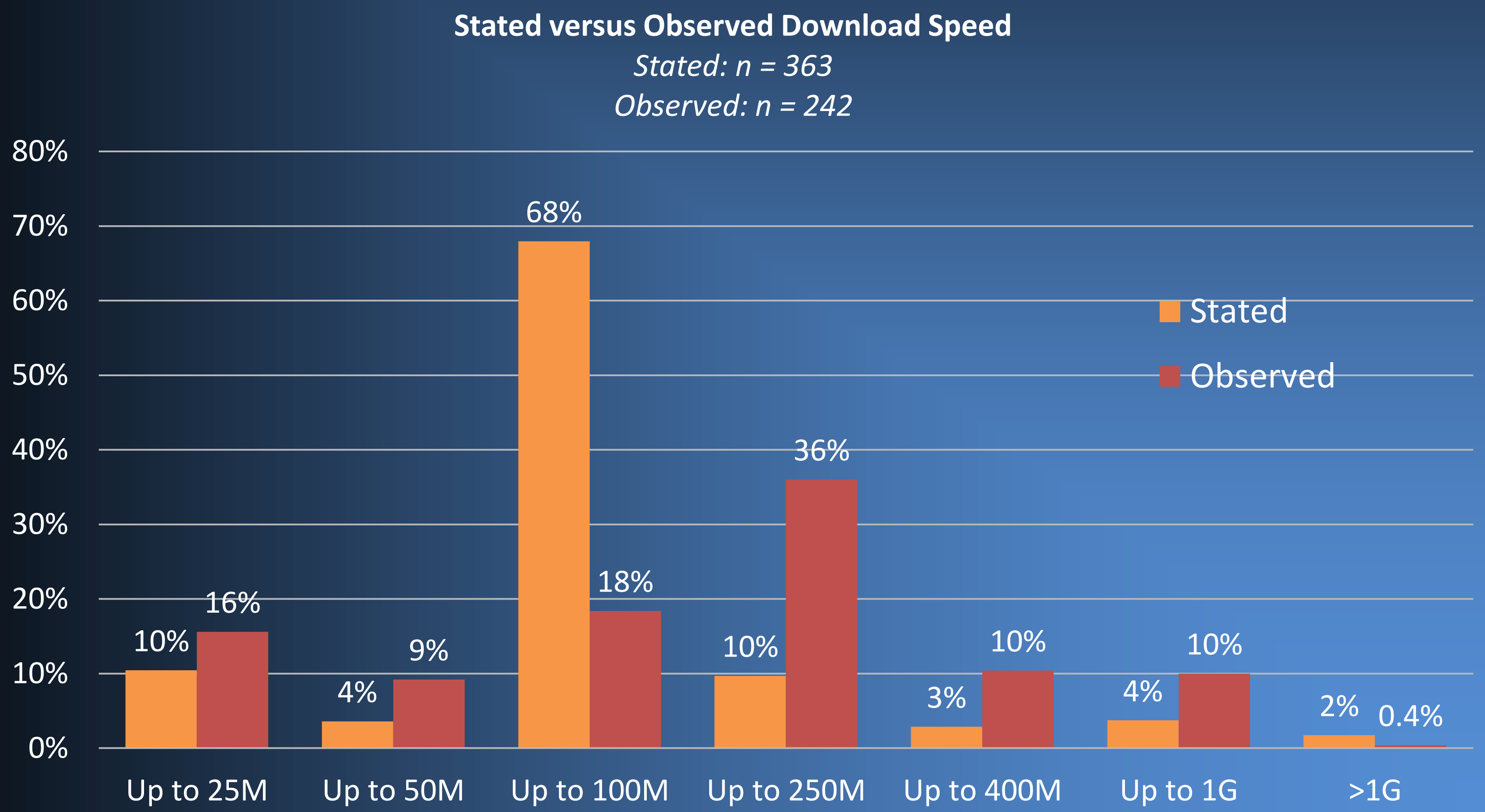


Speed Test Observed
Download & Upload Speeds
(Other zip codes with n = 65)



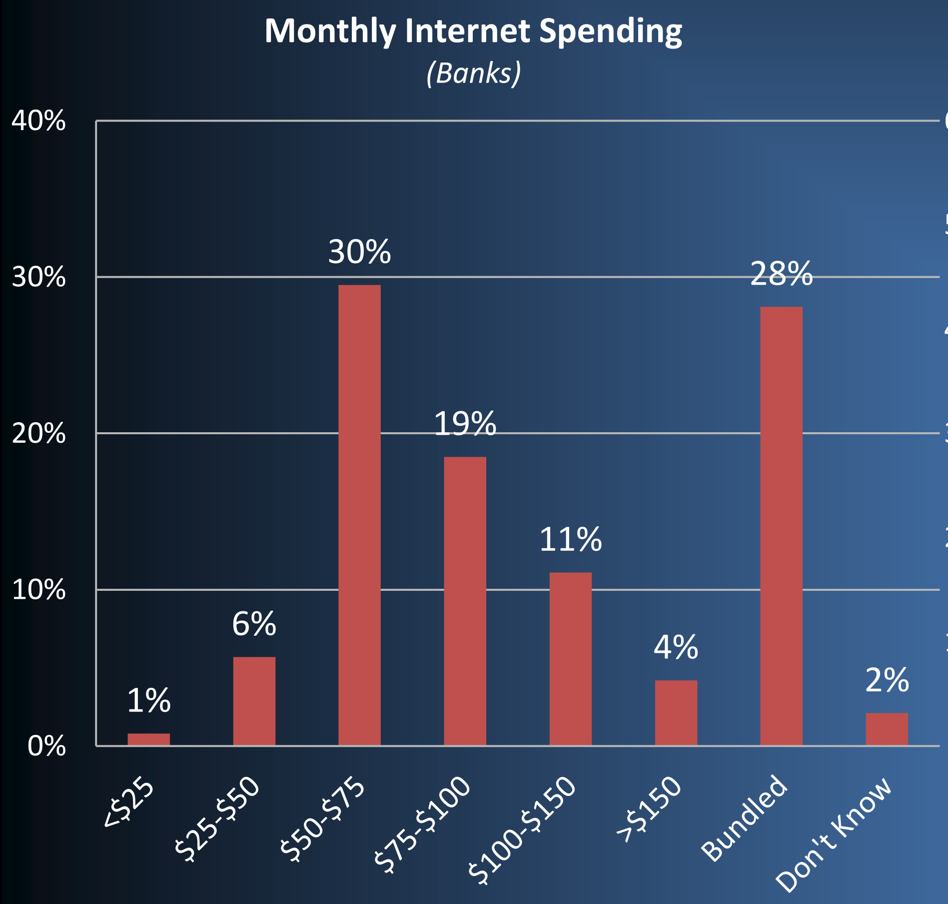
STATED VERSUS OBSERVED DOWNLOAD SPEED

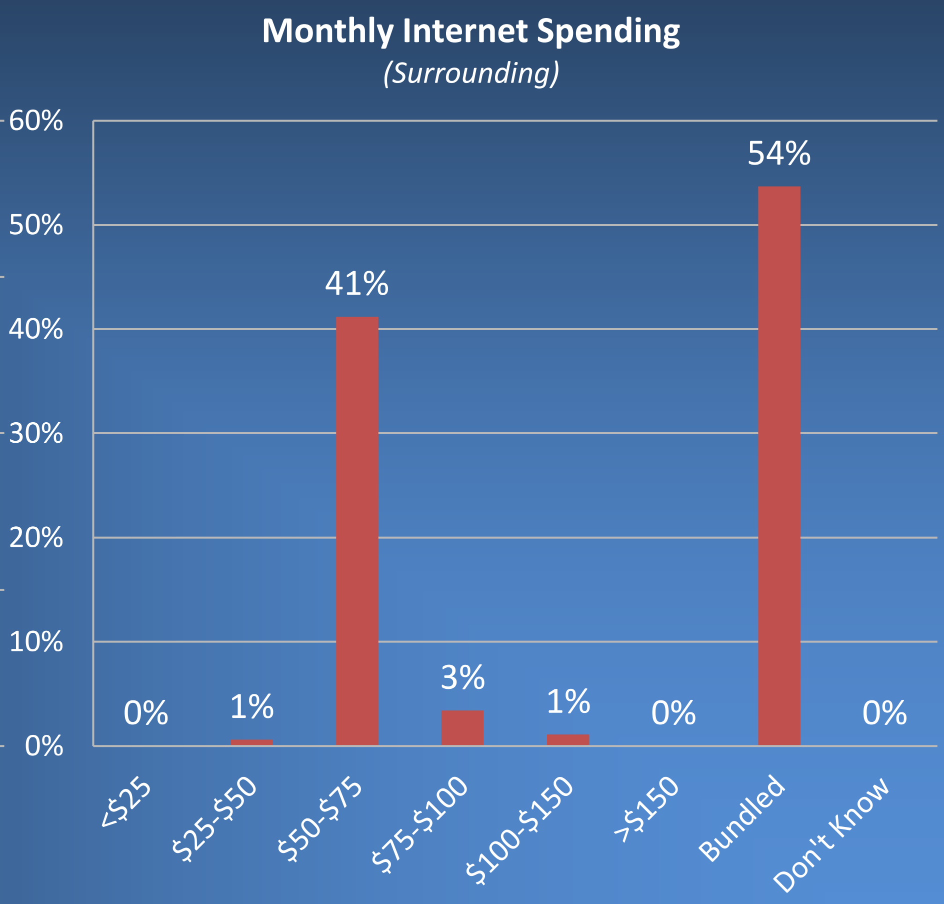
- In general, households are understating their speeds…



STATED INTERNET SPENDING

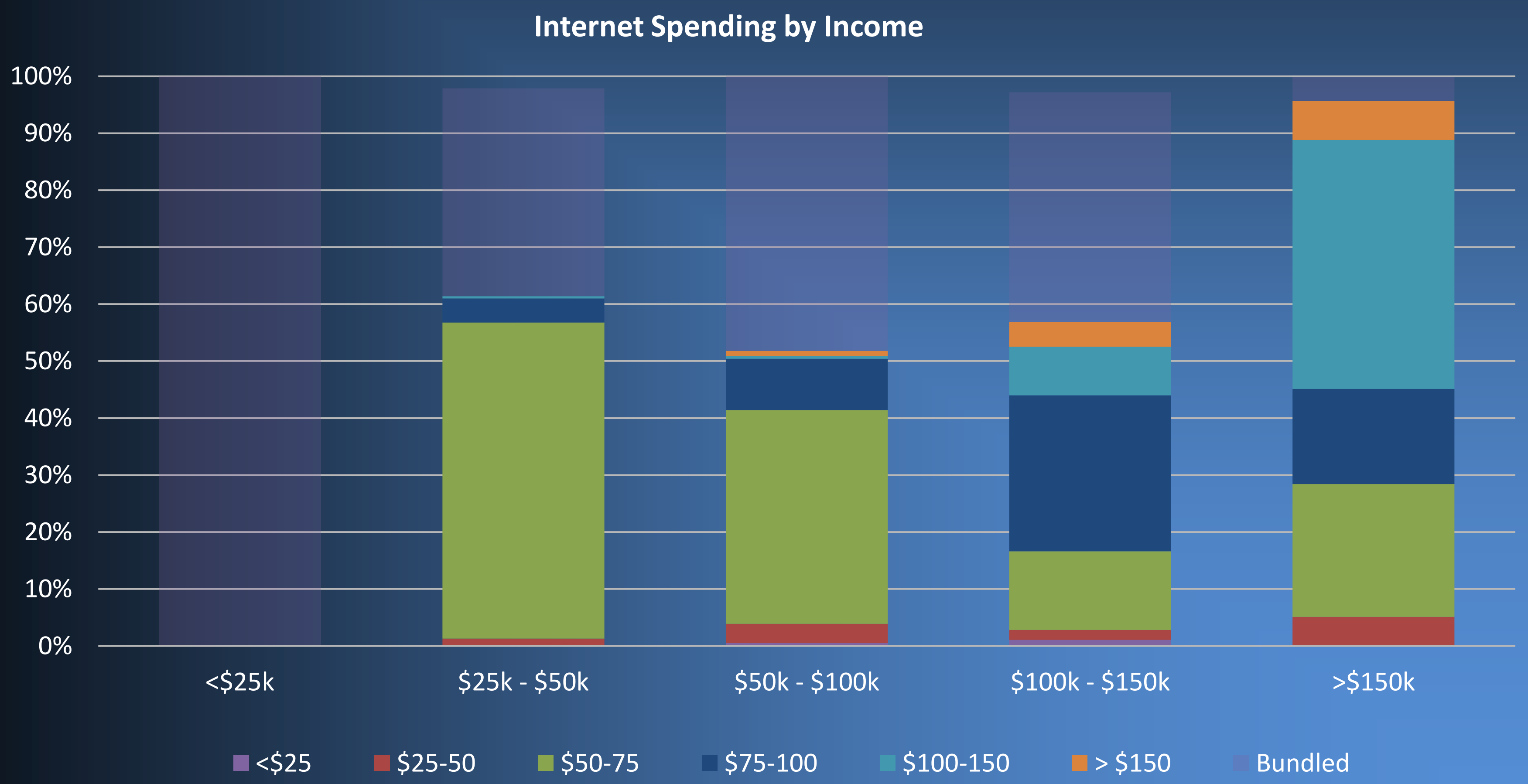
- Monthly spending averages $82 in Banks and $65 in the remainder of the School District





STATED INTERNET SPENDING

- If a household is bundling their Internet service on their providers bill identifying a specific price for Internet alone is not practical
- Among households that are not bundling, average spending increases with greater household income



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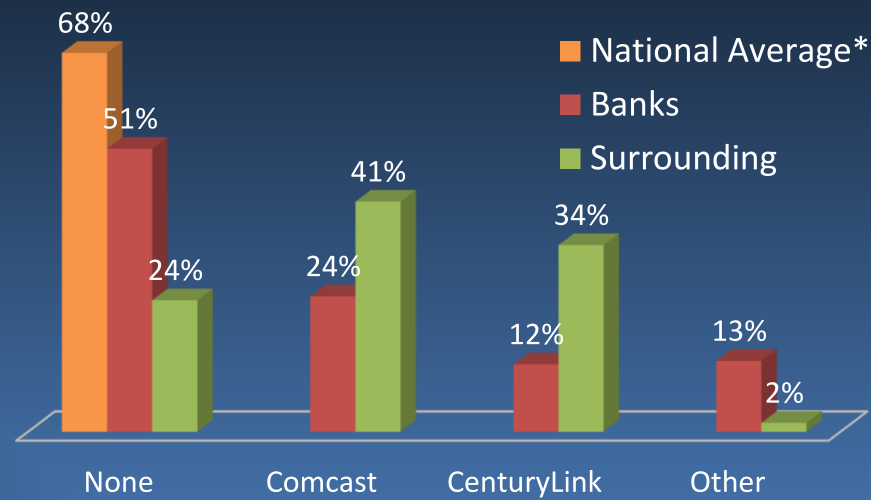
WIRELINE VOICE SERVICE

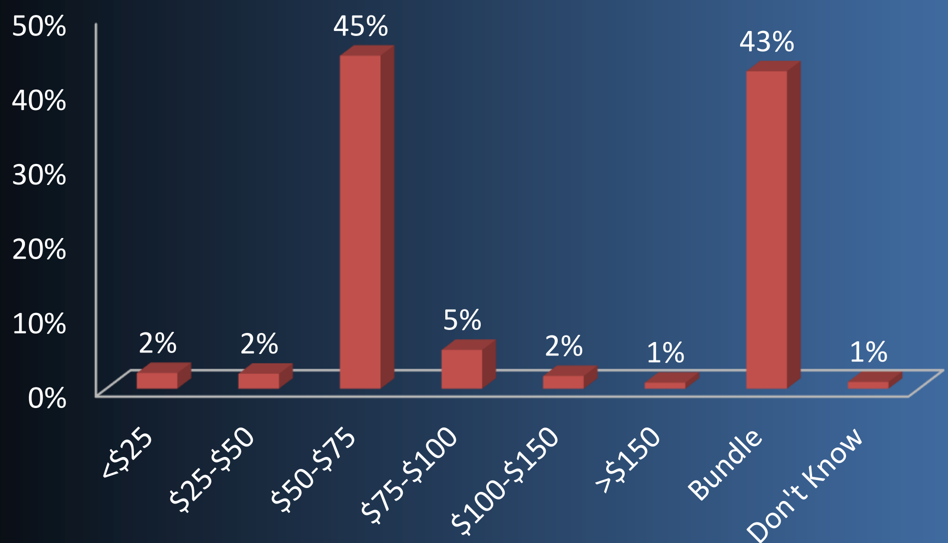
- Wireless substitution of 51% in Banks is lower than the national average at 68% of households. Outside of Banks, twice as many households still have wireline service
- In general, younger households are less likely to have wireline phone service, but this is being influenced by location as well
- Monthly spending averages $66 for those households with a wireline phone

Home Phone Provider

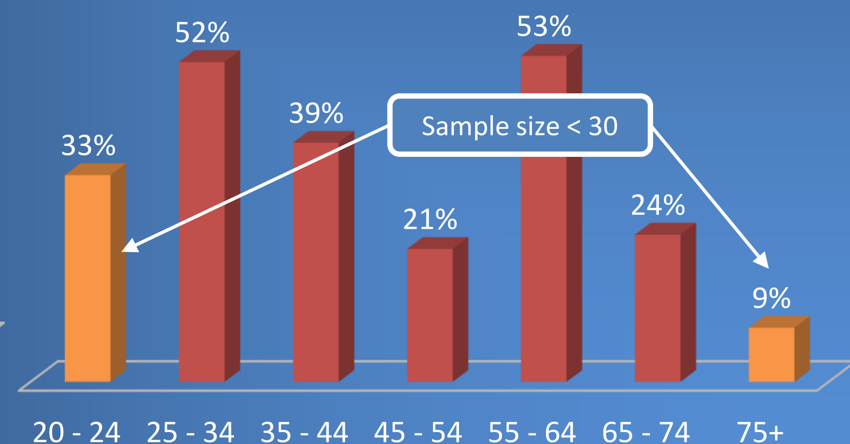
(*source: National Health Interview Survey, 2021)



Monthly Voice Spending



Households Without Wireline Phone by Age

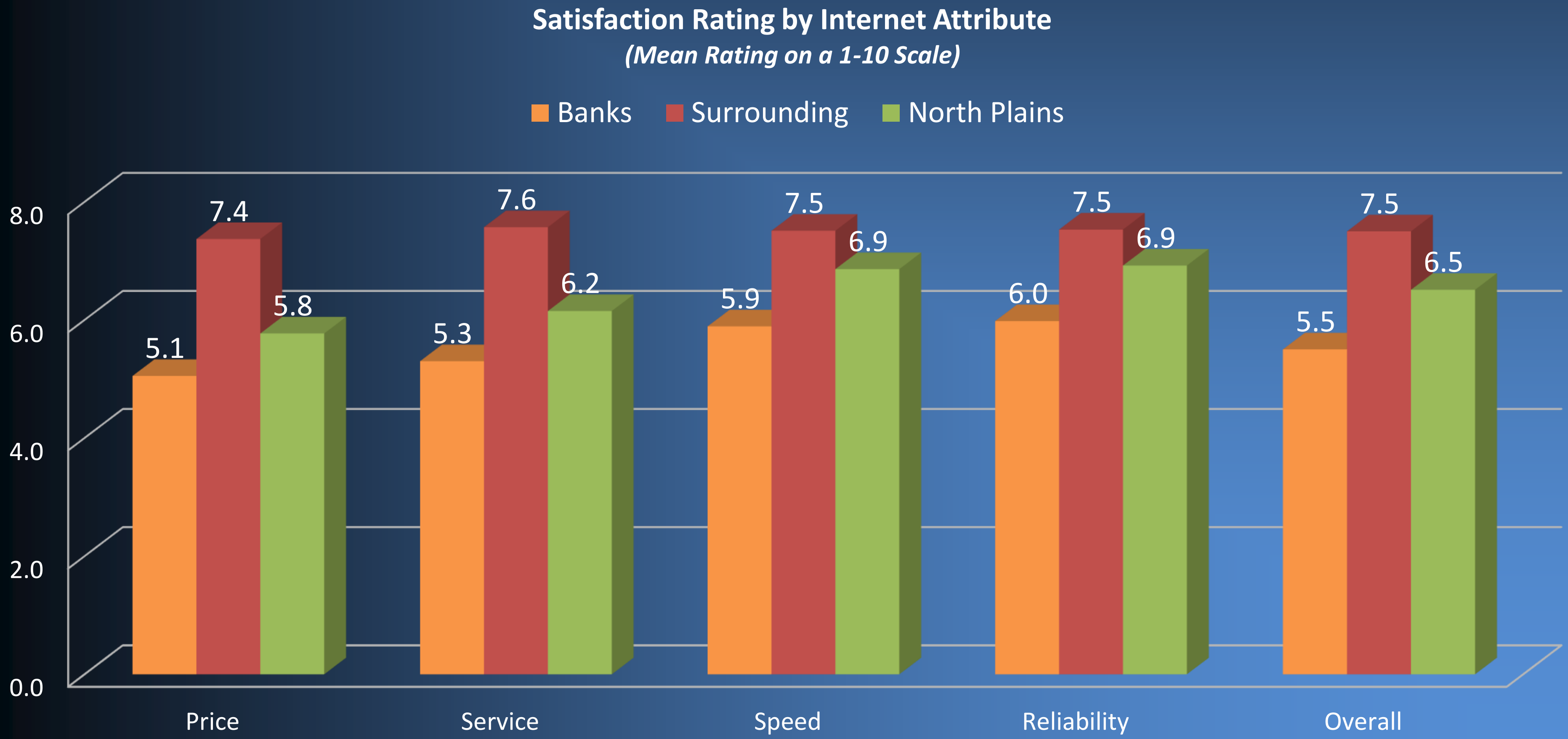


FTTP Residential Quantitative Survey

Satisfaction & Attribute Importance

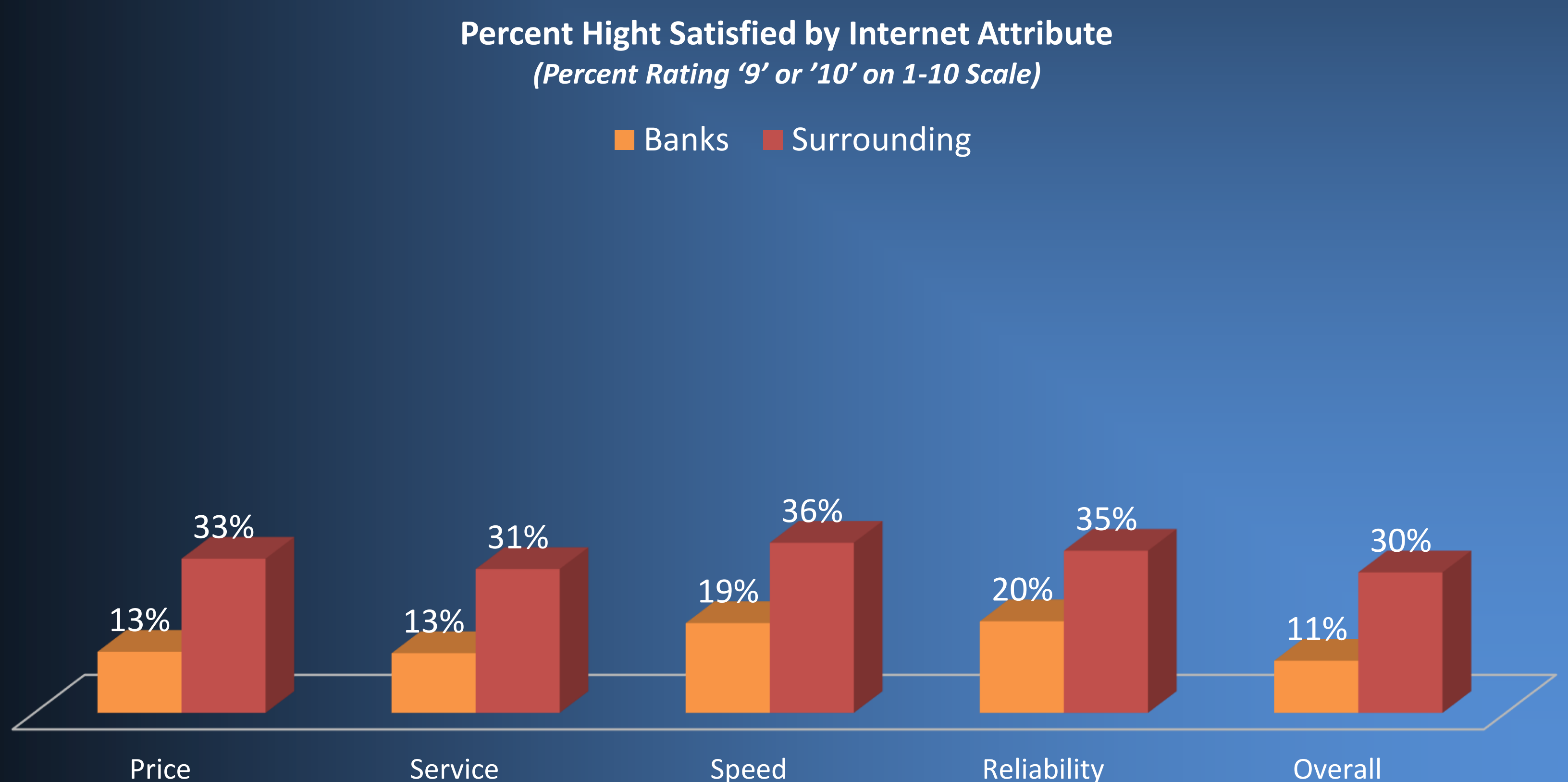
SATISFACTION WITH SPECIFIC INTERNET ATTRIBUTES

- Internet satisfaction levels in Banks are below average compared to other markets we have studied. The opposite is true outside of Banks.
- Price, as is typical, is the service attribute with lowest satisfaction levels.
- Results from North Plains are included for comparison



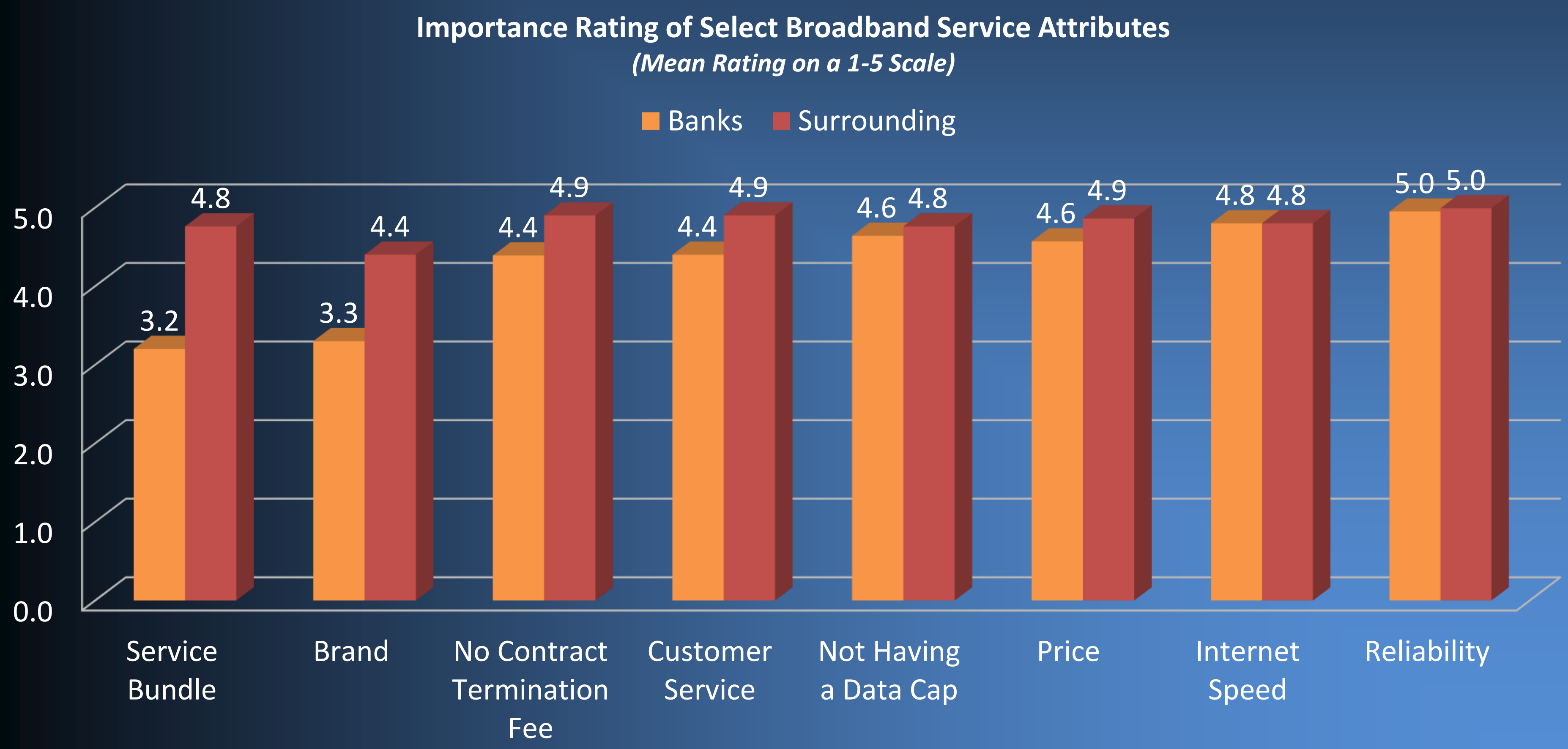
PERCENT HIGHLY SATISFIED

- An insightful alternative to mean satisfaction scores is the percentage of customers rating their provider at 9+ indicating very high satisfaction.
- Across all service attributes, the percentage of households that are ‘very satisfied’ and rating the service a 9 or 10 is low – especially within Banks



ATTRIBUTE IMPORTANCE

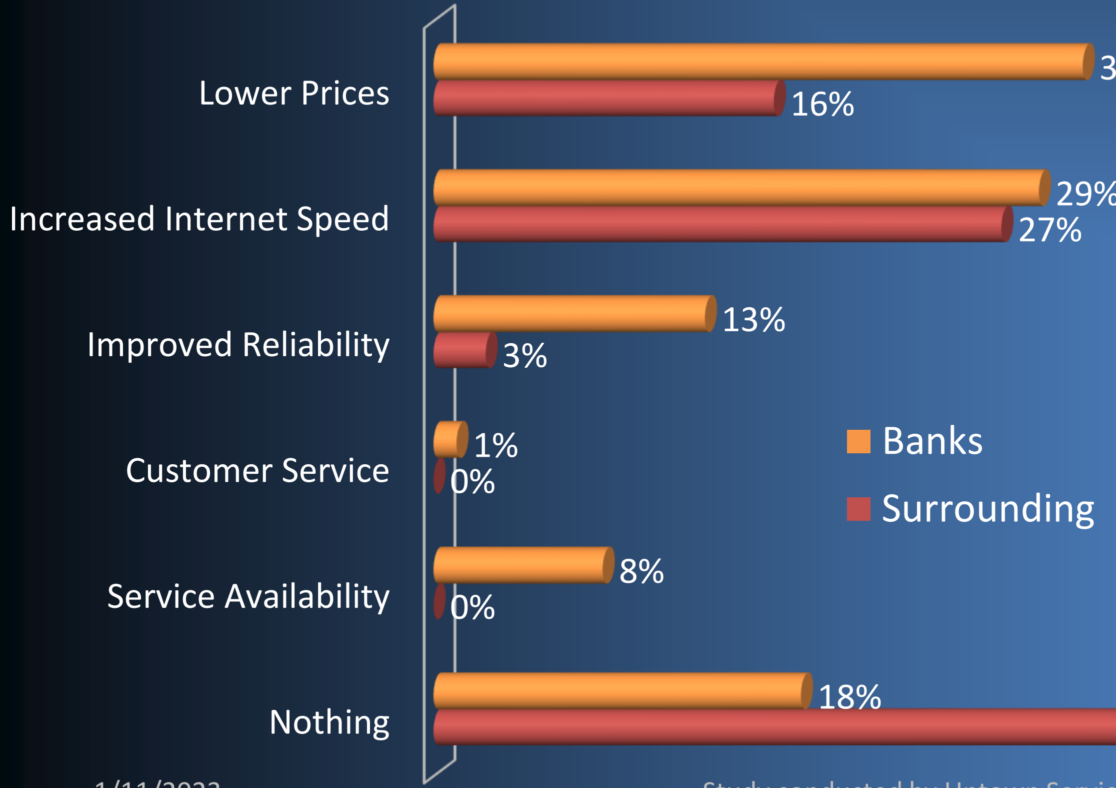
- In Banks, reliability and Internet speed are the most important attributes, with price very close in importance as well.
- Provider policies such as not having data caps score high in importance as well…



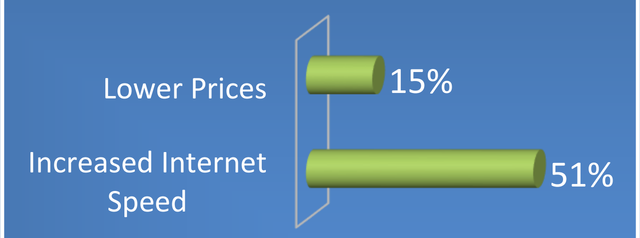
BROADBAND AREAS FOR IMPROVEMENT

- Banks residents see increased Internet speed and lower prices as the most important dimensions for improving their broadband. Among likely subscribers, increased speed is seen as the most desired area for improvement by far.
- Outside of Banks, a very high percentage of households report they don't see anything as needing improvement

Q29: *"What would you like to see most improved from your current broadband services?"*



Definitely Subscribe @ $60

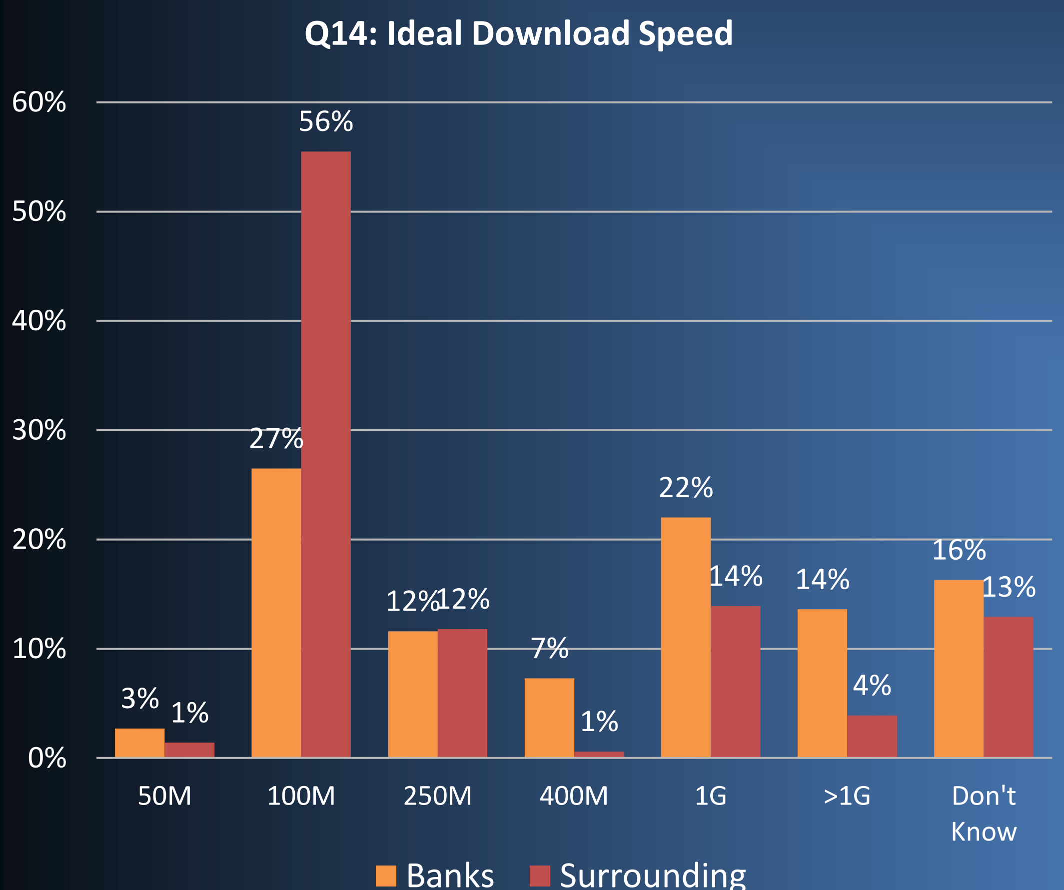


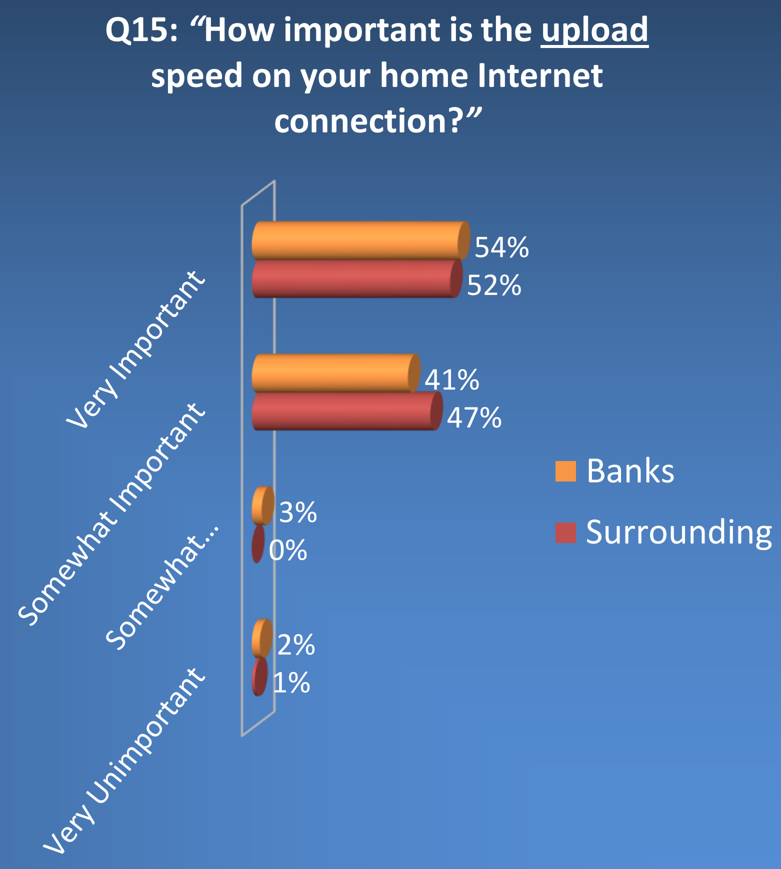
Residential Quantitative Survey

Digital Aptitude & Remote Working and Learning

PERCEPTIONS OF INTERNET SPEED

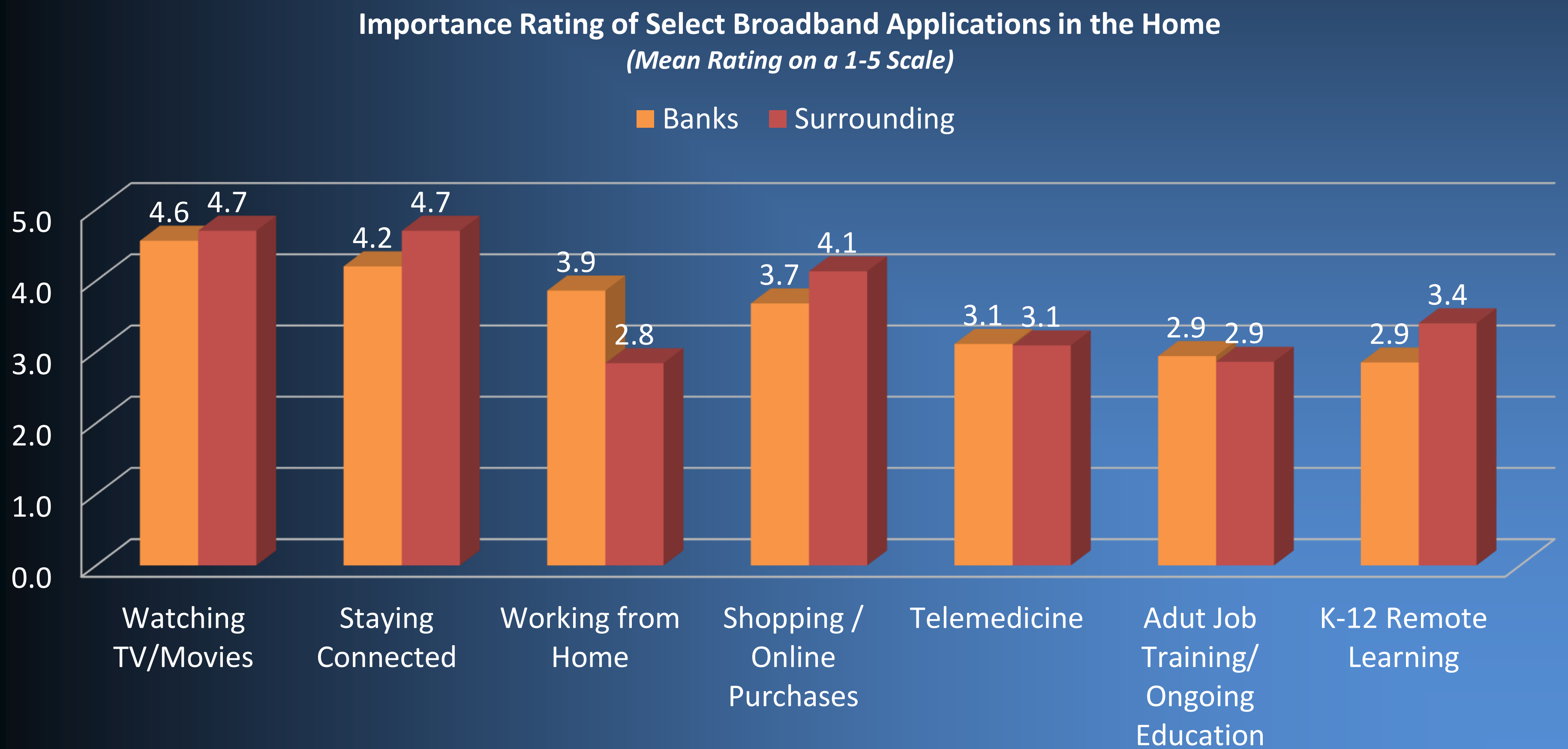
- In Banks, 36% of households state their ideal Internet speed would be 1G or higher. But in the surrounding area this drops to just half of that value.
- One in two households perceive the upload speed as 'very important' across both areas.





IMPORTANCE OF DIGITAL APPLICATIONS

- Social connection and entertainment rate higher in importance in both areas than work-at-home and online learning applications despite the impacts of COVID-19.
- 'Working at Home' rates higher than typical within Banks

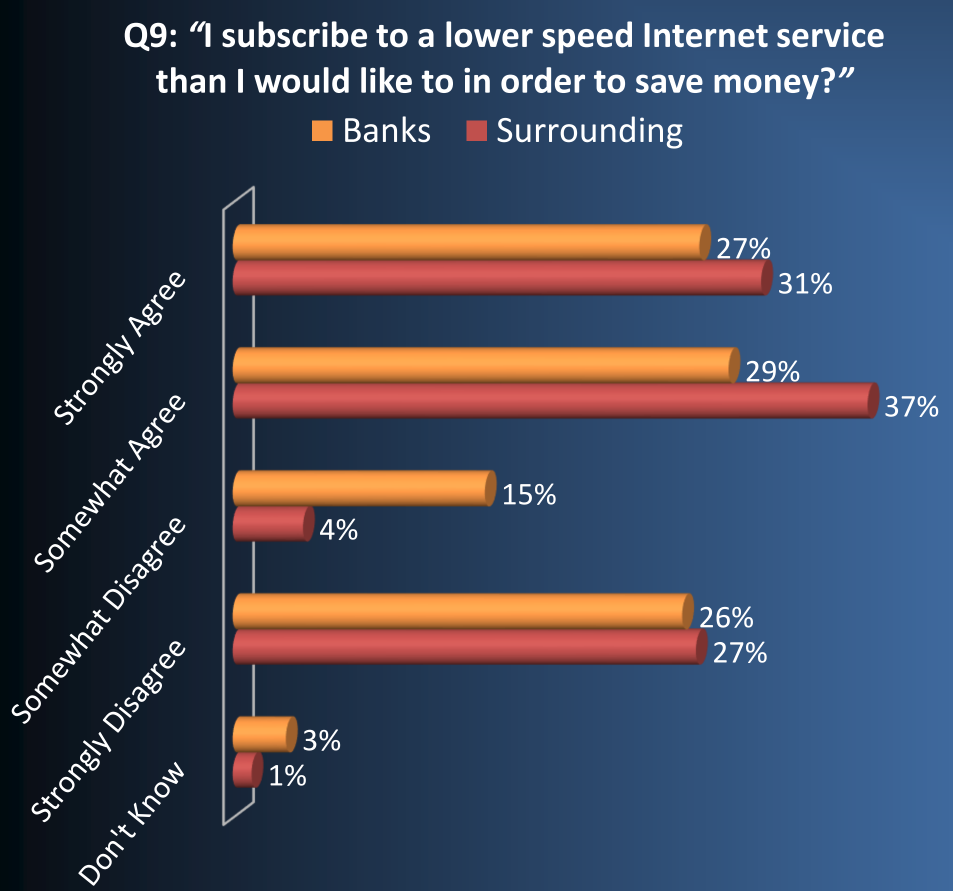


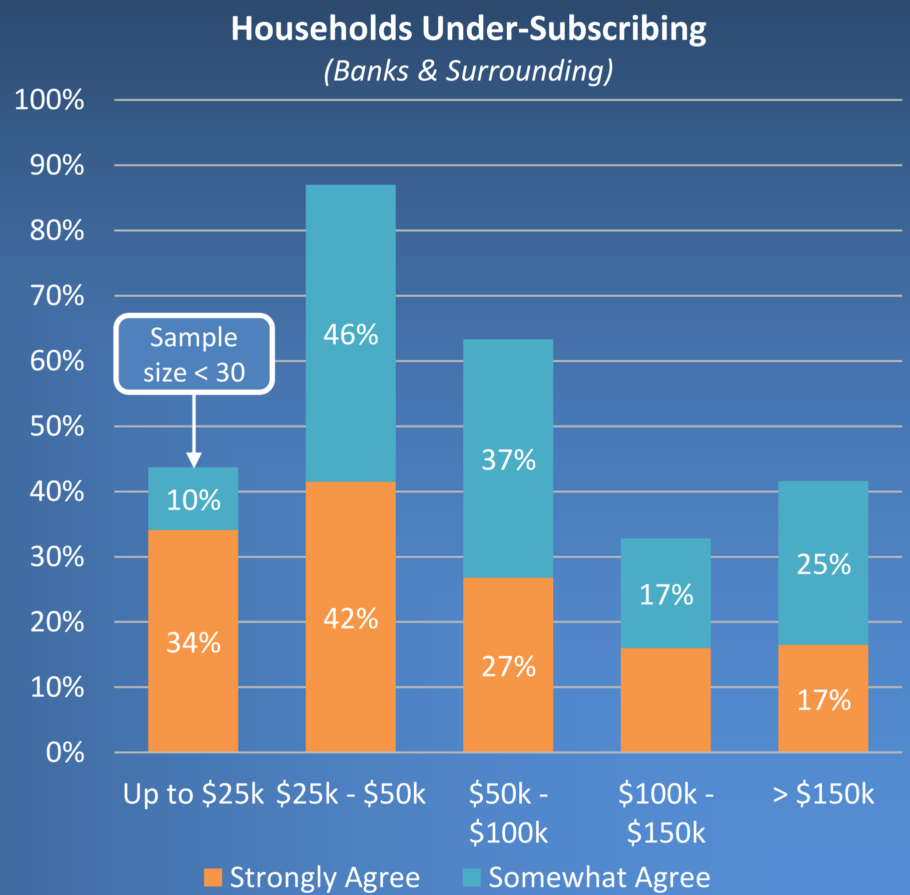
FTTP Residential Quantitative Survey

Affordable Connectivity

BROADBAND AFFORDABILITY

- Within Banks, 56% of households ‘strongly agree’ or ‘somewhat agree’ that they are subscribing to a lower Internet tier in order to save money. This increases to 68% outside of Banks
- As expected, lower income households are more likely to underspend for budgetary reasons

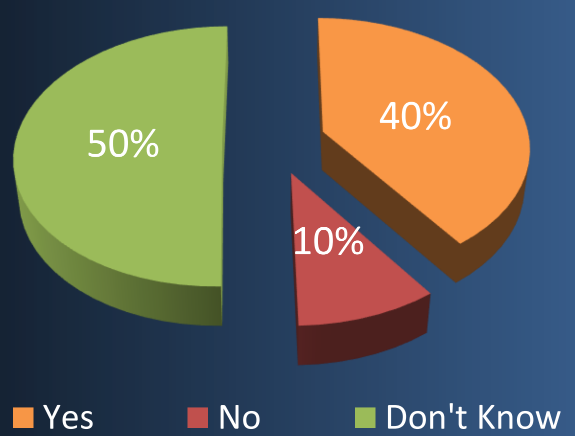




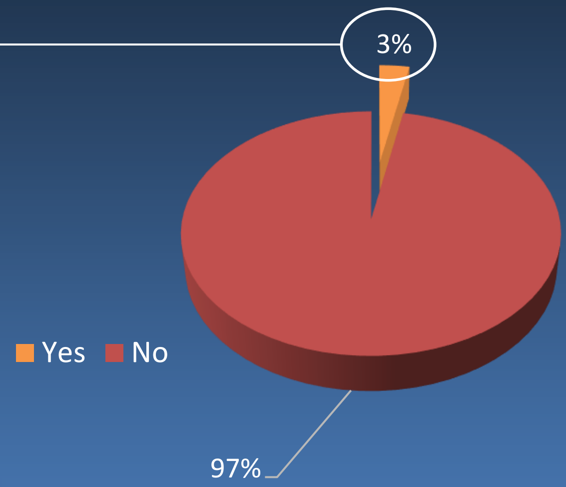
SUBSIDIZED INTERNET AWARENESS & PARTICIPATION

- Only 3% of households state that they are receiving a subsidized internet service based on their level of household income, and among these households, most do not know the amount of the discount.
- Among all households, only 4 in 10 are aware that discounts are available for income-qualifying households. The percent stating correctly that discounts are available:
  - Banks: 20%
  - Surrounding: 56%

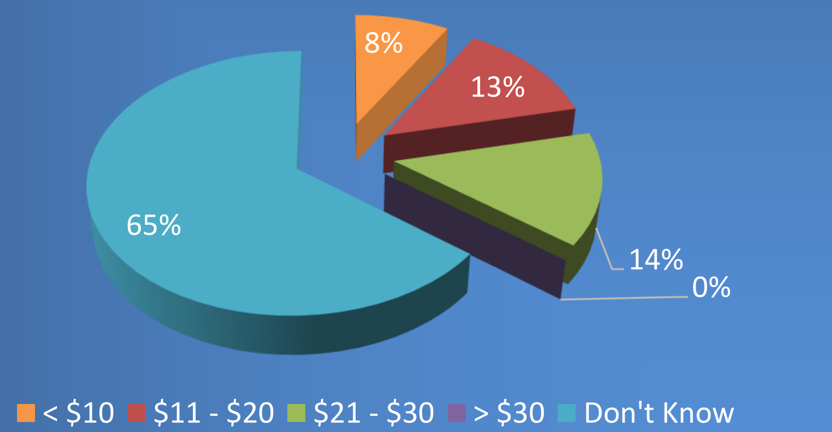
Q11: "Does your Internet provider offer a discounted Internet service for households who qualify due to lower income?"



Q10: "Is your household receiving an Internet discount based on your income?"



Q12: "What is the amount of the discount?"



AFFORDABLE CONNECTIVITY PROGRAM

The Affordable Connectivity Program (ACP) is a newly funded federal program to subsidize Internet service among low-income households to narrow the digital divide…

Program Overview	• $14.2B in total funding • Qualifying households receive a $30 monthly benefit towards Internet service • Connected device reimbursement of $100 if provider charges between $10-$50 for the device • No set end date • Participation qualifies the service provider to receive BEAD grant funding
Household Participation Requirements	• Household income at or below 200% of federal poverty limit (e.g. household size of 3 earning $44k or less) • Participation in national school lunch program • Participate in the FCC Lifeline program
Service Provider Participation Requirements	• Eligible Telecommunications Carriers (ETCs) offering residential Internet service • Requires FCC approval and USAC election notification • The $30 discount must be available on all Internet tiers offered by the provider • No credit check and no disconnects for non-pay until 90 days past due

TESTED RESIDENTIAL INTERNET PRICE POINTS

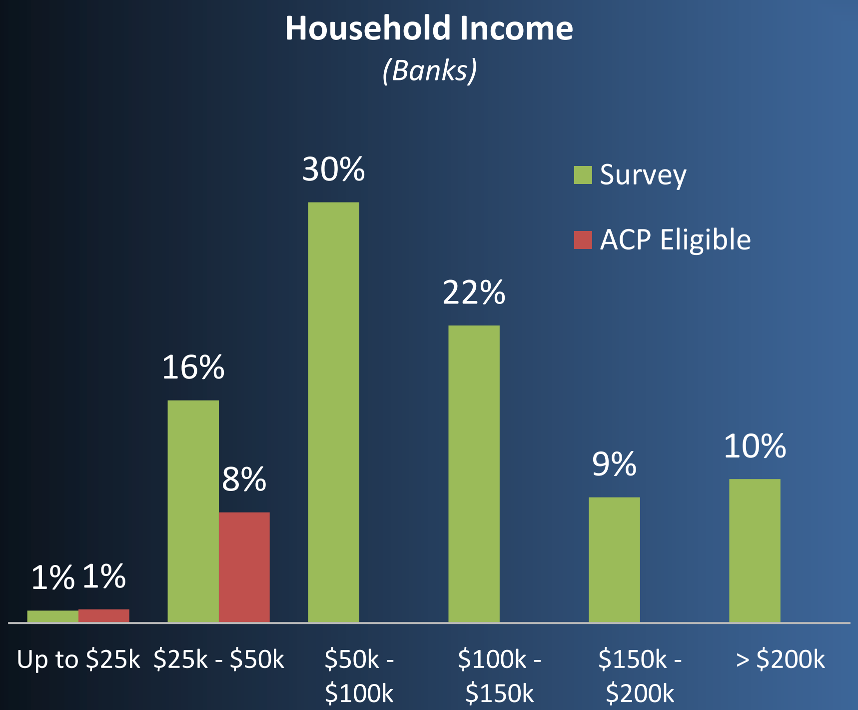
The quantitative survey evaluated household purchase intent taking into consideration a range of strategy options:

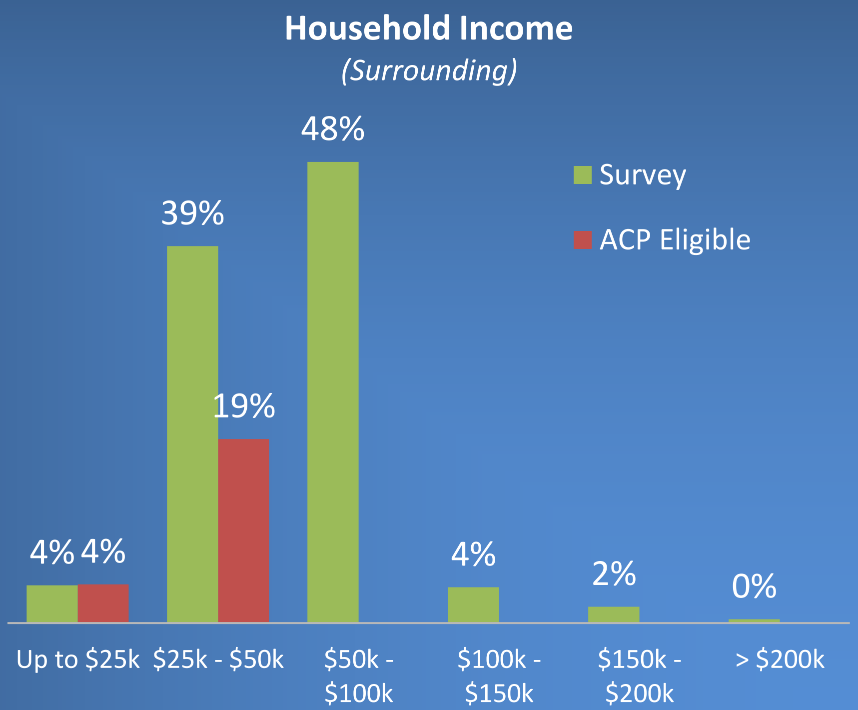
- Price elasticity of demand for 1G Internet tested at $60 and $70/month using a cell design so each participant was presented with one price point
- ACP-eligible households were presented with 1G Internet including the $30 ACP discount (still using the Cell A and B design)
- Multi-Gig tier options were presented to participants that stated they would ‘definitely’ or ‘probably’ subscribe to the 1G tier

Internet Tier Download / Upload	Monthly Price: Standard	Monthly Price: ACP Eligible
1G / 1G	Cell A: $60 Cell B: $70	Cell A: $30 Cell B: $40
2G / 2G	$100	$70
4G / 4G	$150	$120

ACP ELIGIBILITY

- Based on income eligibility limits, we estimate that approximately 9% of Banks and 23% of surrounding area households qualify for ACP. This assumes that 50% of the $25-$50k group are eligible based on household size.
- Eligibility set at 200% of Federal Poverty Level:
  - HH of 1: Income up to $27,180
  - HH of 2: Income up to $36,620
  - HH of 3: Income up to $46,060
  - HH of 4: Income up to $55,500
  - HH of >4: Add $9,440 per person





FTTP Residential Quantitative Survey

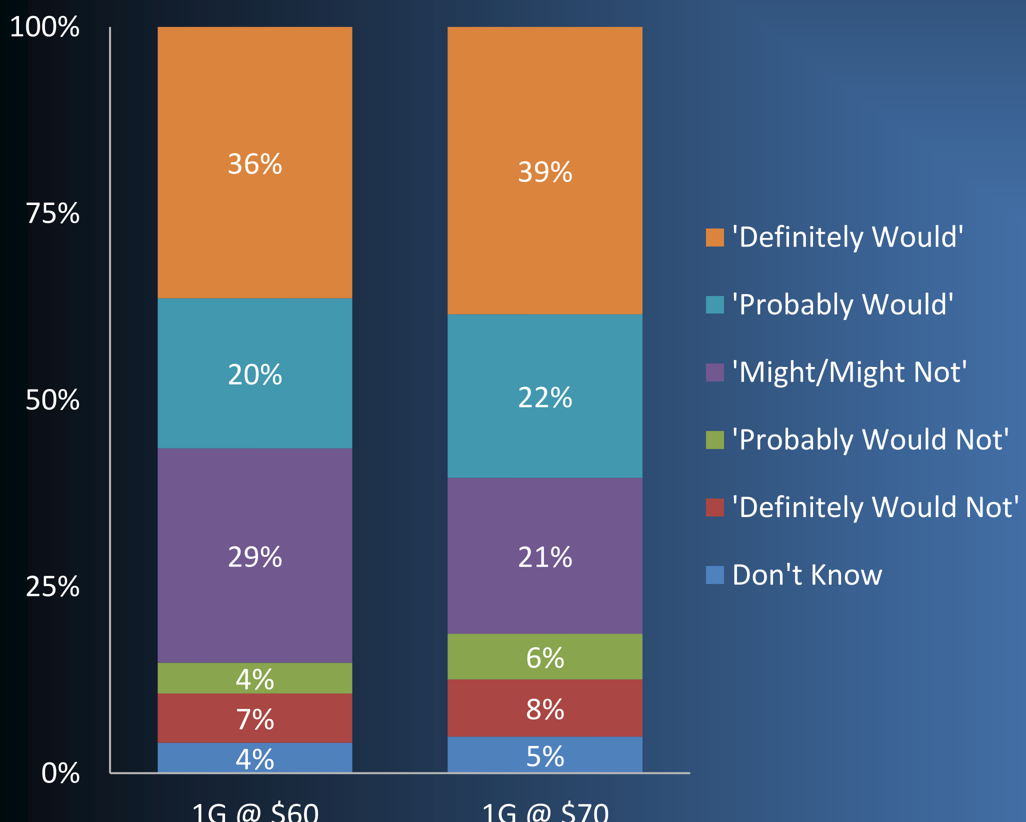
Fiber Broadband Market Potential

- Within Banks, at a $60 price for 1G, 56% of respondents indicated they would definitely or probably switch their Internet service to a new fiber system. This metric increased slightly to 61% at the $70 price point.
- Outside of Banks, stated purchase intent is dramatically lower.

Stated Purchase Intent Inside Banks

- Internet at $60/mo. for 1Gbps

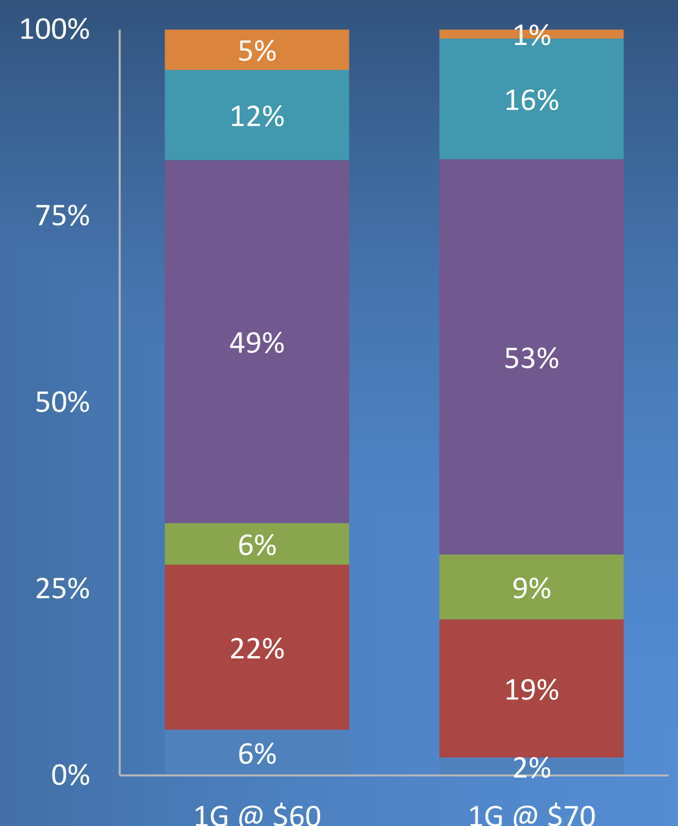
- Internet at $70/mo. for 1Gbps



Stated Purchase Intent Outside Banks

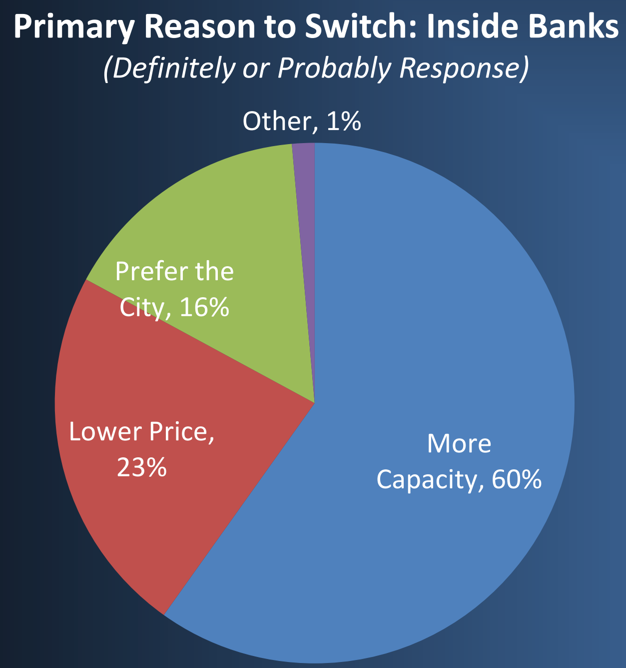
- Internet at $60/mo. for 1Gbps

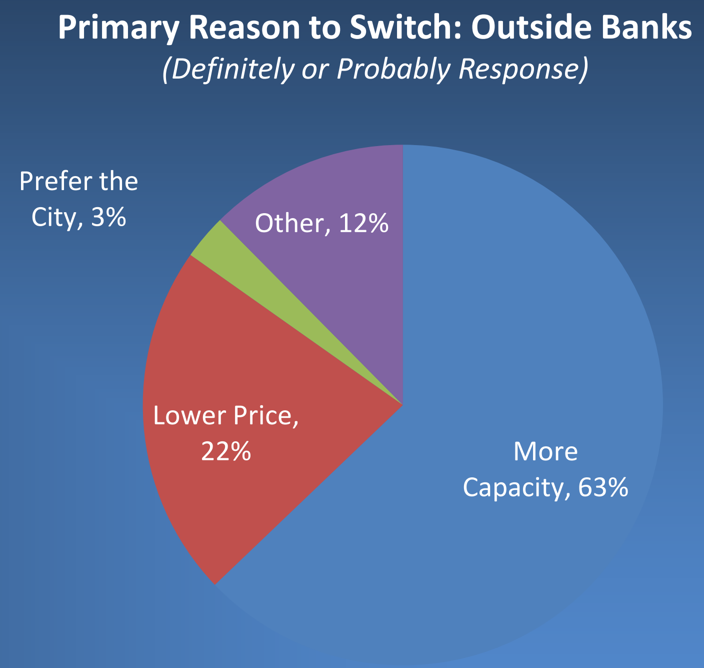
- Internet at $70/mo. for 1Gbps



REASONS TO SWITCH

In both areas, the main incentive to switch is seen as the ability to receive more Internet capacity…



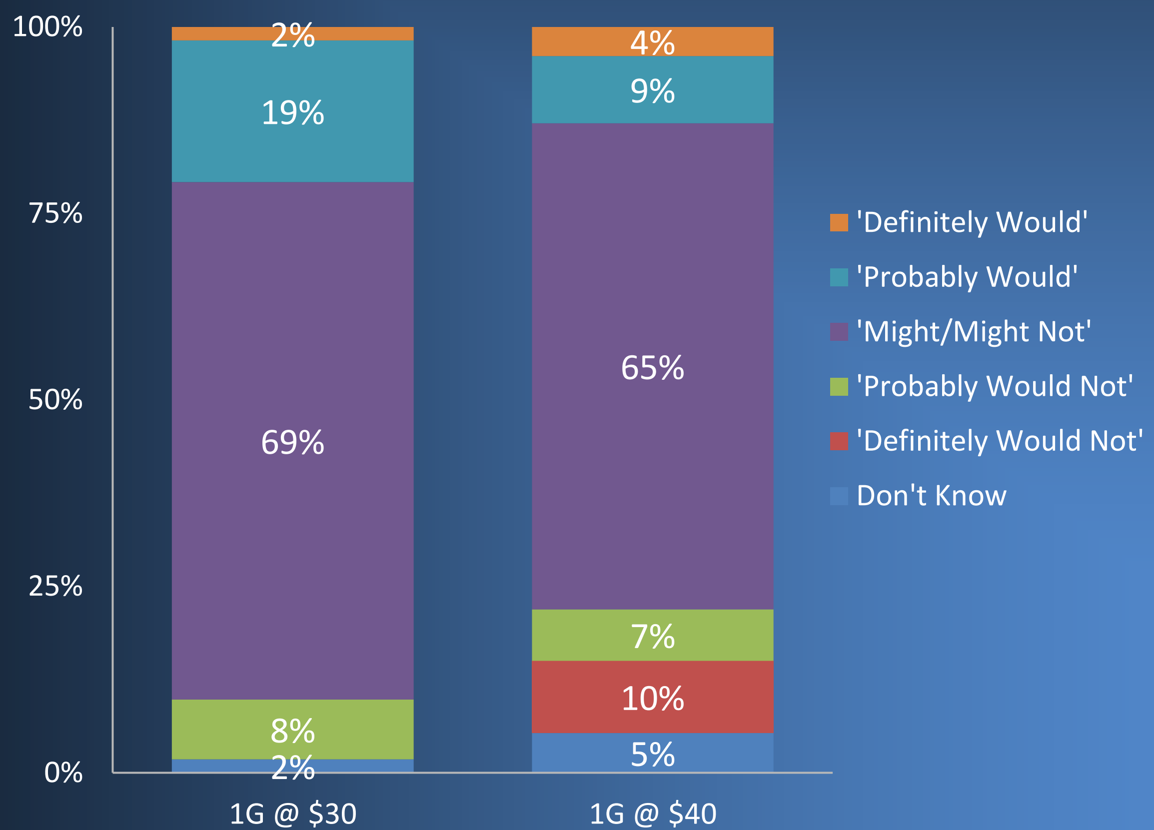


PURCHASE INTENT: ACP ELIGIBLE

Among those survey respondents likely eligible to participate in the Affordable Connectivity Program, stated purchase intent was very low…

Q41/Q42: *Stated purchase intent for:*

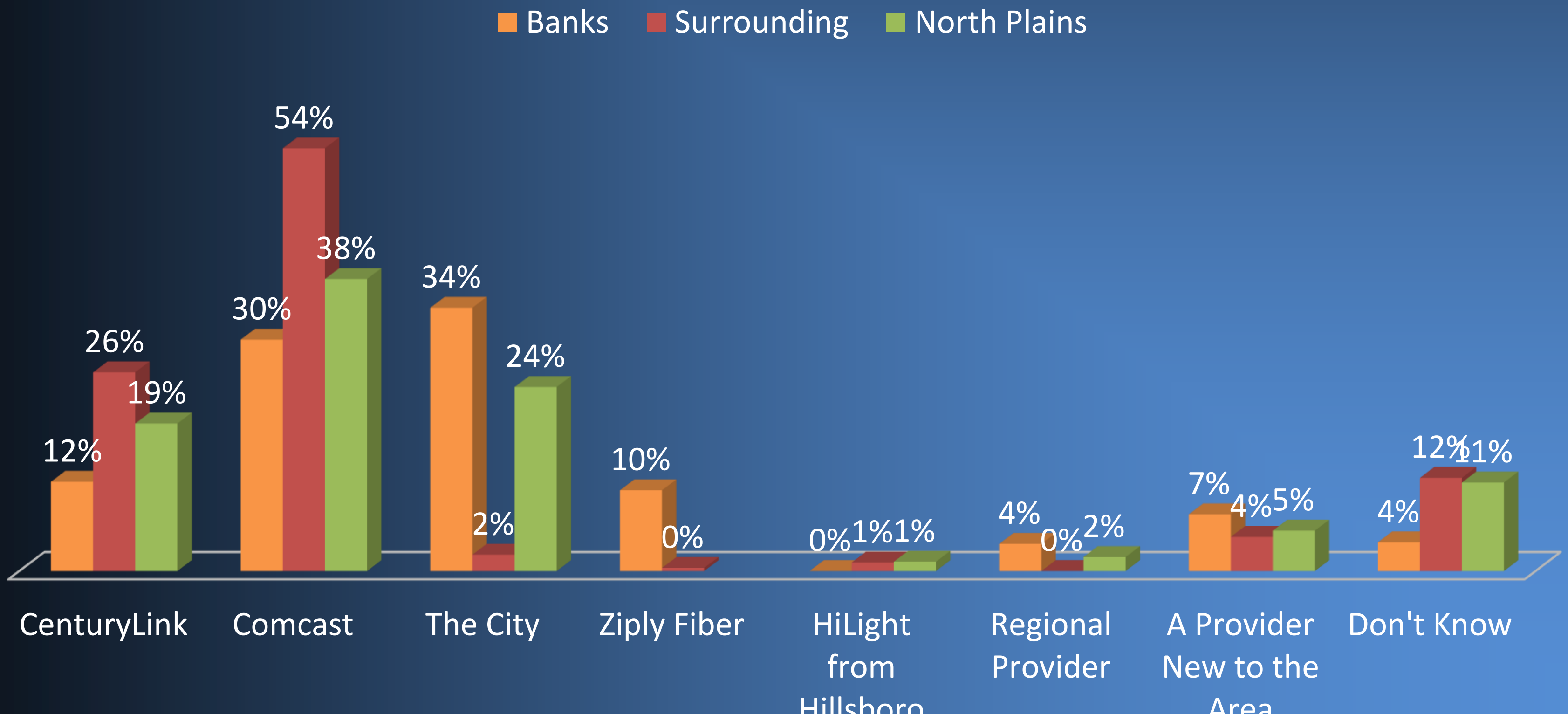
- *ACP Eligible Internet at $30/mo. for 1Gbps (n=47)*
- *ACP Eligible Internet at $40/mo. for 1Gbps (n=66)*



PROVIDER PREFERENCE

- In Banks, 34% of respondents, when given the choice, would prefer to receive high speed Internet from the City, while 30% of respondents prefer Comcast. Outside of Banks, Comcast is preferred (54%) followed by CenturyLink (26%)
- Preference for an incumbent provider is higher than we typically observe.

Q28: *"Among the following list of potential providers, who would you prefer to receive high-speed Internet service from?"*



UPTOWN SERVICES, LLC

PENETRATION CALCULATIONS

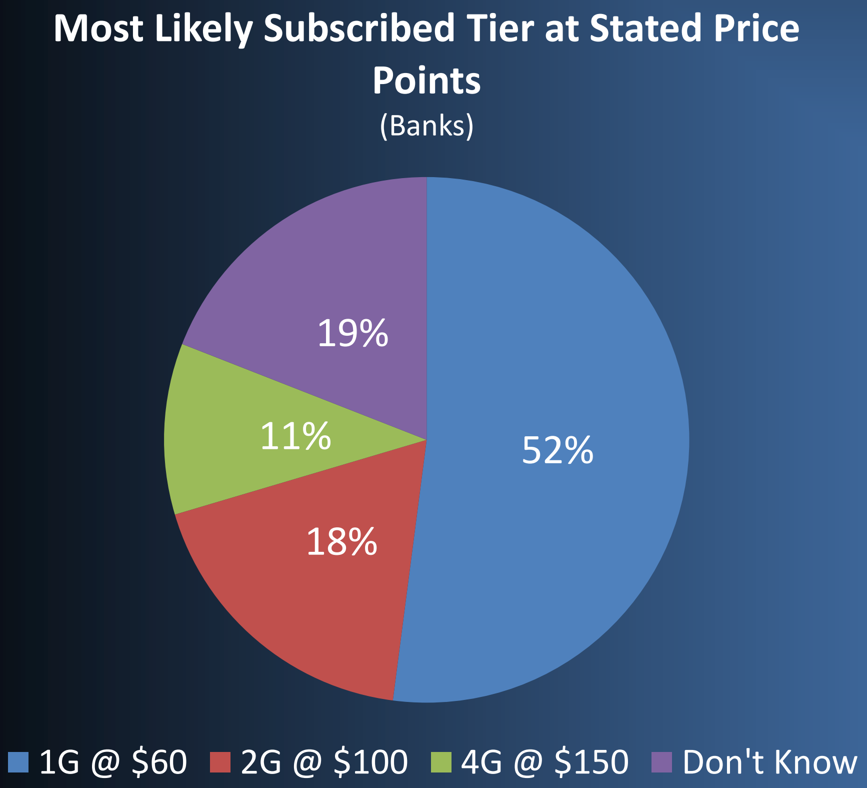
- Uptown uses a 'Likert Scale' with Overstatement Adjustment
  - Conservative research techniques from the Packaged Goods sector
  - Clearly specify purchase intent vs. "interest" and removes overstatement bias
- Example: "How likely would you be to subscribe?"
  - Definitely Would 21.5% x 70% = 15.0%
  - Probably Would 35.6% x 30% = 10.7%
  - Might/Might Not 20.0% x 10% = 2.0%

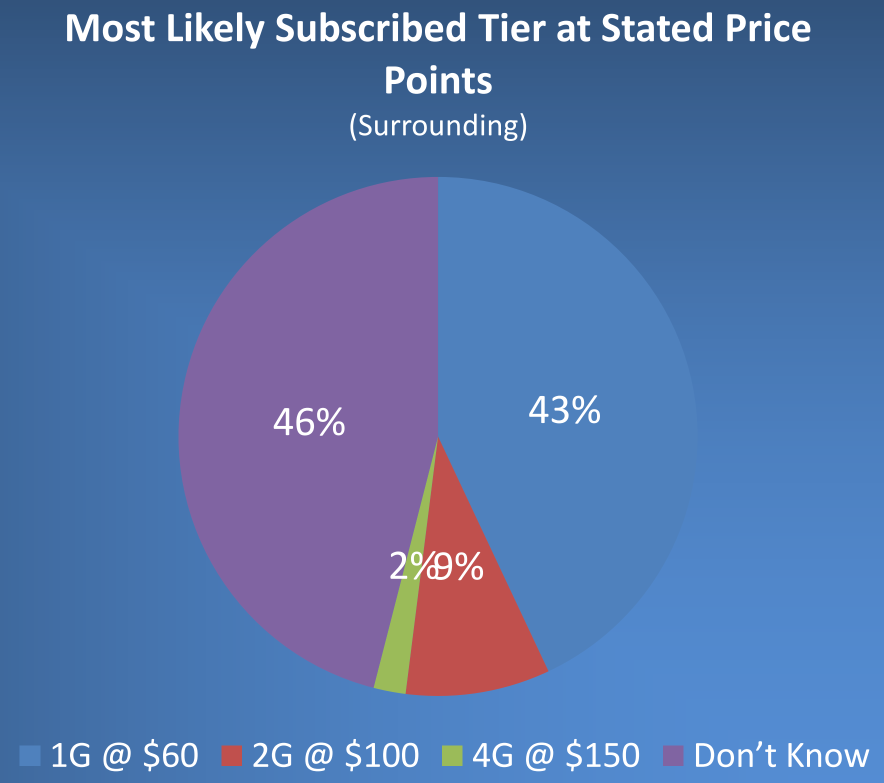
27.7% = Penetration Estimate

Survey Cell	Broadband Service	Banks Take Rate	Surrounding Take Rate
A	1G Internet @ $60	34.3%	12.3%
B	1G Internet @ $70	35.6%	11.0%

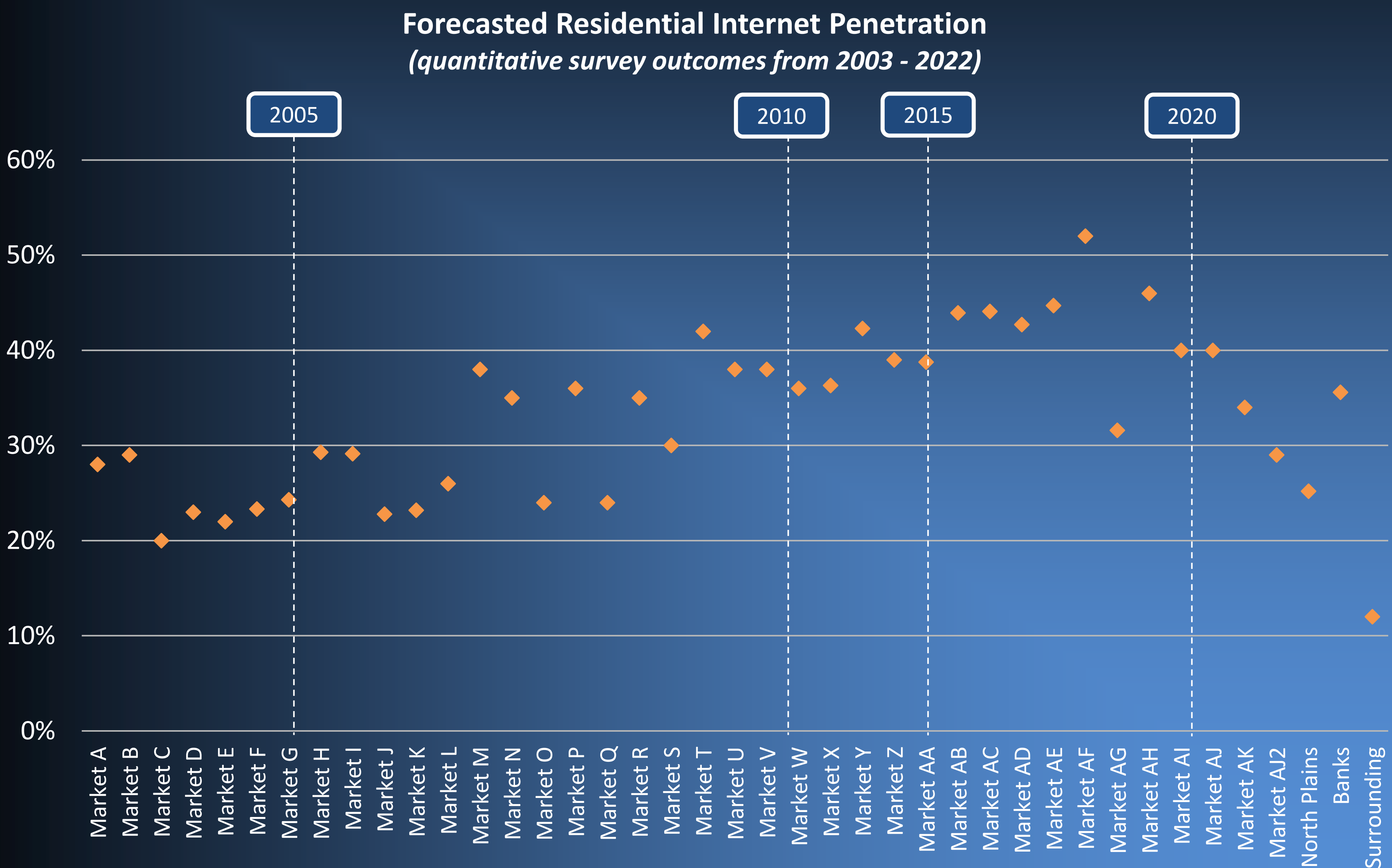
INTERNET DISPERSION & ARPU

Within Banks, we see typical demand for tiers above 1Gbps however outside of Banks this demand is below average…





PURCHASE INTENT BENCHMARKING



SUMMARY OF RESIDENTIAL RESEARCH FINDINGS

- 94% of households use Internet at home with 87% using a wired connection. Comcast is the dominant provider.
- Within Banks, only 1 in 5 households are receiving Internet greater than 100 Mbps. It is only 1 in 10 outside of Banks.
- Lower income households subscribe to significantly lower speeds are than higher income households.
- In Banks, overall Internet satisfaction score is just 5.5 on a 1-10 scale and the percentage of very satisfied households (rating 9 or 10) is just 11%. Conversely, households outside of banks place satisfaction at 7.5 – significantly higher.
- In Banks, increased Internet speed and lower prices are the predominant need for improvement. among younger households. Among households most likely to subscribe the priority dramatically shifts to increased speed.
- In Banks, 36% of households state their ideal Internet speed would be 1G or higher.
- We estimate that ≈9% and ≈23% of Banks/Surrounding area households would be eligible for the ACP program, but only ≈3% currently participating. Just 4 in 10 households are aware of this subsidy program.
- Over half of banks households are under-utilizing Internet capacity due to affordability issues. This increases to two-thirds outside of Banks.
- There is strong purchase intent within Banks and estimated take rate at tested price points is 35%. There is very weak demand however outside of Banks.
- The City is the preferred provider by 34% of households within Banks, but does not carry provider preference outside of the city.

POTENTIAL NEXT STEPS

Uptown would recommend one or more of the following as next steps to the Phase 1 Feasibility Study…

- Completion of Phase 2 tasks including:
  - Develop Network Conceptual Design and Capital Budget
  - Analysis of Business Models
  - Pro Forma Financial Analysis

- Ongoing evaluation by Washington County of feasibility/finding of middle-mile fiber construction linking Hillsboro with Banks and North Plains