ADVANCED CELLULAR FRAME

DESIGN, CONSTRUCTION AND SAMPLE SELECTION

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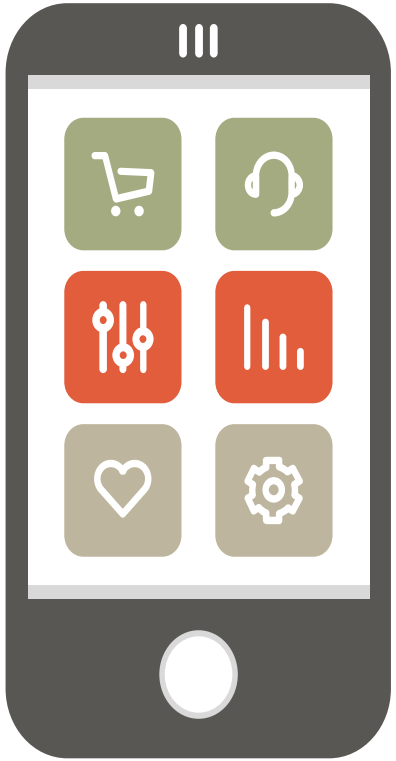
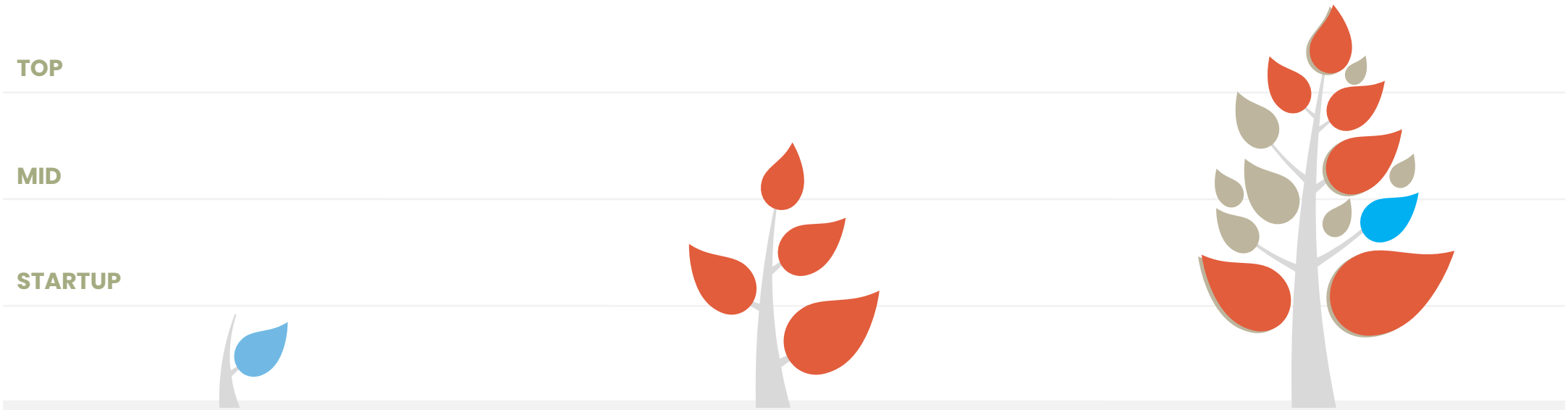
AGENDA



- Evolution of Cellular Sampling
  - Traditional Cellular RDD Sampling Frame
  - Consumer Lists
  - Advanced Cellular Frame (ACF)
- The Construction
  - Understanding the Frame
  - The Listed Frame
  - Name and Address matching
- ACF Advantages
- Improved RDD methodology
  - Stratified sample – walkthrough
  - Takeaways
- Final Thoughts

Evolution of Cellular Sampling



Traditional Cellular RDD

Comprised of all possible numbers in dedicated Cellular 1000 blocks defined by rate centers.

Consumer Lists

Constructed from commercial databases and sources providing improved geographic and demographic targeting.

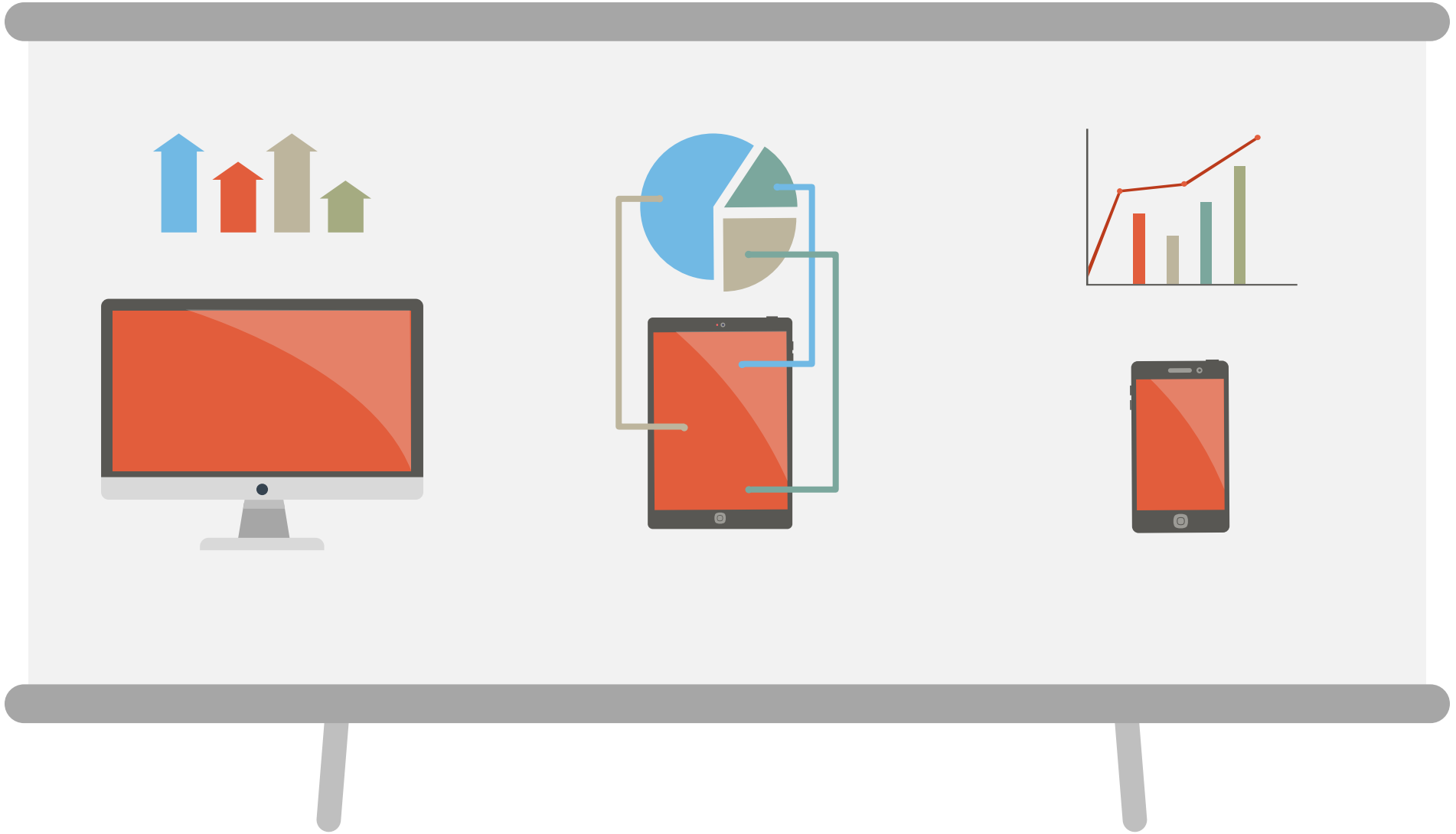
Advanced Cell Frame

The best of both worlds providing the coverage of traditional cellular RDD frame with the efficiency gains of a consumer list.

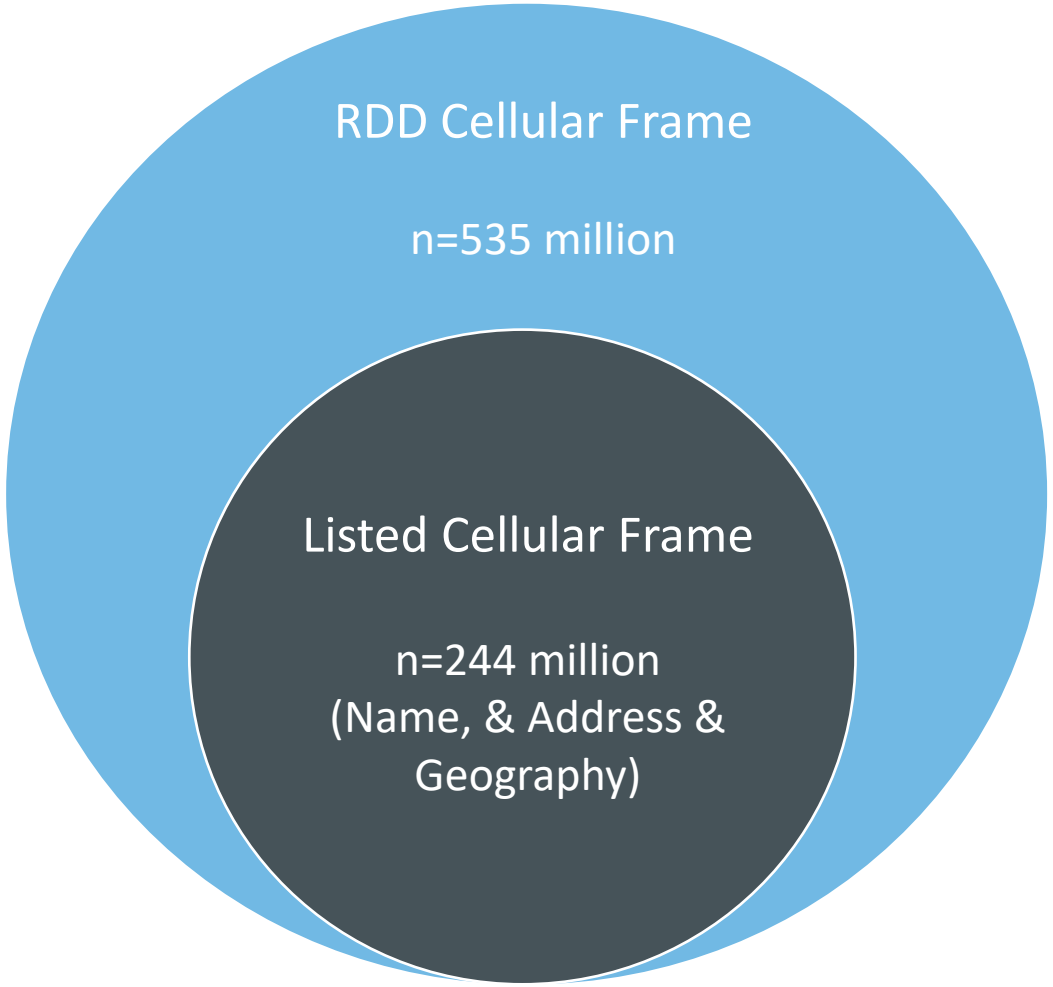
Evolution of Cellular Sampling

Cellular RDD Frame	Consumer List	Advanced Cellular Frame
10+ years Comprised of all possible numbers in a dedicated cellular bank	Constructed from commercial databases and sources.	Provides coverage of traditional cellular RDD frame with the efficiency gains of a consumer list.
Defined by rate center from which 1000 blocks originate **epsem**	Provided improved geographic and demographic targeting.	No longer solely based on billing data Leverages newer technology and data sources.
Coverage and stratification challenges for states and smaller geographies.	Higher working number rates.	Improved ability to link cellular telephone numbers to name and address
Inward / outward migration issues Rate Center Vs Census/Postal geography	Database tends to be small and limited in scope. Primarily based on billing data.	Individual and household level demographic data append.
Rate Center based demographic profiles – very broad	Suppression of data due to privacy concerns.	Lifestyle and segmentation attributes.

Construction of the Frame



Frame Composition



The remaining 291 (535–244) million numbers are either unassigned or unlisted

The Listed part of the frame

Geography (based on address)

Census geography down to Census Block

Postal geography down to ZIP+4

Demographics

Individual (age, gender, race, education, etc.)

Household (Income, presence of children/age breaks, etc.)

Lifestyle

Pre-Paid flag

Name / Address

Name/Address is a post-sampling append

Ensures more up to date name/address information is appended

Working Rate

Working phone rate averages around 95%

ADVANCED CELLULAR FRAME - HIGHLIGHTS

- ✓ **Uses newer technologies and data sources**
  - ✓ Identity authentication
  - ✓ Validation of digital transactions
  - ✓ Over 200 authoritative sources
- ✓ **High linkage rates**
  - ✓ Name and address for 244 million cellular numbers
  - ✓ US population for 15+ is 269 million
- ✓ **Improved accuracy**
  - ✓ Frame no longer based solely on billing data
  - ✓ Corroborated daily
  - ✓ Continuously updated
- ✓ **Frame refreshed quarterly**

01

Improved Targeting

02

Improved Efficiency

03

Improved Coverage

WHY ACF?

Inclusion of inward migration and exclusion of outward migration resulting in improved coverage and efficiency

Improved RDD methodology.

Improved Targeting both with a wide array of Geo and demo variables.

Accommodates disproportionate sampling designs.

Oversampling from listed numbers with a higher working rate (95%)

Under sampling from remaining numbers for complete coverage.

ACF – Improved RDD Methodology

Pre-identified Listed Numbers

01

Traditional RDD frame had no pre-identified listed component.

Net Migration

02

Inward and outward migrating listed numbers are identified appropriately.

Handling the Unlisted/Unassigned

03

The unlisted and unassigned numbers remain as-is just as they always have in the traditional RDD frame.

epsem

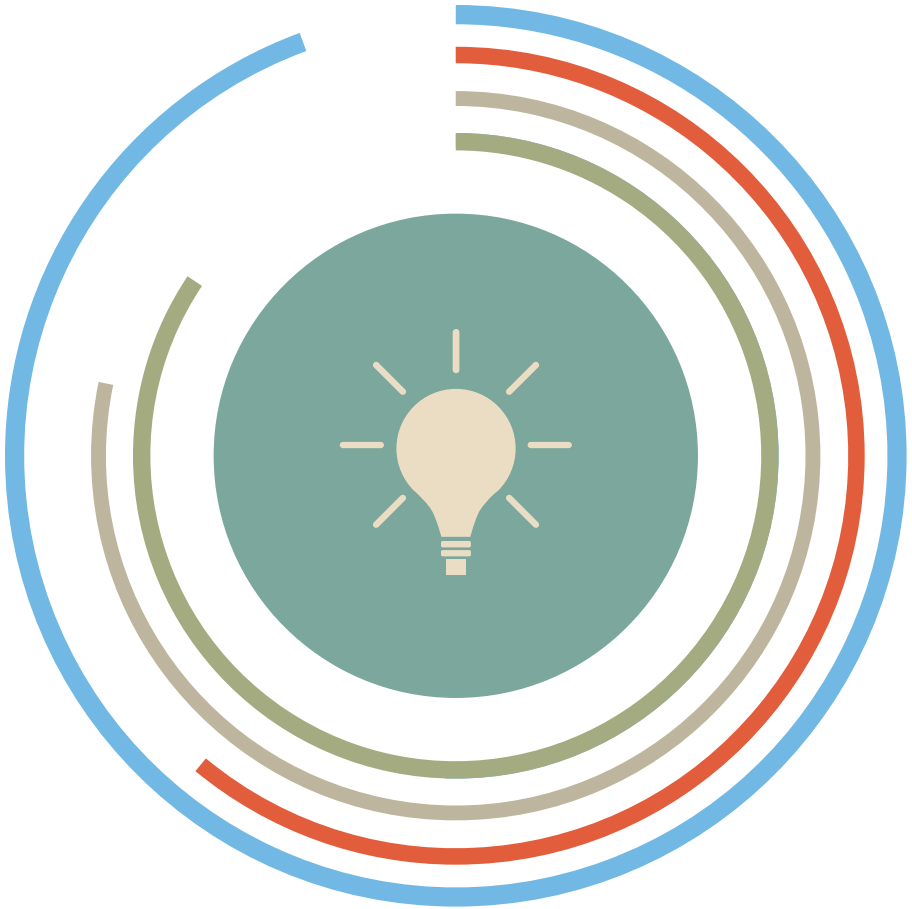
04

Still an epsem sample

Stratified Sampling Example (Washington D.C)

Listed	Inside DC	DC Area Code 202	308,514	12.2%
		DC Area Code <> 202 (Inward Migration)	195,242	7.7%
	Outside DC	DC Area Code 202 (Outward Migration)	590,083	23.3%
	Total Listed		1,093,839	43.2%
	Total Listed in DC		**503,756**	19.9%
Not Listed	**Total Not Listed in DC**		**1,436,403**	56.8%
Total			2,530,242	

Takeaways



- ✓ 39% (195,242) of the listed cellular numbers in DC are inward migration. These would not be sampled using the traditional RDD method.
- ✓ 25% (590,083) of the cellular numbers in the Traditional RDD frame are listed numbers for households outside of DC. These numbers would have to be screened out during data collection.
- ✓ The listed stratum can be sampled at a higher rate to improve efficiency
- ✓ Some under coverage may exist within the inward migration group of people whose phones are unlisted.

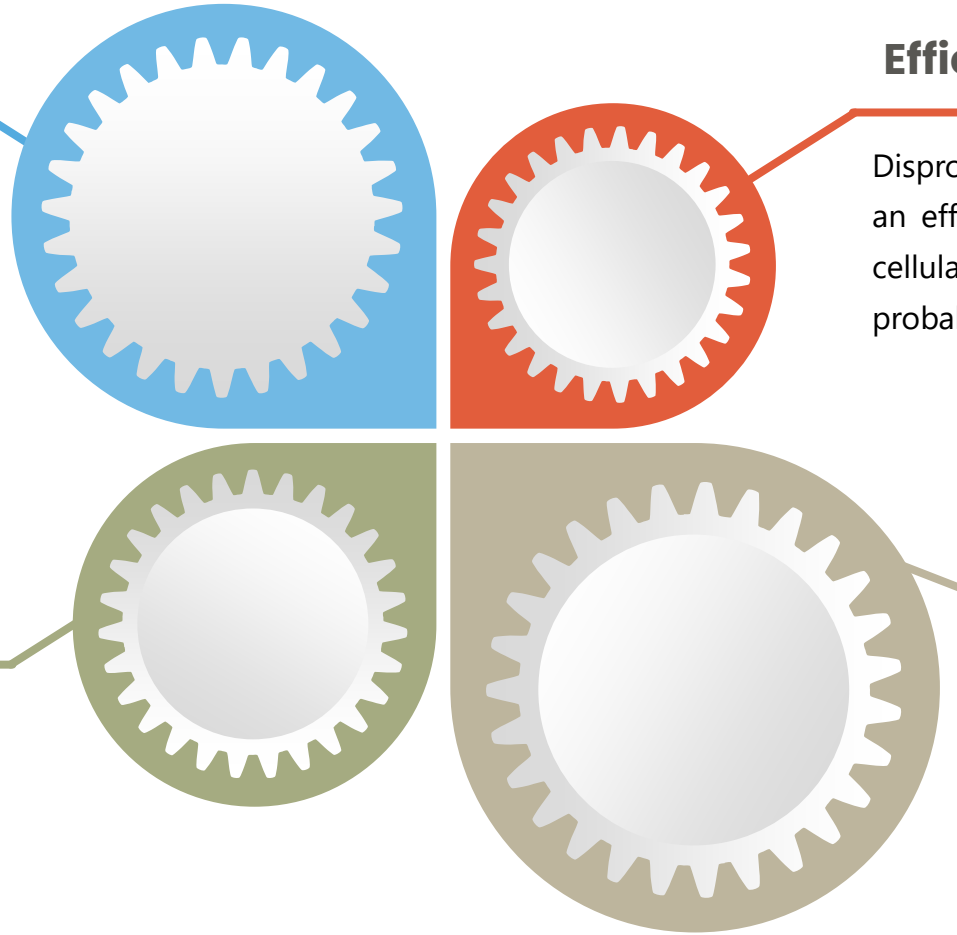
Final Thoughts

Inclusion

Advanced cellular frame allows for inclusion of nearly every cellular telephone for any target geography.

Efficiency

Disproportionate Sampling Designs can be an effective tool for improving efficiency of cellular sampling while providing a probability of selection for all phones.



Coverage

Using the improved RDD methodology will result in a more efficient epsem sample without sacrificing coverage.

Representative

More complete universes imply a more representative sample

THANK YOU FOR YOUR TIME.

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